AECOM

Final
Record of Decision
Camp O'Ryan Rifle Range, New York

Munitions Response Site NYHQ-008-R-02
New York Army National Guard
New York State Department of Environmental Conservation Site Number: 961012

Army National Guard

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Prepared for:
Army National Guard
NGB-AQ-W9133L
111 South George Mason Drive
Building 2, 4th Floor
Arlington, VA 22204-1373

Prepared by:
AECOM
12420 Milestone Center Drive
Suite 150
Germantown
MD, 20876
USA

T: +1 (301) 250 2934
F: +1 (937) 998 1115
aecom.com

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Acronyms and Abbreviations

°F	degrees Fahrenheit
ALM	Adult Lead Methodology
ARAR	Applicable or Relevant and Appropriate Requirement
ARNG	Army National Guard
BCY	bank cubic yards
BERA	Baseline Ecological Risk Assessment
bgs	below ground surface
BLL	blood lead level
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CDC	Center for Disease Control and Prevention
CFR	Code of Federal Regulations
CHE	Chemical Warfare Materiel Hazard Evaluation
COC	Chemicals of concern
COPC	constituent of potential concern
COPEC	constituents of potential ecological concern
CSM	Conceptual Site Model
CWM	Chemical Warfare Materiel
DoD	Department of Defense
DU	Decision Unit
EHE	Explosive Hazard Evaluation Module
FS	Feasibility Study
gpm	gallons per minute
HHE	Health Hazard Evaluation
HHRA	Human Health Risk Assessment
HI	hazard index
HRR	Historical Records Review
IEUBK	Integrated Exposure Uptake Biokinetic
ISM	Incremental Sampling Methodology
LUC	Land Use Control
MC	munitions constituents
MD	munitions debris
MEC	munitions and explosives of concern
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
µg/dL	micrograms per deciliter
mm	millimeters

MMRP	Military Munitions Response Program
MPPEH	Materials potentially presenting an explosive hazard
MRS	Munitions Response Site
MRSPP	Munitions Response Site Prioritization Protocol
NCP	National Contingency Plan
NDNODS	Non-Department of Defense Non-Operational Defense Sites
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Services
NWI	National Wetlands Inventory
NYARNG	New York Army National Guard
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	Operations and Maintenance
PA	Preliminary Assessment
Parsons	Parsons Infrastructure and Technology
PbB	lead blood
PP	Proposed Plan
PTW	principal threat wastes
RAO	remedial action objective
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
ROE	Right-of-Entry
RSL	regional screening level
SCO	Soil Cleanup Objective
SI	Site Inspection
SLERA	Screening Level Ecological Risk Assessment
SSHP	Site Safety and Health Plan
TCLP	toxicity characteristic leaching procedure
TMV	toxicity, mobility, or volume
U.S.	United States
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Services
USGS	United States Geological Survey
UU/UE	unlimited use and unrestricted exposure
UXO	unexploded ordinance
XRF	x-ray fluorescence

1 Declaration

1.1 Site Name and Location

Site Name: Camp O'Ryan Rifle Range Munitions Response Site (MRS) 2 (NYHQ-008-R-02).

New York State Department of Environmental Conservation (NYSDEC) Site Identification Number: 961012.

Site Location: Wethersfield, Wyoming County, New York (**Figure 1-1**).

1.2 Statement of Basis and Purpose

This Record of Decision (ROD) is issued by the National Guard Bureau Army National Guard Directorate (ARNG) as the lead federal agency and presents the selected remedy for the Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02), a former small arms training range. The selection of the remedy for the MRS resulted from the investigation and assessment of the site adhering to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, 42 United States (U.S.) Code §9601 et. seq., the Superfund Amendments and Reauthorization Act of 1986, and to the extent practical, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) 40 Code of Federal Regulations (CFR) Part 300. The ROD is based on the administrative record for the MRS, which includes previously generated site-specific reports and investigations. Gainesville Town Hall maintains the administrative record file, which is available for public review.

The ARNG, in coordination with the landowner, NYSDEC, and New York State Department of Health (NYSDOH), developed this ROD and agree with the selected remedy. This ROD is the final decision to address the presence of military munitions constituents (MC) at the Camp O'Ryan Rifle Range MRS 2.

1.3 Assessment of Camp O'Ryan Rifle Range MRS 2

The response action selected in this ROD is necessary to protect the public health and the environment from the potential exposure to MC-contaminated soil and sediment associated with past munitions-related activities (e.g., small arms training). Under the Military Munitions Response Program (MMRP), a Remedial Investigation (RI) was conducted at the MRS in 2019 and 2020. The presence of unacceptable risks to human receptors from MC-contaminated media (specifically lead in sediment at Target Berm-Ponded decision unit [DU]) warranted a Feasibility Study (FS) for the Camp O'Ryan Rifle Range MRS 2. The remedy selected in this ROD addresses the remediation of MC-contaminated media at the MRS. For the purpose of this ROD, the term soil includes sediment when describing remedial actions because the two media will be remediated in the same way.

