



Final Proposed Plan Ridgway Training Range, Pennsylvania Military Munitions Response Program Munitions Response Site PAE40-001-R-01 January 2021

1.0 INTRODUCTION

This **Proposed Plan** (PP) identifies **munitions constituents** (MC) Alternative 3: **Soil Stabilization and Excavation with Off-Site Disposal** as the **Preferred Alternative** for addressing military munitions and MC-contaminated soil at Ridgway Training Range **Munitions Response Site** (MRS) PAE40-001-R-01, Pennsylvania (PA) (**Figure 1**). The purpose of this PP is to describe the site, provide the rationale for the Preferred Alternative recommendation, and summarize the other alternatives evaluated for addressing **contaminants** at the site. Additionally, this plan explains how the public can participate in the remedy selection process (**Box 1**).

NOTE: Definitions for terms shown in **boldface** are included in a glossary in **Section 12** of this document. Acronyms and abbreviations used throughout this document are listed in **Section 11**.

The MRS is a Non-Department of Defense (DoD) Non-Operational Defense Site (NDNODS). NDNODS are defense sites that were used exclusively by the Army National Guard (ARNG) and were never owned, leased, or otherwise possessed or used by the United States (U.S.) Army or another DoD component. Ridgway Training Range was formerly used by the Pennsylvania ARNG (PAARNG) for training and is currently privately owned.

BOX 1. MARK YOUR CALENDAR FOR THE PUBLIC COMMENT PERIOD December 19, 2020 TO January 21, 2021

The Army National Guard will accept written comments on the Proposed Plan during the public comment period. Comment letters must be postmarked by January 21, 2021, and should be submitted to:

Pennsylvania Army National Guard
Public Affairs Office
Bldg. 8-41
Fort Indiantown Gap, PA 17003
(717) 861-8829
ng.pa.paarng.list.pao@mail.mil

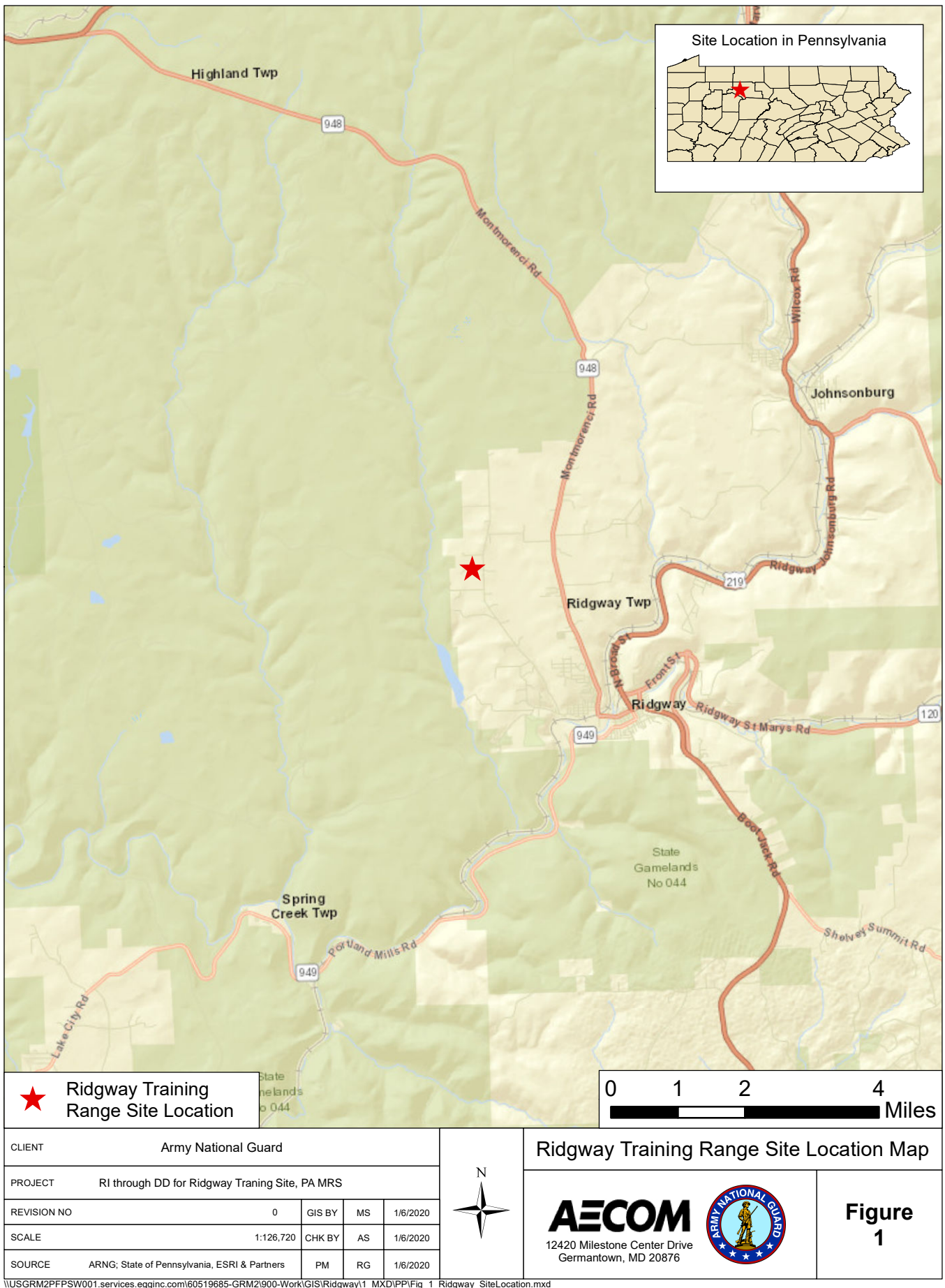
To request an extension, send a written request to the above.

PUBLIC MEETING:

A public meeting will be held if requested by the public to explain this Proposed Plan and answer questions. Interested parties should contact the Pennsylvania Army National Guard Public Affairs Office (contact information above) on or before January 21, 2021 with their interest.

Information Repository:

The public may obtain a copy of the Proposed Plan and other project documents via email by contacting the Public Affairs Office on or before January 21, 2021 with their request.



MC Alternative 3: Soil Stabilization and Excavation with Off-Site Disposal is the Preferred Alternative for addressing MC-contaminated soil at PAE40-001-R-01. The **remedial action alternatives** described in this PP are:

- MC Alternative 1: No Action
- MC Alternative 2: Soil Excavation with Off-Site Disposal (as Hazardous Waste)
- MC Alternative 3: Soil Stabilization and Excavation with Off-Site Disposal

Based on the evaluation of the alternatives, the Preferred Alternative meets the required threshold criteria and balancing criteria. A summary of the remedial alternatives for MC is presented in **Section 7**. The evaluation of the remedial alternatives is presented in **Section 8**. The selection of the Preferred Alternative for MC is presented in **Section 9**.

This document is being prepared by the ARNG, the lead agency for the site cleanup activities. The ARNG will select the final remedies for the MRS after reviewing and considering all information submitted during the public comment period and the public meeting (if requested by the public). The ARNG may modify the Preferred Alternative or select other response actions presented in this PP based on new information or public comments. Therefore, the public is encouraged to review and comment on all the MC alternatives presented in this PP. See **Box 1** (page 1) for public participation information.