1.4 Description of Selected Remedy

The ARNG developed and evaluated remedial alternatives for the MRS through an FS (AECOM, 2022a), a Proposed Plan (PP) (AECOM, 2022b), and discussions with the landowner, the NYSDEC, and the NYSDOH. Based on these documents and regulator discussions, the ARNG selected Alternative 3: Target Berm DUs: Soil Stabilization, Excavation, and Off-site Disposal as Non-Hazardous Waste with MRS-wide Land Use Controls (LUCs). Under Alternative 3, MC-contaminated sediment at the Target Berm – Ponded DU would be excavated and disposed of offsite because that DU demonstrated unacceptable risk to human health. Additionally, soil across

the lower reach of the Target Berm – Hillside DU would be excavated and disposed of offsite to prevent MC migration from the hillside to the ponded area at the foot of the hill.

The general remedial action objective (RAO) is to prevent human contact with MC-contaminated soil. The specific goal is to prevent human exposure to lead in soil at concentrations greater than 63 milligrams per kilogram (mg/kg), which is the NYSDEC's Soil Cleanup Objective (SCO) for Unrestricted Use for lead. The MC RAO will address 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 should be noted that the NYSDEC SCO for Unrestricted Use is the value for Protection of Ecological Resources. Residential use SCOs may be protective of human health from exposure without having to resort to unrestricted use SCOs. It should be noted that residential use criteria restricts land use activities such as agricultural use for growing crops for human consumption or for livestock feed and grazing to ensure human health is fully protected. The NYSDEC SCO for Protection of Public Health (Residential) is 400 mg/kg. Thus, it is possible for a remedial alternative to achieve protection of human health from a direct exposure standpoint without achieving unlimited use and unrestricted exposure (UU/UE) at the Camp O'Ryan Rifle Range MRS 2. Soil with lead concentrations above landfill disposal criteria will undergo in-situ soil stabilization prior to excavation. If areas of soil remain above alternative land disposal restrictions after multiple soil stabilization efforts, then soil that exceeds criteria from these areas will be disposed of at an approved Resource Conservation and Recovery Act (RCRA) Subtitle C disposal facility. Soil that has undergone stabilization successfully will be excavated and disposed of at an appropriate disposal facility. This alternative mitigates lead in source area soil where unacceptable risk to human health was identified via stabilizing treatment and removal from the MRS, and it addresses MC at other DUs using LUCs.

Based on the results of the RI, the extent of soil removal was estimated to be 0.42-acre to a depth of 1 foot across the Target Berm – Ponded DU; however, after discussion with the NYSDEC, the excavation area was expanded to include 1.55 acres to a depth of 2 feet across the lower reach of the adjoining Target Berm – Hillside DU. Concentrations of MC (especially lead) in samples collected during the 2009 NYSDEC Site Investigation at the hillside suggest that downhill soil migration could be a continuing source of lead at the Target Hill – Ponded DU. The revised total Alternative 3 excavation area is 1.97 acres. Based on this area, the estimate of contaminated soil to be stabilized and removed is 5,679 bank cubic yards (BCY) (AECOM, 2022b). The 5,679 BCY of soil will be stabilized using a mixing reagent (e.g., Portland cement) and disposed of based on waste classification analysis per the requirements of RCRA Part 261. Lead concentrations in confirmation soil samples will be measured in the field using x-ray fluorescence (XRF), and discrete samples will be submitted for laboratory analysis to confirm that the RAO is achieved during excavation. If necessary, additional soil excavation deeper than 2 feet, in 1-foot lift increments, and subsequent sampling and analysis will proceed until the results indicate that contaminant concentrations are below their established screening criteria. Confirmation soil samples will also be collected from excavation area boundaries to determine whether the excavation boundaries must be extended laterally to achieve the RAO. The toxicity characteristic leachate procedure (TCLP) level for non-hazardous waste for lead (5 milligrams per liter [mg/L]) will also be a criterion to be met in confirmation samples.

During the soil stabilization process, measures such as dust suppression will be taken to minimize the potential for migration of contaminated soil. If necessary, soil covers and fencing materials may also be used to further reduce migration.

Because MC exceeded the RAO at other DUs where no unacceptable risk was identified, Alternative 3 includes the implementation of legal LUCs and educational controls. Legal LUCs (proprietary controls) would include environmental easements (e.g., deed restrictions), and educational controls would include the posting of warning signs along the Camp O'Ryan Rifle Range MRS 2 boundary. Successful implementation of LUCs is contingent upon the cooperation and active participation of the existing landowners/users. Legal LUCs are not enforceable by the ARNG; however, NYSDEC may be able to enforce legal LUCs. Although Alternative 3 stabilizes and removes soil that poses unacceptable risk to human health at the Target Berm – Ponded DU and adjacent hillside, the excavation would not achieve UU/UE at other areas of the Camp O'Ryan Rifle Range MRS 2. Therefore, Five-Year Reviews are required under CERCLA upon completing the Alternative 3 remedial action.

The estimated total cost of Alternative 3 is $2,015,925. The cost estimate includes the total cost for excavation and disposal of MC-contaminated media, implementation of LUCs, and periodic costs for Five-Year Reviews.

1.5 Statutory Determinations

The selected remedy for the Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02) satisfies the statutory requirements of CERCLA §121(b), and to the extent practicable, NCP §300.130(f)(5)(ii). The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are applicable and appropriate to the remedial action, is cost effective, utilizes permanent solutions to the maximum extent practicable, and satisfies the statutory preference for treatment through the stabilization, removal, and disposal of MC-contaminated soil. Five-year reviews are required because MC-contamination will not be eliminated or reduced outside of the Target Berm – Ponded DU.

1.6 Data Certification Checklist

The following information in **Table 1-1** is included in this ROD's Decision Summary (**Section 2**). Additional information can also be found in the Camp O'Ryan Rifle Range MRS 2 administrative record located at the Gainesville Town Hall: 2 Toolhouse Road, Gainesville, NY 14066.

TABLE 1-1 ROD DATA CERTIFICATION CHECKLIST

Data	Location
Chemicals of concern (COCs) and their respective concentrations	Sections 2.2 and 2.7
Baseline risk represented by the COC	Section 2.7
Cleanup levels established for COC and the basis for these levels	Section 2.8.1
How source materials constituting principal threats are addressed	Section 2.11
Current and reasonably anticipated future land use assumptions and potential future beneficial uses of groundwater used in the risk assessment	Section 2.5.8 and 2.6
Potential land and groundwater use that will be available at the site as a result of the selected remedy	Section 2.12.2
Estimated capital, operations and maintenance (O&M), and total net present worth costs; discount rate; and number of years over which the remedy costs are projected	Section 2.10.7
Key factors that led to the selection of the remedy	Section 2.12

1.7 Authorizing Signature

On the basis of the RI, the FS and PP performed for the Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02), the selected remedy meets the requirements for remedial action set forth in CERCLA. The signature below documents the ARNG's approval of the selected remedy for the Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02).

APPROVED:

HAMMETT.ANTHONY.SCOTT.1116575562 Digitally signed by HAMMETT.ANTHONY.SCOTT.1116575562 Date: 2022.07.06 15:32:23 -04'00'