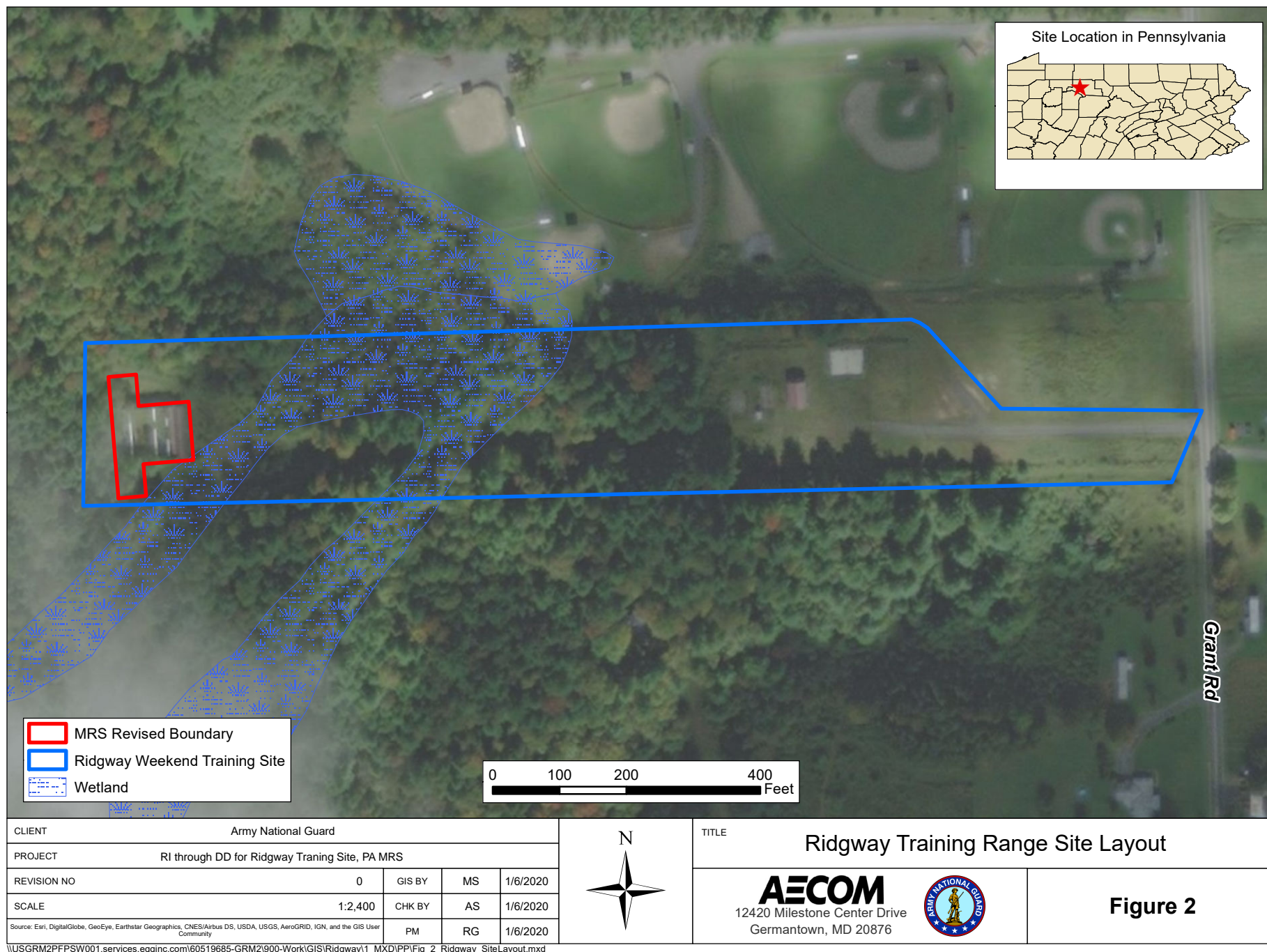
The ARNG is required under the **Comprehensive Environmental Response, Compensation, and Liability Act** (CERCLA) §117(a) and **National Oil and Hazardous Substances Pollution Contingency Plan** (NCP) §300.430(f)(2) to issue this PP and seek public comment and participation. This PP summarizes information that can be found in greater detail in the Final **Remedial Investigation** (RI) (AECOM, 2019), **Feasibility Study** (FS)

(AECOM, 2020), and other documents contained in the **Administrative Record** File for this MRS that can be accessed at the **Information Repository** listed in **Box 1**. The ARNG encourages the public to review these documents to gain a more comprehensive understanding of the MRS and investigation activities that have been conducted. Public input to this PP will be documented in a **Responsiveness Summary** that will be included in a **Record of Decision** (ROD) that documents the selected **remedial action**.

2.0 SITE BACKGROUND

The Ridgway Training Range MRS was originally a 0.22-acre site located in Ridgway Township, PA, on the west side of Grant Road, approximately 2 miles northwest of Ridgway Borough, and 5 miles southwest of Johnsonburg in Elk County. The revised acreage based on data from the 2019 RI Report is 0.27 acres (AECOM, 2019). The MRS is surrounded by the 8-acre former Ridgway Weekend Training Site (WETS) (**Figure 2**), which was recommended for No Further Action during the 2012 Site Inspection (SI; Parsons, 2012). The range is primarily covered in grass, other vegetation, and the structures associated with the baffled small-arms range. The MRS is located on privately owned property; access to the range is partially restricted from the public by a locked gate, concrete walls on the north and southern side, and a fence on the east side.

The Ridgway Training Range MRS was used by the PAARNG for small-arms, live-fire weapons training from 1987 to 2005 (Parsons, 2012). The property was originally conveyed to the Commonwealth of PA from private owners on 26 September 1969 (PADMVA, 2011). The PA Department of Military and Veterans Affairs (PADMVA) owned the property from 1969 to 2015.



The property was approved for conveyance from the Commonwealth of Pennsylvania (with approval from the PADMVA) through State Act 56 of 2013 (PA House Bill 1112). Transfer of the property to a private owner was completed in 2015.

After taking over ownership in 2015, the current landowner installed a French drain parallel to and in front of the Target **Berm** to improve drainage. In doing so, the top 12 to 18 inches of soil from the foot of the Target Berm were removed and stored in a pile near the north concrete sidewall.

Four environmental investigations were completed at the Ridgway Training Range MRS since 2011. These investigations include the following:

- Ridgway WETS & Range, Environmental Baseline Survey Report (PADMVA, 2011)
- Final Pennsylvania Site Inspection Report, ARNG MMRP (Parsons, 2012)
- Final Remedial Investigation Report (AECOM, 2019)
- Final Feasibility Study Report (AECOM, 2020)

3.0 SITE CHARACTERISTICS

PHYSICAL SETTING

The MRS is located within a fragmented forest that is surrounded on all sides by Ridgway WETS. The area surrounding the MRS is predominantly rural; the properties surrounding the MRS include agricultural, mining, residential, and recreational land (Parsons, 2012). Allegheny National Forest is in close proximity to the western edge of the MRS, with various coniferous trees and some deciduous trees, the most common being birch. A community baseball/athletic field is north of the property. The range is primarily covered in grass, other vegetation, and the

structures associated with the former baffled small-arms range.

CURRENT AND FUTURE RESOURCE USE

The area adjacent to the MRS is currently used as a staging area for equipment associated with a private landscaping company who owns the property. The area within the MRS boundary is currently unused. Since the current landowner has owned the property, the range has been used with homemade munitions, distinct from historic use, which were fired into a trap. This use has stopped and will not occur again until this project concludes. Future land use is unlikely to significantly change.

NATURE AND EXTENT OF MC

For the purposes of the RI, the MRS was divided into four **Decision Units** (DUs): Target Berm, Firing Point, Soil Pile, and French Drain Outfall area. The DUs reflect the four distinct areas of potential contamination as indicated by site history and remaining physical evidence of the target areas. The potential wastes related to small arms training include bullets, bullet fragments, and the related metals (lead especially) that can accumulate in site soil. In addition to lead, three other metals—antimony, copper, and zinc—are commonly part of small arms munitions, and the group of four metals are referred to as MC. The RI field activities included **x-ray fluorescence** (XRF) screening of **discrete surface soil samples** collected on a grid from each DU to evaluate the lateral extent of lead in surface soil. Using **incremental sampling methodology** (ISM), composite surface soil samples were obtained for evaluating potential risks to receptors at the point of exposure (i.e., the surface). The ISM provides an improved measure of the DU-wide concentration of MC relative to calculating a DU concentration using a small number of discrete samples. Based on the

XRF results, discrete samples at depth were subsequently collected to evaluate vertical extent. Details of the sampling methodology and results are documented in the Final RI Work Plan/Uniform Federal Policy - Quality Assurance Project Plan (UFP-QAPP; AECOM, 2017) and the Final RI Report (AECOM, 2019).

Target Berm DU. Exceedances of the human health criterion for lead were observed in XRF screening results at the Target Berm DU and resulted in **step-out sampling** that enlarged the DU area by 0.126 acres. ISM sample results indicate that antimony, copper, and lead are present in soil above human health screening criteria (**Figure 3**). Four locations (location #80 #22, #91, and #45) were selected for discrete subsurface soil sampling based on XRF results and used to determine MC presence vertically. Discrete subsurface samples at locations #22 and #91 indicated that antimony, copper, lead, and zinc are present above their risk-based screening levels at the 12 to 18-inches below ground surface (bgs) depth interval and the 24 to 30-inch bgs interval, although MC concentrations generally decreased with depth. Deeper samples at these locations could not be collected due to refusal at a gravel layer within the berm. XRF data showed that lead is migrating from the Target Berm but does not extend into the drainage areas to the north and south of the MRS.

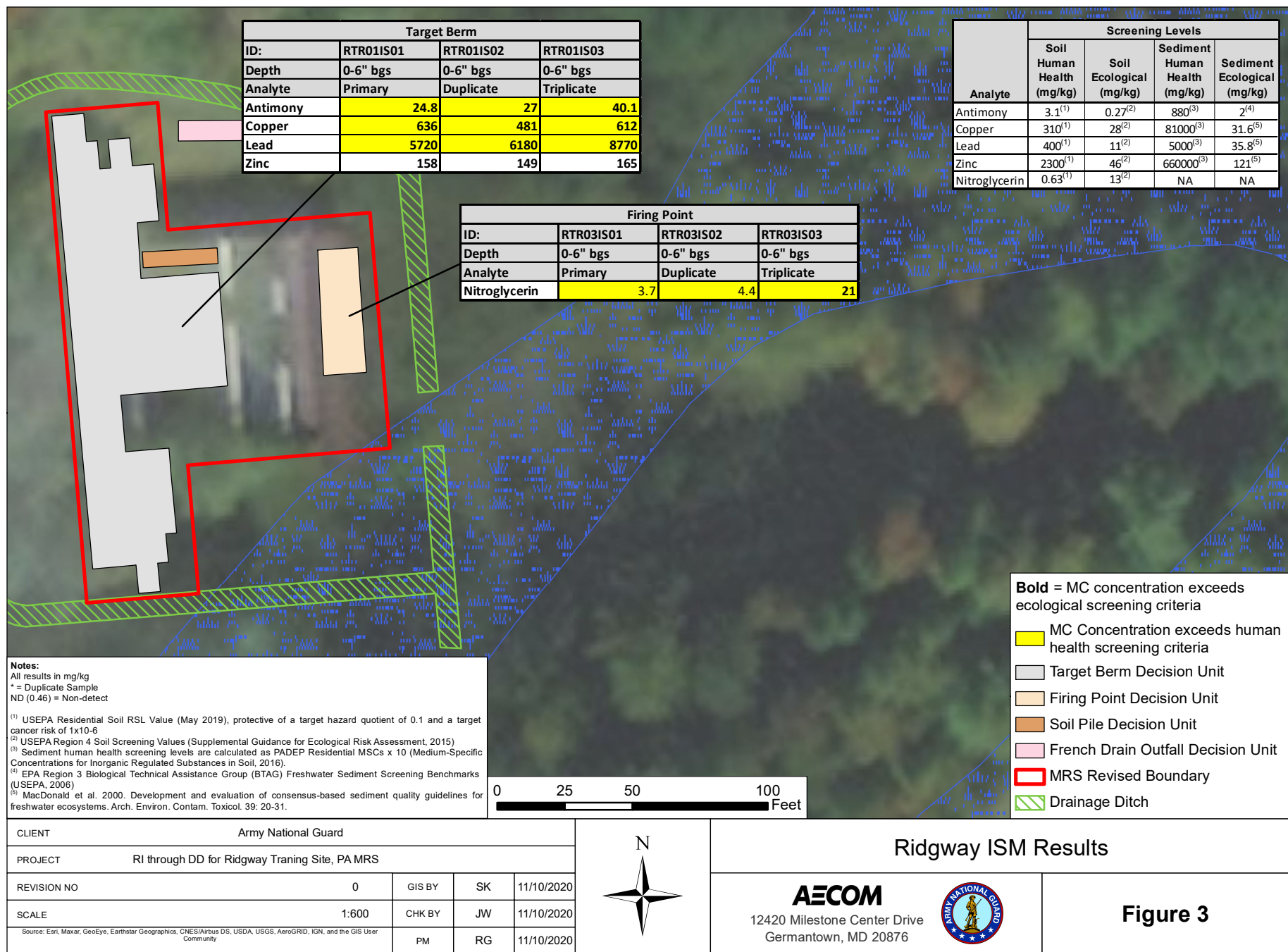
Firing Point DU. The data collected at the Firing Point were sufficient to delineate the extent of nitroglycerin contamination at the DU. Surface soil samples collected adjacent to the DU from uncovered soil east of the firing positions showed no exceedances for nitroglycerin, indicating that nitroglycerin is not being transported outside of the MRS. ISM sample results indicate that nitroglycerin is present in soil above human health screening criteria (**Figure 3**). Three locations selected for discrete subsurface soil sampling showed nitroglycerin were elevated above

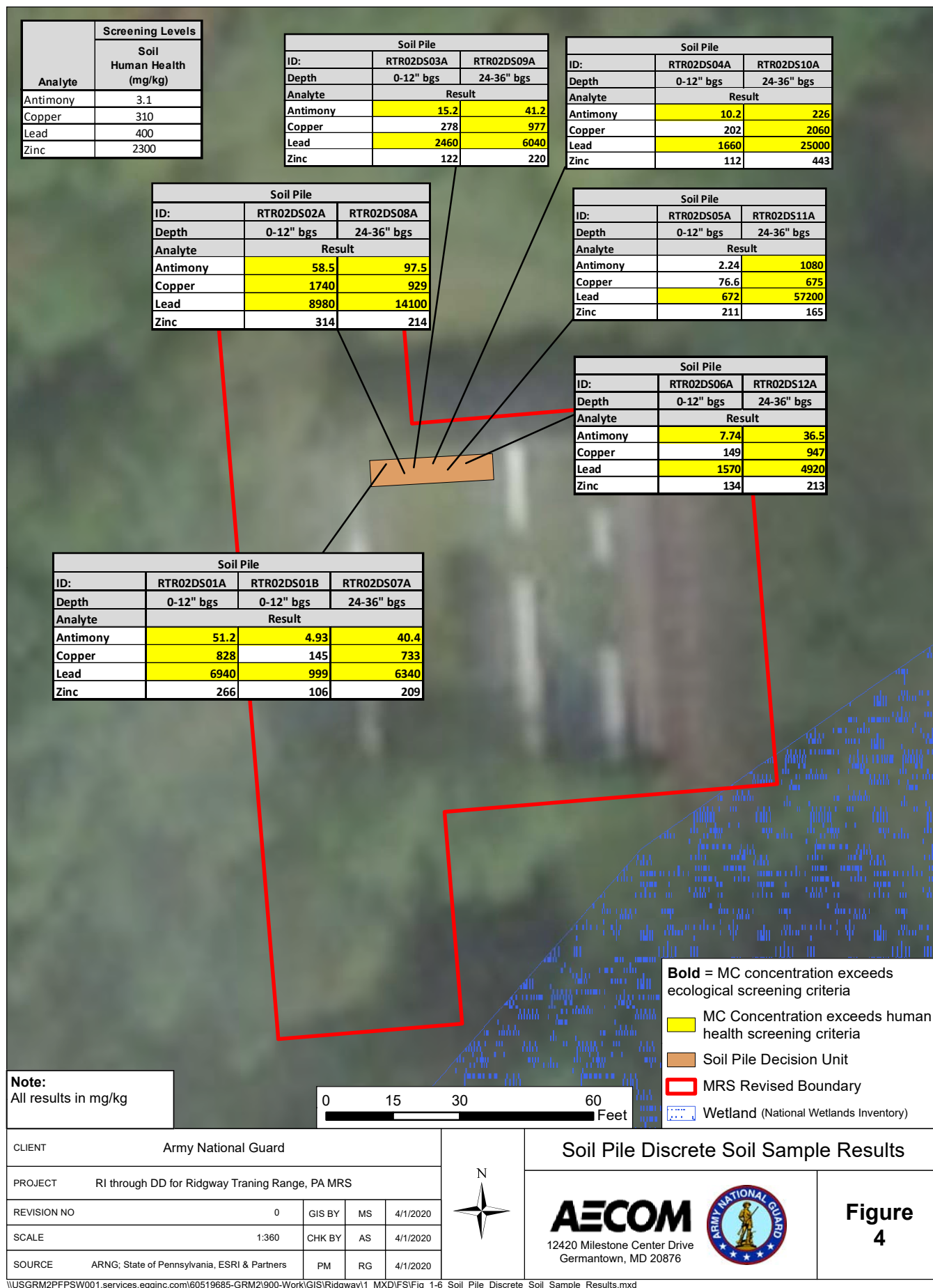
human health screening criterion at the 12 to 18-inch bgs interval; the 24 to 30-inch bgs interval could not be sampled due to refusal at a gravel layer. Although nitroglycerin is elevated above human health screening criterion in Firing Point soil, it is not being transported beyond the DU boundary.