06 July 2022

Anthony Hammett
Colonel, U.S. Army
Chief, G-9 Army National Guard

Date

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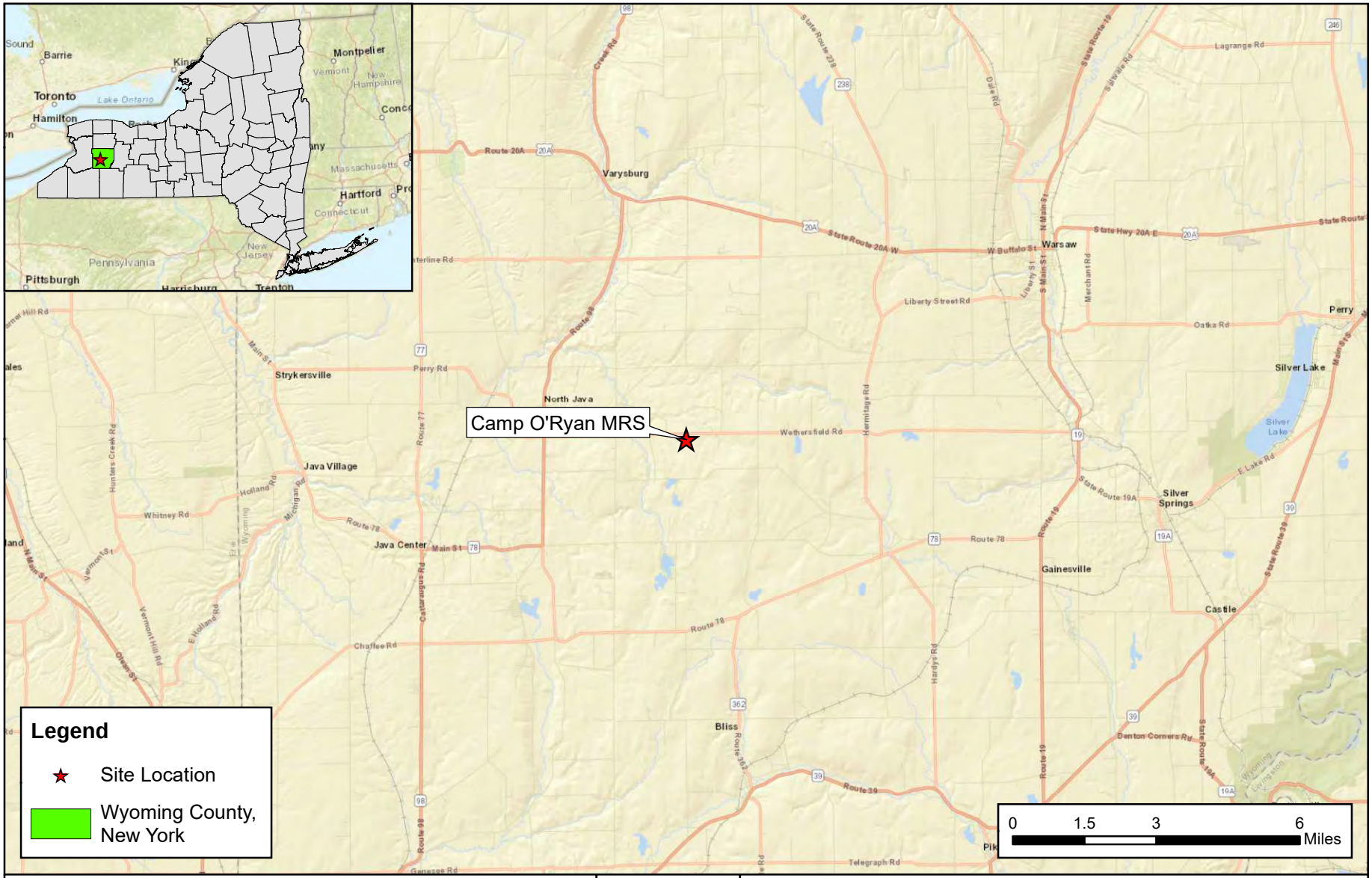

CLIENT	Army National Guard			
PROJECT	Record of Decision for Camp O'Ryan, NY MRS			
REVISION NO	0	GIS BY	MS	5/19/2022
SCALE	1:190,080	CHK BY	JW	5/19/2022
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community		PM	LS	5/19/2022

Camp O'Ryan Rifle Range MRS 2 Location

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 1-1

Prepared for: Army National Guard

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2 Decision Summary

The Decision Summary identifies the selected remedy, explains how the remedy fulfills statutory and regulatory requirements, and provides a substantive summary of the Administrative Record File that supports the remedy selection.

2.1 Site Name, Location, and Description

Camp O'Ryan is located in Wethersfield, Wyoming County, New York. Camp O'Ryan was divided into three MRSs: Camp O'Ryan Pistol Range MRS 1, Camp O'Ryan Rifle Range MRS 2, and Camp O'Ryan Maneuvering Area MRS 3. This investigation focuses on Camp O'Ryan Rifle Range MRS 2, which is located on the northern boundary of the 370-acre former Camp O'Ryan. The former small arms range was originally about 17.5 acres and was expanded to 42.41 acres as a result of the RI. The MRS contains mostly gently rolling, forested terrain comprising deciduous trees with patches of open grass fields.

The MRS consists of a hillside impact berm and a former 200-yard range with 50 targets and firing berms at distances of 100 and 200 yards (**Figure 2-1**). The Camp O'Ryan Rifle Range MRS 2 also includes a concrete retaining wall with target structures still intact. The area outside of the Camp O'Ryan Rifle Range MRS 2, within the former Camp O'Ryan, was used by NYARNG for both company and squad level training including maneuver practicing and camping.

2.2 Site History and Enforcement Activities

This section provides background information for the site, including a description of site activities and a general summary of the types of contamination found. There have been no enforcement actions at the site to date.

Camp O'Ryan (also known as the North Java Rifle Range, the Wethersfield Training Area, and the Wethersfield Target Range and Maneuver Area) was located on 376 acres and was used by the NYARNG from 1949 to 1974 and then again from 1989 to 1994 (Parsons Infrastructure and Technology [Parsons], 2011 [Appendix H-3]). The firing direction at the Camp O'Ryan Rifle Range MRS 2 was to the southeast. Small arms, including .30 caliber M1, were approved for use Camp O'Ryan Rifle Range MRS 2; additional potential munitions used include .22, .38, and .45 caliber, 5.56 millimeter (mm), and 7.62mm. The property is privately owned, and live-fire training no longer occurs at the MRS. There is no historical evidence of munitions and explosives of concern (MEC) use at the MRS.

The site is owned by private landowners and is occupied by the King Brothers Fireplace and Stove, Inc. business. The remaining portion of the MRS is private undeveloped land. The former range spans two privately owned tax parcels: parcel #106.-2-61.2 and parcel # 106.-2-61.1 (**Figure 2-1**). From 1949 to 1974, training areas included a rifle range, a pistol range, a tank driver training course, a range storage building, a field latrine, and a mess hall. From 1989 to 1994, it was used for infantry training maneuvers, off-road driver training, and communication exercises. It is unknown if the ranges were reactivated in 1989 (Parsons, 2011). Live-fire training no longer occurs at the Camp O'Ryan Rifle Range MRS 2.

For the purpose of the RI, the Camp O'Ryan Rifle Range MRS 2 was originally divided into three DUs (100-Yard Firing Berm, Target Area, and Target Berm-Hillside), with two additional DUs added during the investigation to assess potential MC in sediment at a temporarily inundated area that collects surface water runoff at the base of the Target Berm (Target Berm-Ponded DU) and a

seasonally flooded wetland on the east side of the Target Berm-Hillside (Wet Meadow DU) (**Figure 2-2**). The investigation of the Target Area, the Target Berm, and 100 Yard Firing Berm DUs focused on soil within the Camp O'Ryan Rifle Range MRS 2, while the investigation of the additional two DUs (Target Berm-Ponded DU and the Wet Meadow DU) focused on sediment because the additional DUs are temporarily or semi-permanently flooded.

Seven environmental investigations and reports have been completed at the NDNODS Camp O'Ryan Rifle Range MRS 2 since 2009. These investigations include the following:

- NYSDEC Site Investigation Report (NYSDEC, 2009)
- Final National Guard Bureau NDNODS Inventory Report for New York (Preliminary Assessment [PA]; Malcom Pirnie Inc., 2009)
- Preliminary Site Investigation Report, Former Camp O'Ryan (FUDS Property No. C0NY1132) (Woods Hole Group, Inc., 2011)
- Final Historical Records Review (HRR)/Work Plan, New York, 2011 (Parsons, 2011 [Appendix H-3])
- Final New York Site Inspection (SI) Report, ARNG MMRP, 2012 (Parsons, 2012)
- Final Remedial Investigation Report (AECOM, 2021)
- Final Feasibility Study (AECOM, 2022a)
- Final Proposed Plan (AECOM, 2022b)

2.2.1 NYSDEC Site Investigation Report (NYSDEC, 2009)

The 2009 Site Investigation Report summarized the targeted surface soil and sediment sampling conducted at the former Camp by NYSDEC. The investigation included collecting soil samples from the 100-yard firing berm, target berm, and an adjacent background area for comparison. NYSDEC confirmed during a teleconference in 2022 that the samples collected during the 2009 Site Investigation were not sieved to remove bullet fragments. The samples were analyzed for total metal lead analyses. A total of 15 samples had elevated levels of lead; the highest concentrations were at the target berm impact area. Data from these samples showed that MCs were present in soil at the 100-yard firing berm and target berm at concentrations above the New York SCOs for unrestricted use.

2.2.2 NDNODS Inventory for New York (Preliminary Assessment; Malcom Pirnie Inc. 2009)

In 2009, the ARNG completed its Non-Department of Defense (DoD) Non-Operational Defense Sites (NDNODS) Inventory that resulted in the identification of more than 500 sites where guardsmen trained and discharged munitions. NDNODS sites are defense sites that were exclusively used by a state ARNG and never owned, leased or otherwise possessed or used by the Army or other DoD component. NDNODS are a subcategory of MRSs. NDNODS Inventory Reports are considered to have met the requirements of a PA under CERCLA. In 2009, the NDNODS Inventory for New York was completed, and it identified Camp O'Ryan as one of the eligible MRSs within New York with a potential munitions risk and was recommended for further investigation.

2.2.3 Preliminary Site Investigation Report (Woods Hole Group, Inc., 2011)

The 2011 Preliminary Site Investigation Report describes the results of work performed in October 2010 that included surface water and shallow groundwater sampling across the former Camp O'Ryan. The surface water and pore water samples were analyzed for explosives, perchlorate, VOC, SVOC, and lead (total and dissolved). The sampling event focused on the northern portion of the former Camp O'Ryan, which included surface water samples and shallow groundwater samples collected from streams within the Camp O'Ryan Pistol Range MRS 1 and Camp O'Ryan Maneuvering Area MRS 3. Surface water and shallow groundwater samples were collected from locations downgradient of the Camp O'Ryan Rifle Range MRS 2. In all samples, concentrations were non-detect for total and dissolved lead. The only detected result was for total lead (0.018 mg/L) in a duplicate field sample of shallow groundwater; however, the detection was below the New York State Ambient Water Quality Standard for lead (0.05 mg/L; New York State Ambient Water Quality Standards and Guidance Values, June 1998). Additionally, the associated parent field sample was non-detect).