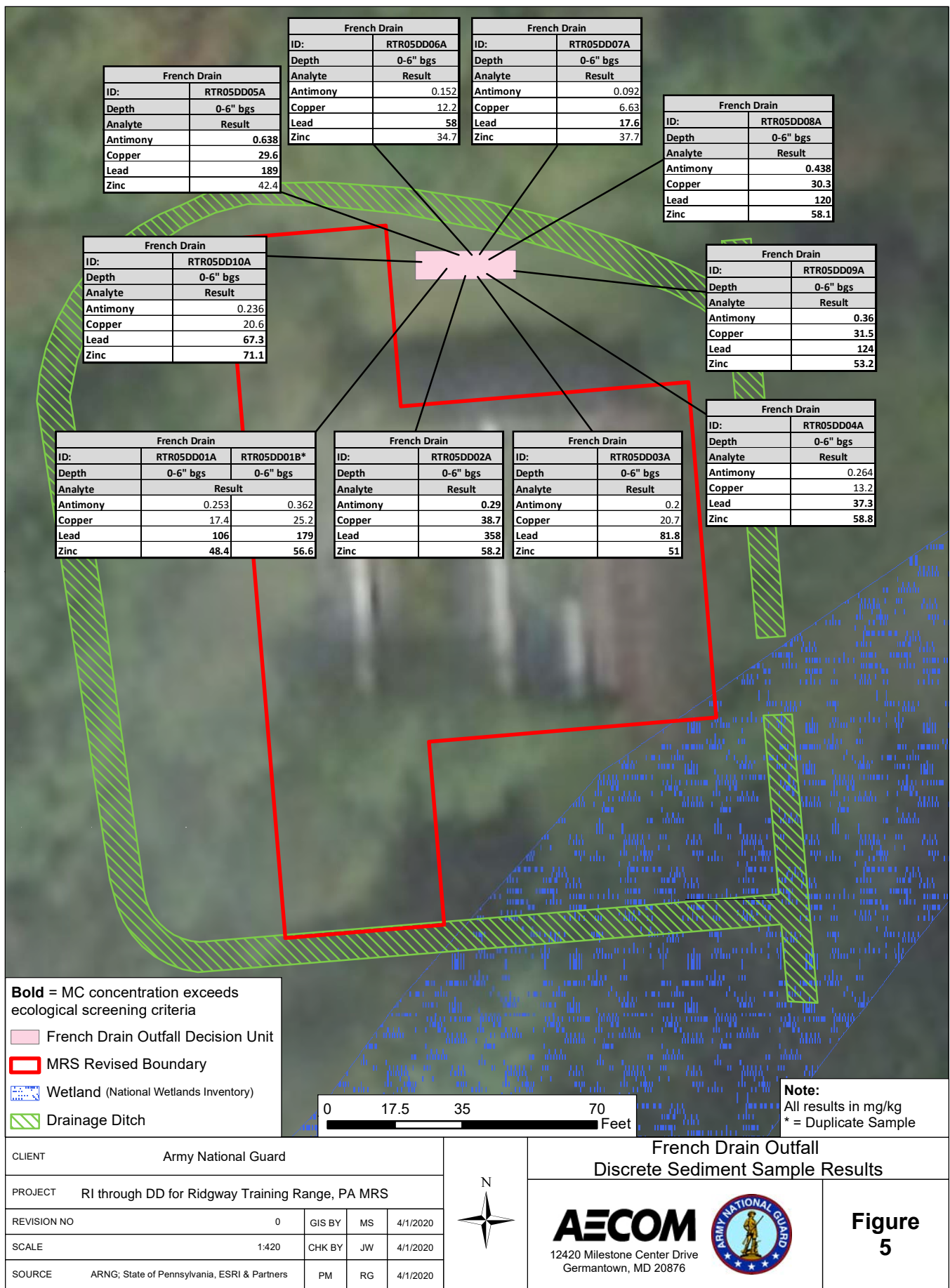
Soil Pile and French Drain DUs. Discrete soil and sediment samples from the Soil Pile DU and French Drain Outfall DU, respectively, were collected to assess the potential spread of small arms MC as a result of the installation of the French at the Target Berm. Discrete soil samples from the Soil Pile DU showed antimony, copper, and lead elevated above human health screening criteria (**Figure 4**). Small arms MC in the Soil Pile may be transported to the range floor via precipitation runoff but is not anticipated to be transported beyond the MRS due to the confining concrete walls. Discrete sediment samples from the French Drain Outfall DU did not exhibit any MC concentrations above human health screening criteria (**Figure 5**).

4.0 SCOPE AND ROLE OF THE ACTION

It is anticipated that the Preferred Alternative 3 will constitute the final response action for PAE40-001-R-01. The overall strategy of the ARNG is to eliminate human health risks from the MRS. Preferred Alternative 3 would provide a high level of long-term effectiveness and permanence and remove the potential for direct contact of MC-contaminated soil by human receptors considering both current and potential future land uses.







5.0 SUMMARY OF SITE RISKS

MC analytical data generated during the RI field study were compared with human health risk-screening criteria to evaluate whether past munitions-related practices have resulted in contaminant releases exceeding human health or **ecological screening criteria**.

ISM samples were collected from surface soil at the Target Berm and Firing Point DUs to determine the concentration of MC to which a receptor visiting these DUs may be exposed. These data were used to evaluate potential risk at each DU because the methodology provides a robust estimate of the true concentration for an area sampled. Discrete subsurface samples were collected for the purpose of conservatively determining the vertical extent of MC, not for risk assessment use.

Because of the small size of the Soil Pile and French Drain Outfall DUs, discrete soil and sediment samples were collected for risk assessment use.