2.2.4 Historical Records Review (HRR)/Work Plan (Parsons 2011 [Appendix H-3])

An HRR and SI for the former Camp O'Ryan were conducted concurrently by Parsons in 2011/2012. These investigations resulted in the division of the former Camp O'Ryan into three MRSs: The Camp O'Ryan Pistol Range MRS 1, the Camp O'Ryan Rifle Range MRS 2, and the Camp O'Ryan Maneuvering Area MRS 3. The largest identified MRS area at the former Camp O'Ryan, the Camp O'Ryan Maneuvering Area MRS 3 (NYHQ-008-R-03), includes within its footprint the Camp O'Ryan Pistol Range MRS 1 (NYHQ-008-R-01) and Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02).

2.2.5 Site Inspection Report (Parsons 2012)

The 2012 SI did not include field work because the previous investigations performed by NYSDEC and Woods Hole Group, Inc. included surface soil, sediment, surface water, and shallow groundwater sampling across the former Camp O'Ryan MRSs. The 2012 SI assessed the Camp O'Ryan Rifle Range MRS 2 based on sample data from previous investigations and desktop research performed during the 2011 HRR. Data from the 2009 NYSDEC SI samples showed that MC were present in soil at the 100-yard firing berm and target berm at concentrations above New York SCOs and background levels. At the 100-yard Firing Berm, total lead concentrations in soil ranged from 18 mg/kg to 90.9 mg/kg. One sample exhibited a total lead concentration of 1,930 mg/kg; this result is over one order of magnitude greater than all other samples and may be considered an outlier. At the target berm, total lead concentrations in soil ranged from 24.6 mg/kg to 50,900 mg/kg (NYSDEC, 2009). Based on the elevated total lead concentrations in soil samples and the 2011 HRR, the 2012 SI recommended that the Camp O'Ryan Rifle Range MRS 2 be carried forward to RI/FS.

2.2.6 Remedial Investigation (AECOM 2021)

The RI was conducted between 2019 and 2020 to evaluate the presence, nature, and extent of MC at the Camp O'Ryan Rifle Range MRS 2 and assess potential risk to human and ecological receptors. The first mobilization in June 2019 was halted upon discovery of materials potentially presenting an explosive hazard (MPPEH) onsite. The two items, determined to be inert munitions debris (MD), were removed and disposed of by the local authorities. Field work resumed with a

revised Site Safety and Health Plan (SSHP) during the second mobilization in August 2020, with an unexploded ordinance (UXO) escort added to the field team.

For data interpretation purposes and for assessing risks, the MRS was originally divided into three DUs, and the sampling approach was designed to characterize the nature and extent of MC contamination in soil berms at the 100-yard Firing Berm, Target Area, and Target Berm Area. Two additional DUs were added during the investigation to assess potential MC in sediment at a temporarily inundated area that collects surface water runoff at the base of the Target Berm (Target Berm - Ponded DU) and a seasonally flooded wetland on the east side of the Target Berm (Wet Meadow DU). The original Target Berm DU was renamed Target Berm - Hillside DU. Field investigation activities included XRF screening of surface soil at the 100-yard Firing Berm DU, Target Area DU, and the perimeter and step out areas of the Target Berm-Hillside DU to evaluate the lateral extent of MC. Activities included the collection of surface soil samples using incremental sampling methodology (ISM) at the DUs. Discrete sampling of subsurface soil at those DUs was performed to assess vertical extent of MC in soil. Discrete sediment samples were collected at the Target Berm-Ponded DU and Wet Meadow DU. Because MC metals are also naturally occurring, site-specific background reference ISM samples were collected and analyzed in an area on the western edge of the MRS not affected by training activities.

Human health screening criteria for lead and zinc were exceeded based on ISM sample results. As a result, an HHRA was performed. Ecological screening criteria for antimony, lead, and zinc were also exceeded based on ISM sample results, and as a result, a screening level ecological risk assessment (SLERA) was performed.

The HHRA evaluated the following human receptors: outdoor worker, construction worker, site visitor/ recreational user (child/adult), and hypothetical resident (child/adult). Non-cancer hazard results for metals other than lead indicated that adverse health effects are not likely for any of the potential receptors - Hillside, and Wet Meadow DUs. Lead concentrations in blood were modeled for receptors using the U.S. Environmental Protection Agency's (USEPA's) Adult Lead Methodology (ALM) and Integrated Exposure Uptake Biokinetic (IEUBK) model. Lead modeling indicated adverse health effects are possible for child receptors (site visitor/recreational user and hypothetical resident) at the Target Berm - Ponded DU from exposure to sediment. The lead modeling results are likely overestimated for the Target Berm - Ponded DU due to limited access and conservative modeling assumptions. As a result of the HHRA, the MRS was recommended to move forward to an FS.

The results of the SLERA indicated there is negligible risk identified for the soil macroinvertebrate community, benthic macroinvertebrate community (Wet Meadow DU), terrestrial wildlife community, aquatic and semi-aquatic wildlife community, and groundwater to surface water pathway. The SLERA also indicated the potential for adverse ecological affects to the benthic macroinvertebrate community at the Target Berm - Ponded DU.

2.2.7 Feasibility Study (AECOM 2022a)

Potentially complete pathways for exposure and interactions between MC-contaminated media and receptors were identified during the RI. Due to the presence of unacceptable risk to human receptors from MC-contaminated sediment at the Target Berm - Ponded DU, an FS was conducted to evaluate possible actions appropriate to remediate the Camp O'Ryan Rifle Range MRS 2. The FS evaluated possible alternatives in detail and completed a comparative analysis based on criteria outlined in the NCP.

The four alternatives evaluated for MC-contaminated media were as follows:

- Alternative 1 – No Action, a baseline to which other alternatives are compared
- Alternative 2 – LUCs
- Alternative 3 – Target Berm-Ponded DU: Soil Stabilization, Excavation, and Off-Site Disposal as Non-Hazardous Waste with LUCs
- Alternative 4 – All DUs: MC-Contaminated Soil Stabilization and Excavation with Off-Site Disposal

2.2.8 Final Proposed Plan (AECOM 2022b)

The PP presented the findings of the FS and identified the preferred alternative for addressing MC-contaminated media at Camp O'Ryan Rifle Range MRS 2. The PP also revised the excavation area identified in Alternative 3 to include the lower reach of the Target Berm – Hillside DU. The expanded excavation area in Alternative 3 increased from 0.42 acres to 1.97 acres, and the resulting total estimate for soil to be stabilized and removed is 5,679 BCY. The preferred alternative was Alternative 3 and was renamed to "Alternative 3 – Target Berm DUs: Soil Stabilization, Excavation, and Off-Site Disposal as Non-Hazardous Waste with MRS-wide LUCs." Alternative 3 is technically and administratively feasible, is protective of human health, achieves the RAO, and is cost-effective.

2.3 Community Participation

The ARNG solicited public input on the PP (AECOM, 2022b) in the newspaper, *Batavia Daily News*, on 22 March 2022. The public comment period was held from 22 March 2022 through 21 April 2022. The RI (AECOM, 2021), FS (AECOM, 2022a), and PP (AECOM, 2022b) were made available to the public at Gainesville Town Hall. No public comments or questions were received on the Camp O'Ryan Rifle Range MRS 2 PP during the public comment period, and the public did not request a meeting. The public notice affidavit of publication is included in **Appendix A**.

2.4 Scope and Role of Response Action

The selected remedy will be the final action for the Camp O'Ryan Rifle Range MRS 2 (Army Environmental Database Restoration # NYHQ-008-R-02). ARNG's overall strategy is to eliminate the potential for direct contact with MC-contaminated media by human receptors, considering the current and potential future land uses. This response will remove access to source area MC-contaminated media, which constitute the hazard at the MRS. 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. No additional response actions will be needed upon implementation of the selected remedy.

2.5 Site Characteristics

This section summarizes the physical setting of the MRS and the conceptual site model (CSM), a tool for understanding how contaminants enter the environment and potentially affect human health or ecological resources.

2.5.1 Surface Topography

The Camp O'Ryan Rifle Range MRS 2 is located in an area that has a downward regional slope from the southeast to northwest on a glacial lake plain that is incised by streams and produces a rolling surface within the MRS. The MRS includes a large hill along the eastern boundary that acted as an impact berm downrange of the former target area. Elevations range from approximately 1,745 feet above sea level in the northwest corner of the MRS to 1,810 feet above sea level in the southeast corner (U.S. Geological Survey [USGS], 1995) of the original MRS boundary. The revised MRS boundary includes the larger hillside area in the southeast direction, which rises to approximately 1,905 feet at its highest point before plateauing in a meadow at the revised MRS boundary. The terrain continues to rise farther southeast, beyond the revised MRS boundary.