HUMAN HEALTH SUMMARY

To understand the potential risk to human health, the surface soil ISM results are screened against established criteria. The ISM data are used because these data reflect the MC concentrations that a receptor would be exposed to (i.e., visitors may be exposed to surface soil) for the entirety of a DU. The results of the ISM sampling showed that of the five **analytes**, antimony, copper, lead, and nitroglycerin exceeded their respective human health criteria for exposure to surface soils at the Target Berm DU (antimony, copper, and lead) and the Firing Point DU (nitroglycerin) (**Table 5-1**). Zinc was eliminated from further evaluation because its concentrations did not exceed human health screening criteria in any sample. Antimony, copper, and lead also exceeded their respective human health criteria for

exposure in samples collected from the Soil Pile DU (**Table 5-1**). Therefore, a human health risk assessment (HHRA) was performed to further evaluate risk scenarios. No sediment samples showed concentrations of analytes exceeding their respective human health screening criteria. As a result, sediment was eliminated from further evaluation at the French Drain Outfall DU.

WHAT ARE THE "CONTAMINANTS OF CONCERN?"

MC-contaminated soil (lead: 57,200 milligrams per kilogram (mg/kg), copper: 2,060 mg/kg, antimony: 1,080 mg/kg, nitroglycerin: 4.4 mg/kg) was identified at PAE40-001-R-01 exceeding its USEPA Residential Soil RSLs (lead: 400 mg/kg, copper: 310 mg/kg, antimony: 3.1 mg/kg, nitroglycerin: 0.63 mg/kg)

Table 5-1: Human Health Risk Summary

Analyte	Soil Human Health Screening Level (mg/kg)	Maximum Detected Concentration (mg/kg)		
		Target Berm	Soil Pile	Firing Point
Metals				
Antimony	3.1	40.1	1080	NA
Copper	310	636	2060	NA
Lead	400	8770	57200	NA
Zinc	2,300	165	443	NA
Explosives				
Nitroglycerin	0.63	NA	NA	4.4
Notes:				
Bold = Exceeds Background Exceeds Screening Criteria				

Potential off-site receptors were not identified for the MRS because site access is restricted via a locked gate. However, an on-site trespasser scenario was evaluated in the HHRA to address potential breaches in security.

Lead concentrations in blood were modeled for each receptor exposed to the soil medium. The U.S. Environmental Protection Agency's (USEPA's) **Adult Lead Methodology and Integrated Exposure Uptake Biokinetic model** was used to evaluate soil exposure to the child visitor, child resident, teen trespasser, construction/utility worker, and outdoor worker. Soil-related exposure pathways that were evaluated in the HHRA include incidental ingestion and dermal

contact with soil. The inhalation exposure pathways were identified as incomplete (i.e., antimony, copper, and nitroglycerin do not have inhalation toxicity values). The HHRA determined that there is some risk for the child visitor, adult/child resident, teen trespasser, construction/utility worker, and outdoor worker from exposure to antimony, lead, and/or nitroglycerin in soil at all three DUs.

ECOLOGICAL SUMMARY

To understand the potential risk to ecological health, the ISM soil samples were screened against established criteria. Since MC concentrations in soil at the Target Berm, Firing Point, and Soil Pile DUs exceeded ecological screening criteria (**Table 5-2**), and MC concentrations in sediment exceeded ecological screening criteria at the French Drain Outfall DU (**Table 5-3**), a screening level ecological risk assessment (SLERA) was conducted.

Table 5-2: Ecological Risk Summary (soil)

Analyte	Soil Ecological Screening Level (mg/kg)	Maximum Detected Concentration (mg/kg)		
		Target Berm	Soil Pile	Firing Point
Metals				
Antimony	0.27	40.1	1080	NA
Copper	28	636	2060	NA
Lead	11	8770	57200	NA
Zinc	46	165	443	NA
Explosives				
Nitroglycerin	0.63	NA	NA	4.4

Notes:

Bold = Exceeds Background

Exceeds Screening Criteria

Table 5-3: Ecological Risk Summary (sediment)

Analyte	Sediment Ecological Screening Level (mg/kg)	Maximum Detected Concentration (mg/kg)
		French Drain
Metals		
Antimony	2	0.638
Copper	31.6	38.7
Lead	35.8	358
Zinc	121	71.1

Notes:

Bold = Exceeds Background

Exceeds Screening Criteria

The results of the risk characterization determined that exposure to constituents of potential ecological concern in on-site soil resulted in substantial impact (*de manifestis*) to both soil invertebrate and terrestrial wildlife populations. For the benthic macroinvertebrate community and the aquatic and semi-aquatic wildlife community, the potential for adverse effects is *de minimus* (minimal).

RISK ASSESSMENT CONCLUSION

The results of the HHRA indicated that the MRS boundary be revised to include the furthest extent of lead concentration exceedances of its human health screening criterion based on XRF data; the revised MRS acreage is 0.27 acres. The presence of unacceptable risks to human health warranted an FS for the Ridgway Training Range MRS.

6.0 REMEDIAL ACTION OBJECTIVES (RAOs)

RAOs are site-specific objectives that are established based on the nature and extent of contamination, potential for human and environmental exposure, and **applicable or relevant and appropriate requirements** (ARARs). The RAO is described below, and ARARs for the Ridgway Training Range MRS are presented in **Table 6-1**. The possible response actions to achieve the RAO are then discussed.

The RAO for MC is to prevent human exposure to lead and antimony above the human health screening criteria for lead (400 mg/kg) within Ridgway Training Range MRS. Because the limits of detection for antimony are difficult to achieve in the field, the human health criterion for antimony (3.1 mg/kg) is not appropriate to use as a remediation criterion.

Table 6-1
Potential Federal and State Applicable or Relevant and Appropriate Requirements to be Considered

Standard, Requirement, Criteria or Limitation	Citations	Description	ARAR Type	Applicability to Site
Pennsylvania Hazardous Sites Cleanup Act	Act of October 18, 1988, P.L. 756 (35 P.S. §§ 6020.501-6020.513)	Where there is a release or substantial threat of release of a contaminant which presents a substantial danger to the public health or safety or the environment. Requires investigation and an appropriate response, if contaminant or hazardous substance are present	Action	ARAR/Applicable to soils containing elevated levels of lead at concentrations where the restrictions on land disposal are exceeded.
Pennsylvania Administration of Land Recycling Program	25 Pa. Code 250.2-250.708	Medium-Specific Concentrations (MSCs) for Lead in Soil, Direct Contact Numeric Values, Residential (0-15 feet) and Non-Residential, Surface Soil (0-2 feet)	Action	ARAR/Applicable to soils containing levels of lead above MSCs where the restrictions on land use are exceeded.
Pennsylvania Solid Waste Management Act	Act of Jul. 7, 1980, P.L. 380, No. 97, Cl. 35, Section 401-405	Provides procedures for managing contaminated soil when soil-disturbing activities occur or are planned.	Location	ARAR/Applicable to any actions where soil is disturbed in portions of the site within an impacted area.
Hazardous Waste Management Regulation	40 CFR 260-270, Article VII	These chapters apply to the identification and listing, generation, transportation, storage, treatment and disposal of hazardous waste and contains the requirements under RCRA for a state to implement a federally approved hazardous waste program	Location	ARAR/Applicable to soils containing elevated levels of lead at concentrations where the restrictions on land disposal exceeded.
Clean Streams Law	Act of June 22, 1937, P.L. 1987, as amended, 35 P.S. §§ 691.401-691.402	Whenever the department finds that any activity, not otherwise requiring a permit under this act, including but not limited to the handling, storage, transportation, disposing of materials or substances, creates a danger of pollution of the waters of the Commonwealth or that regulation of the activity is necessary to avoid such pollution, the department	Location	ARAR/Applicable and Relevant if there is a danger of soil excavation activities leaching contamination into drainage areas located inside the MRS during excavation

		may, by rule or regulation, require that such activity be conducted only pursuant to a permit issued by the department or may otherwise establish the conditions under which such activity shall be conducted, or the department may issue an order to a person or municipality regulating a particular activity.		
25 Pa. Code 102.11 – Erosion and Sediment Control Best Management Practices (BMPs); General requirements	25 Pa. Code §§102.11 et seq.	(a) A person conducting or proposing to conduct an earth disturbance activity shall design, implement and maintain BMPs to minimize the potential for accelerated erosion and sedimentation in order to protect, maintain, reclaim, and restore water quality and existing and designated uses. Various BMPs and their design standards are listed in the Erosion and Sediment Pollution Control Program Manual (Manual), commonwealth of Pennsylvania, Department of Environmental Protection, No. 363-2134-008 (January 1996), as amended and updated. (b) BMPs and design standard other than those listed in the Manual may be used when a person conducting or proposing to conduct an earth disturbance activity demonstrates to the Department or a county conservation district that the alternate BMP or design standard minimizes accelerated erosion and sedimentation to achieve the regulatory standards in subsection (a).	Location	ARAR/ Relevant and Appropriate as MC removal activities would require excavation of some kind. 25 Pa. Code 102 requires persons proposing or conducting earth disturbance activities to develop, implement and maintain BMPs to minimize the potential for accelerated erosion and sedimentation.
Water Quality Standards	Chapter 93 (25 P.S. §§ 93.6-93.8b)	a) Water may not contain substances attributable to point or nonpoint source discharges in concentration or amounts sufficient to be inimical or harmful to the water uses to be protected or to human, animal, plant or aquatic life. (b) In addition to other substances listed within or addressed by this chapter, specific substances to be controlled include, but are not limited to, floating materials, oil, grease, scum and substances that produce color, tastes, odors, turbidity or settle to form deposits.	Chemical	ARAR/Applicable and relevant if there is a danger of soil excavation activities leaching contamination into drainage areas located inside the MRS during excavation

Construction, Modification, Reactivation and Operation of Sources	Chapter 127, 25 Pa. Code §§ 127.36 and 127.801	This chapter on "Construction, Modification, Reactivation and Operation of Sources" requires the use of Best Available Technology (BAT) for control of new sources, plan approval and operating permit requirements, and special requirements for sources in nonattainment areas	Chemical	ARAR/Applicable and relevant if there is a concern of dust from contaminated soil becoming airborne and affecting air quality during or after remediation
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Notes:

ARAR = Applicable or Relevant and Appropriate Requirement

BMP = Best Management Practice

CFR = Code of Federal Regulations

RCRA = Resource Conservation and Recovery Act

USEPA = United States Environmental Protection Agency

MRS= Munitions Response Site

MC = Munitions Constituents

It is anticipated that because antimony is associated with lead, as they are derived from the same source (i.e., spent bullets), the cleanup goal for antimony will be concurrently achieved. The primary remedial goal is to prevent contact with MC-contaminated soil. The MC RAO addresses the likelihood of exposure to workers, residents, visitors, and trespassers during work and construction such that an acceptable condition of negligible risk of injury or exposure due to dermal contact or incidental ingestion with MC-contaminated soil is achieved. It is anticipated that any remediation conducted to remove exposure risks to human receptors will also reduce the exposure risk to ecological receptors as well. This is appropriate given the limited size of the revised MRS, the lack of critical habitats within the DUs, and the high degree of development (i.e., range infrastructure and range floor enhancements) within the MRS.

7.0 SUMMARY OF REMEDIAL ALTERNATIVES

The three alternatives evaluated in the FS (AECOM, 2020) to address MC-contaminated soil at PAE40-001-R-01 are presented in **Table 7-1** and described below.

**Table 7-1:
Remedial Alternatives for MC**

Designation	Description
Alternative 1	No Action
Alternative 2	Soil Excavation with Off-Site Disposal (as Hazardous Waste)
Alternative 3	Soil Stabilization and Excavation with Off-Site Disposal

ALTERNATIVE 1 – NO ACTION

Alternative 1 leaves the MRS in its present condition with no **land use controls** LUCs or remedial actions. Alternative 1 assumes that

no action would be taken regarding MC-contaminated soil at the MRS. Alternative 1 provides no protection to human health and does not reduce the human health hazard. MC-contaminated soil would not be eliminated, reduced, or controlled through treatment, engineering, or LUCs.

This alternative is required by the NCP, and it serves as a baseline against which the other alternatives are compared (40 Code of Federal Regulations [CFR]300.430[e][6], 2014). No applicable chemical-, location-, or action-specific ARARs were identified for Alternative 1. There are also no costs associated with this alternative.

Estimated Costs for Alternative 1-

- Capital Cost: \$0
- Operation and maintenance (O&M) and Periodic Cost: \$0
- Total Cost of Alternative: \$0

ALTERNATIVE 2 – SOIL EXCAVATION WITH OFF-SITE DISPOSAL (AS HAZARDOUS WASTE)

Alternative 2 Soil Excavation with Off-Site Disposal as hazardous waste was evaluated because it would achieve **unlimited use and unrestricted exposure** (UU/UE) at the MRS without the need for any continuing LUC. Under Alternative 2 MC-contaminated soil with lead above 400 mg/kg would be excavated and disposed of offsite.

General work requirements include obtaining **Rights-of-Entry** (ROE) to the MRS, removing soil using an excavator, hauling soil offsite for hazardous waste disposal, confirmation sampling, and restoring the site. Based on the results of the RI, the extent of soil removal was estimated to be 0.146 acres to a depth of 3 feet (**Figure 6**). About 1,061 tons would be excavated and disposed of based on waste classification analysis per the requirements of the **Resource Conservation and Recovery Act** (RCRA) Part 261, which

establishes standards for generators of solid and hazardous waste and **Subtitle D and C solid waste disposal facilities**, respectively.

Lead concentrations in **confirmation soil samples** would be measured in the field using XRF and discrete samples submitted for laboratory analysis to confirm that the RAO is achieved during excavation.

Estimated Costs for Alternative 2-

Capital:	\$496,625
O&M/Periodic:	\$0
Total:	\$496,625
Total PV:	\$496,625

**ALTERNATIVE 3 – SOIL
STABILIZATION AND EXCAVATION
WITH OFF-SITE DISPOSAL**

Alternative 3 Soil Stabilization and Excavation with Off-Site Disposal was evaluated because it would achieve UU/UE at the MRS without the need for any continuing LUC. Under Alternative 3 MC-contaminated soil with lead above 400 mg/kg would be stabilized in placed and then excavated and disposed of offsite.

General work requirements include obtaining ROE to the MRS, **in-situ** soil stabilization, removing soil using an excavator, hauling soil offsite for disposal, confirmation sampling, and restoring the site. Based on the results of the RI, the extent of soil removal was estimated to be 0.146 acres to a depth of 3 feet (**Figure 6**). Soil with lead concentrations above landfill disposal criteria will undergo in-situ soil stabilization, which renders it harmless. It is conservatively assumed that the extent of area identified for excavation based on RI results will be the same extent of area with lead concentrations above landfill disposal criteria. As such, approximately 1,061 tons would be stabilized, excavated, and disposed of based on waste classification analysis per the requirements of the RCRA Part 261, which

establishes standards for generators of solid waste and Subtitle D solid waste disposal facilities. This is the same tonnage identified in Alternative 2; however, Alternative 3 includes soil stabilization prior to disposal offsite. Soil rendered harmless via stabilization may be disposed of as non-hazardous waste in Subtitle D solid waste disposal facilities, which is less costly than disposal as hazardous waste.

Lead concentrations in confirmation soil samples would be measured in the field using XRF and discrete samples submitted for laboratory analysis to confirm that the RAO is achieved during excavation.

Estimated Costs for Alternative 3-







Capital:	\$389,108
O&M/Periodic:	\$0
Total:	\$389,108
Total PV:	\$389,108

8.0 EVALUATION OF ALTERNATIVES

Nine **evaluation criteria** are statutory criteria required by the NCP (40 CFR 300, 2014) and described in the Guidance for Conducting RI and FS under CERCLA (USEPA, 1988). The nine criteria were used to evaluate the different alternatives individually and against each other in order to select a remedy. These nine criteria are segregated into three groups (threshold, balancing, modifying), and are summarized in **Box 2**.

Threshold criteria are requirements that each alternative must meet in order to be selected. Balancing criteria are used to weigh major trade-offs among alternatives. Modifying criteria may be considered to the extent that information is available during the FS but can be fully considered only after public comment is received on the PP.

Firing Point Decision Unit: 0.016 Acres*
 Target Berm Decision Unit: 0.126*
 Soil Pile Decision Unit: 0.004 Acres*
 * - Acreage approximate

- Legend**
-  Excavation Area*
 -  Target Berm Decision Unit
 -  Firing Point Decision Unit
 -  Soil Pile Decision Unit
 -  MRS Revised Boundary
 -  Drainage Ditch

* Extent of excavation is subject to change based on in-field confirmation sampling

CLIENT Army National Guard				
PROJECT RI through DD for Ridgway Training Range, PA MRS				
REVISION NO	0	GIS BY	MS	5/12/2020
SCALE	1:600	CHK BY	AS	5/12/2020
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	5/12/2020



Alternative 3 Excavation Area - Ridgway Training Site

AECOM
 12420 Milestone Center Drive
 Germantown, MD 20876



Figure 6

In the final balancing of trade-offs among alternatives upon which the final remedy selection is based, modifying criteria are of equal importance to the balancing criteria.

Detailed analysis of the three MC alternatives were conducted against the nine criteria, and a comparative analysis was conducted to compare the alternatives against each other to determine the Preferred Alternative. The comparative analysis identified the advantages and disadvantages of each alternative so that key differences could be identified. This process provides a framework for selection of an appropriate remedy for the MRS. A visual summary of the following detailed descriptions appears in **Table 8-1**.

THRESHOLD CRITERIA:

Overall Protection of Human Health and the Environment –

Alternative 1 does not achieve the RAO. Alternative 2 and Alternative 3 readily achieve the RAO.

Compliance with ARARs –

There are no ARARs associated with Alternatives 1. Soil containing elevated MC will remain in-situ for Alternatives 1. Removal of soil containing elevated MC under Alternative 2 and 3 would be performed and excavation and disposal activities would need to comply with all ARARs (**Table 6-1**) Alternatives 2 and 3 pose the larger ARAR burden relative to Alternative 1.

PRIMARY BALANCING CRITERIA:

Long-Term Effectiveness and Permanence –

Alternative 1 would not be effective or permanent. Alternatives 2 and 3 are effective

BOX 2. REMEDY EVALUATION CRITERIA

THRESHOLD CRITERIA

1. ***Overall Protection of Human Health and the Environment*** determines whether an alternative eliminates, reduces, or controls threats to public health and the environment.
2. ***Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)*** evaluates whether the alternative meets federal and State environmental statutes, regulations, and other requirements that are applicable or relevant and appropriate to the site, or whether a waiver is justified. ARARs are listed in Appendix A at the end of this Proposed Plan.

PRIMARY BALANCING CRITERIA

3. ***Long-term Effectiveness and Permanence*** considers the ability of an alternative to maintain protection of human health and the environment over time.
4. ***Reduction of Toxicity, Mobility, or Volume of Contaminants Through Treatment*** evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.
5. ***Short-Term Effectiveness*** considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.
6. ***Implementability*** considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
7. ***Cost*** includes estimated capital and annual operation and maintenance (O&M) costs, as well as **present worth cost**. Present worth cost is the total cost of an alternative over time in terms of today's dollar value.

MODIFYING CRITERIA

8. ***State Agency Acceptance*** considers whether the State agrees with the analyses and recommendations described in the Proposed Plan.
9. ***Community Acceptance*** considers whether the local community agrees with analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

Table 8-1
Comparative Analysis of Remedial Alternatives for Soil Containing Elevated MC

Screening Criteria		Alternative 1 No Action	Alternative 2 MC-contaminated Soil Excavation with Off-Site Disposal	Alternative 3 MC-contaminated Soil Stabilization and Excavation with Off- Site Disposal
Threshold	Overall Protection of Human Health and the Environment	○	●	●
	Compliance with ARARs	○	●	●
Balancing	Long-Term Effectiveness	○	●	●
	Reduction of TMV Through Treatment	○	●	●
	Short-Term Effectiveness	●	●	●
	Implementability	●	■	●
	Cost	\$0	\$496,625	\$389,108
Modifying (a)	State Acceptance	TBD	TBD	TBD
	Community Acceptance	TBD	TBD	TBD

Notes:

(a) The Modifying criteria of state and community acceptance are 'To Be Determined' following review and input from these parties.

● Favorable ('YES' for threshold criteria)

■ Moderately Favorable

○ Not Favorable ('NO' for threshold criteria)

NA = Not Applicable

ARAR = Applicable or Relevant and Appropriate Requirement

TBD = To Be Determined

TMV = toxicity, mobility, or volume

and permanent assuming the cooperation of the private landowner. Alternatives 2 and 3 offer the best long-term effectiveness and permanence because soil containing elevated MC is removed from the MRS.

Reduction of TMV through Treatment –

Alternative 1 will not reduce the toxicity, mobility, or volume (TMV) of soil containing elevated MC. Alternatives 2 and 3 would reduce the TMV of soil containing elevated MC through excavation and disposal.

Short-Term Effectiveness –

For Alternative 1, no removal actions would be implemented, so there would be no short-

term risks to the community or workers during remedy implementation. Alternatives 2 and 3 poses higher potential risks to site workers from the handling of soil containing MC and in operating heavy equipment during excavation and loading trucks. Site work for Alternative 2 and 3 is estimated to require about 11 and 12 days, respectively.

Implementability –

Alternative 1 has no implementability concerns as it requires no action. Alternatives 2 and 3 require approval and participation of the State and the private landowner because the property is not owned by the U.S. Army. An ROE agreement would be needed to access to the property. Alternative 2 requires

approval and acceptance of all excavated material as potentially hazardous waste by a disposal facility, and this may impact the implementability of Alternative 2.

Cost –

The net present value costs for each remedial alternative are presented in **Table 8-2**. As shown in this table, Alternative 1 incurs no cost to implement, while Alternative 2 would be the costliest to implement. The detailed cost estimate is presented in the Final FS Report (AECOM, 2020).

MODIFYING CRITERIA:

State and Community and Acceptance –

State acceptance will be assessed based on regulatory review of this PP. Modifying criteria (State and Community Acceptance) are considered in the remedy selection process.

Selection –

Selection of the final remedy will be documented in a ROD that will be based on the PP's Preferred Alternative and input from the regulators and community.

Table 8-2: Cost Comparison of Remedial Action Alternatives for Soil Containing Elevated MC

Cost	Alternative 1	Alternative 2	Alternative 3
Capital	\$0	\$496,625	\$389,108
O&M / Periodic	\$0	\$0	\$0
Total	\$0	\$496,625	\$389,108
Total Present Value	\$0	\$496,625	\$389,108

Notes:

O&M = operations and maintenance

9.0 PREFERRED ALTERNATIVE

The results of the comparative analysis (**Tables 8-1 and 8-2**) highlight the relative advantages and disadvantages of each alternative, identifying key tradeoffs. Alternative 3 is the Preferred Alternative for the Ridgway Training Range MRS because it achieves the RAO, is cost effective, and achieves UU/UE.

The ARNG expects the Preferred Alternative to satisfy the following statutory requirements of CERCLA § 121(b):

- To be protective of human health and the environment,
- comply with ARARs (**Table 6-1**),
- be cost-effective,
- utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable, and
- satisfy the preference for treatment as a principal element or explain why the preference for treatment will not be met.

The elements of Alternative 3 are technically and administratively feasible.

The Preferred Alternative can change in response to public comment or if new information is obtained for the MRS.

10.0 COMMUNITY PARTICIPATION

Information regarding the implementation of the Preferred Alternatives at PAE40-001-R-01 is provided to the public through information and documents in the ARNG Administrative Record File and announcements published in local newspapers. The public is encouraged to refer to these sources to stay informed on issues pertaining to the restoration activities.

The dates for the public comment period and the location of the RI Report and other project documents at the information repository are provided on Page 1 of this PP. Nearby residents and other interested parties are encouraged to use the comment period for questions and concerns about the proposed decision for the MRS. ARNG will summarize and respond to public comments in a responsiveness summary, which will become part of the ROD.

11.0 ACRONYMS AND ABBREVIATIONS

ARARs	Applicable or relevant and appropriate requirements
ARNG	Army National Guard
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DoD	Department of Defense
DU	Decision Units
FS	Feasibility Study
HHRA	Human Health Risk Assessment
ISM	Incremental sampling methodology
LUCs	Land use controls
MC	munitions constituents
mg/kg	milligrams per kilogram
MRS	Munitions Response Site
NCP	National Contingency Plan
NDNODS	Non-Department of Defense Non-Operational Defense Site
O&M	Operation and maintenance
PA	Pennsylvania
PAARNG	Pennsylvania Army National Guard
PADMVA	Pennsylvania Department of Military and Veterans Affairs
PP	Proposed Plan
RAO	Remedial action objective
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
ROE	Right-of-entry
SI	Site Inspection
SLERA	screening level ecological risk assessment
TMV	toxicity, mobility, or volume
U.S.	United States of America
UFP-QAPP	Uniform Federal Policy - Quality Assurance Project Plan
USEPA	United States Environmental Protection Agency
UU/UE	Unlimited Use and Unrestricted Exposure
WETS	Weekend Training Site
XRF	X-ray fluorescence

12.0 GLOSSARY

Administrative Record – A collection of documents made available to the public that includes all the information considered and relied on in selecting a remedy for a contaminated site.

Analytes – A substance that undergoes identification and measurement of its chemical constituents.

Applicable or Relevant and Appropriate Requirements (ARARs) – State or federal requirements, standards, criteria, or limitations that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site, or that are sufficiently similar to those encountered at the CERCLA site that their use is well-suited to the particular site. Generally, the federal standards are the ARARs; state standards only apply if they are either more stringent or more broadly applied than their federal counterparts.

Berm – A flat strip of land, raised bank, or terrace that is used at a firing range to help limit the spread of fired bullets.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) - Passed in 1980 and subsequently amended, this law provides for liability, compensation, cleanup, and emergency response in connection with the cleanup of inactive hazardous waste disposal sites that endanger public health and safety of the environment.

Confirmation Soil Samples – Samples collected at the complete of an excavation beneath or adjacent to areas from which contaminated soil has been removed in order to determine/verify whether cleanup levels have been achieved

Contaminant – A compound or element that upon exposure will or may reasonably be anticipated to cause certain specified harmful health effects.

Decision Units – The locations where soil sampling occurs.

Discrete Surface Soil Sample – This is the process of collecting a single soil sample from a specific location.

Ecological Screening Criteria – A set of criteria used to determine to potential of a substance to impact an environment.

Evaluation Criteria – A set of criteria where the sustainability and performance of an action or procedure are determined.

Feasibility Study (FS) - A document that describes and evaluates potential cleanup alternatives for a contaminated site based on data and risk assessments documented in the RI.

Human Health Criterion – A set of criteria that determine the potential of a substance to present risks to human health.

In-Situ – The original place or location.

Incremental sampling methodology - a structured composite sampling and processing protocol that provides a reasonably unbiased estimate of mean contaminant concentrations in a volume of soil targeted for sampling.

Information Repository – The location in the community where the administrative record and other documents containing site information are available for review by the public.

Land Use Controls (LUCs) - Physical, legal, or administrative mechanisms that restrict the use of, or limit access to, property to prevent or reduce risks to human health and the environment from contamination.

Milligrams per kilogram (mg/kg) – A unit of measure for the amount of chemicals in soil. One mg/kg is a millionth of a gram of a chemical in one kilogram of soil.

Munitions Constituents (MC) – Materials that originate from ordnance or other military munitions such as bullets.

Munitions Response Site – Sites that are known or suspected to contain unexploded ordnance, discarded military munitions, or munitions constituents.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP) - A set of federal regulations that provide the organizational structure and procedures for preparing for and responding to discharges of oils and releases of hazardous substances, pollutants, or contaminants into the environment. (See 40 CFR Part 300).

Preferred Alternative - The remedial action alternative that provides the best balance of tradeoffs with respect to the evaluation criteria among all of the alternatives evaluated in a Proposed Plan.

Present Worth Cost - A method for evaluating and comparing costs that occur over different time periods that takes into account the fact that the value of money changes over time. Present worth cost is the amount of money required today to construct and operate a remedial action over a specified period of time. By discounting all costs that occur over the lifetime of a remedy to today's dollar value, the costs for different remedial action alternatives can be compared relative to one another, regardless of when those costs will be incurred.

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

Proposed Plan - A document used to facilitate public involvement in the remedy selection process for a CERCLA contaminant release site. The document presents the lead agency's preliminary recommendation concerning how best to address contamination at a site.

Record of Decision (ROD) - A legal document that certifies that the remedy selection process was carried out in accordance with CERCLA and the NCP, that documents the cleanup action or remedy selected for a site, the basis for the choice of that remedy, and public comments received on the Proposed Plan.

Remedial Investigation (RI) - A study of a contaminant release site that includes data collection and analysis to determine 1) the nature and extent of the contamination, 2) the potential risks to human health and the environment from that contamination, and 3) whether or not remedial action is warranted.

Remedial Action (also called a Cleanup Action) – Action taken at a contaminated site to reduce or eliminate the human health or ecological risks associated with the contaminants.

Remedial Action Objective (RAO) - Site-specific goals that a remedial action is expected to accomplish in order to protect human health and the environment.

Resource Conservation and Recovery Act (RCRA) – A law enacted in 1976 that gives the EPA the right to control the generation, transportation, treatment, storage, and disposal of hazardous wastes.

Responsiveness Summary – A summary of responses to comments made by the public during the public comment period.

Right-of-entry (ROE) – An agreement form that grants permission of access to an area.

Soil Stabilization – Soil treatment that renders lead less prone to leaching and may reduce bioavailability. Potential binders include Portland cement, lime-fly ash, asphalt, and sorbents such as activated carbon, clays, zeolites, and anhydrous sodium silicate.

Step-Out Sampling – Additional sampling used to delineate concentrations of MC in soil beyond the original scope of sampling around the Decision Units.

Subtitle C Solid Waste Disposal Facility - A sort of facility like a landfill that is specifically designed to receive hazardous solid wastes.

Subtitle D Solid Waste Disposal Facility – A sort of facility like a landfill that is specifically designed to receive household and other nonhazardous wastes.

Unlimited Use and Unrestricted Exposure (UU/UE) - A term used to describe when contamination at a site has been reduced to levels that are safe for any land use, including residential land uses.

X-ray fluorescence – A technique that uses the emission of x-rays to determine the elemental composition of a material.

13.0 DOCUMENT REFERENCES

- AECOM, 2017. Final Remedial Investigation Work Plan and UFP-QAPP, Ridgway Training Range, Pennsylvania. June.
- AECOM, 2019. Final Remedial Investigation Report, Ridgway Training Range, Pennsylvania. October.
- AECOM, 2020. Final Feasibility Study Report, Ridgway Training Range, Pennsylvania. September.
- Code of Federal Regulations (CFR). Revised 2014. Applicable Sections of Title 40, Part 300, National Oil and Hazardous Substances Pollution Contingency Plan.
- Parsons Infrastructure and Technology (Parsons), 2012. Final Pennsylvania Site Inspection Report, Army National Guard Military Munitions Response Program, February. (Ridgway Training Range MRS assessed as part of state-wide Site Inspection.)
- Pennsylvania Department of Military and Veterans Affairs (PADMVA), 2011. Ridgway Weekend Training Site (WETS) & Range, Environmental Baseline Survey Report (EBS). August.
- United States Environmental Protection Agency. (USEPA). 1988. Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA. USEPA/540/G-89/004. Interim Final.