2.5.2 Climate

The climate at O'Ryan Rifle Range is classified as humid and continental and is characterized by warm summers and cold winters with high precipitation. Average temperatures in the area vary from 60 degrees Fahrenheit (°F) in summer to 20°F in winter. The average maximum temperature is 76°F in July, and the average minimum temperature is 13°F in January. The long-term average annual temperature for the nearby Warsaw, NY area is 44°F. Summertime (June through August) temperatures range from an average low of 56°F in the evenings to an average high of 74°F during the daytime (National Oceanic and Atmospheric Association [NOAA], 2020).

The total annual average precipitation is 188 inches, with the majority occurring as snowfall (142 inches). The snowiest month of the year is January, with an average of 36.9 inches. Rainfall is fairly evenly distributed throughout the year, with the wettest month being June, which averages 4.65 inches of rainfall. The driest month is February, with an average of 2.57 inches of precipitation. Winter snowstorms can occur from November through April, with the harshest conditions occurring December through March (NOAA, 2020).

2.5.3 Geology

The Camp O'Ryan Rifle Range MRS 2 is on the northern margin of the Appalachian Plateaus physiographic province in southwestern New York. Devonian rocks are at the surface or subcrop glacial deposits in the vicinity of the former Camp O'Ryan. These Paleozoic sediments are deeply eroded, particularly by geologically recent glaciations (Olcott, 1995).

Continental-scale glaciers episodically covered most of the northern US over the last 1.8 million years. New York has been covered by ice multiple times, including during the last advance approximately 22,000 years ago. Glaciers scoured and removed soil and soft weathered surface rocks as they moved and polished the hard bedrock surface below the ice. A variety of landforms were left behind when the glaciers eventually receded approximately 10,000 years ago (Skehan, 2008). As the ice melted, the sediment load was dropped in place as unsorted till, a mixture of silt, gravel, and boulders of various sizes in a clay matrix, or was redistributed as outwash by the vast amounts of meltwater released by the glacier. The glacial outwash sediments, deposited by streams and rivers of meltwater in front of the receding glaciers (glaciofluvial deposits), tend to be graded from coarse to fine with increasing distance from the glacier. Meltwater could also be impounded in lakes that were dammed either by the ice or by glacial sediments. Lake plains, terraces, and beaches were left in place when the dammed water found a lower outlet (Olcott, 1995). The "Finger Lakes" northwest of the MRS are of glacial origin.

2.5.4 Hydrogeology and Hydrology

Coarse-grained glacial outwash, ice contact, and alluvial deposits form the productive sand and gravel aquifers of the surficial aquifer system. Yield from sand and gravel aquifers depends on thickness and grain size of deposits. Higher yields may be obtained where deposits are hydraulically connected to an adjacent body of surface water. Groundwater well depths generally range from 10 to 120 feet and could exceed 500 feet below land surface (Olcott, 1995). Major consolidated bedrock aquifers in the vicinity of the Camp O'Ryan Rifle Range MRS 2 are in Devonian age limestone formations at or near the surface. Little primary porosity or permeability remain in rocks following the lithification process. Groundwater in limestone aquifers is stored in solution cavities that are interconnected through complex dissolution channels, which results in highly variable yields. Wells commonly yield 10 to 30 gallons per minute (gpm), although yields of 1000 gpm have been reported from carbonate aquifers in New York. Aquifers generally are unconfined in the upper 200 feet (Olcott, 1995). There are no groundwater wells within the former Camp O'Ryan. Two domestic water wells exist approximately 0.25 miles from the MRS. Well number WO 430 to the southeast shows a depth to water of 15 feet below ground surface (bgs). Well number WO 868 is north of the MRS with a depth to water of 50 feet bgs.

The low-lying area immediately downrange of the target area collects surface water runoff from the adjacent target berm-hillside and becomes temporarily inundated during and after precipitation events; the soil in this area is regularly saturated. This area, referred to as the target berm ponded area, spans the entire length of the eastern side of the target wall between the target wall and the target berm hillside. This area is not listed as a wetland on the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) (USFWS, 2020).

An 8.05-acre freshwater forested/shrub wetland exists approximately 0.1 miles southeast of the original MRS boundary and downrange from the target berm hillside (USFWS, 2020). This area is listed on the USFWS NWI as a wetland habitat and is characterized as semi-permanently flooded because surface water persists throughout the growing season in most years. During RI field work, the wetland was observed to have shallow water and saturated soils, and it was designated as the Wet Meadow DU because of its distinguishable land and habitat differences from the adjacent target berm hillside. The elevation at the Wet Meadow DU is considerably higher than the adjacent MRS features, including the majority of the target berm hillside. Due to the Wet Meadow DU elevation and local topography, neither groundwater nor surface water from MC source areas are expected to migrate towards the Wet Meadow DU. Groundwater is anticipated to follow topography, and surface water flow is away from the Wet Meadow to the northwest in the direction of other MRS features. If shallow groundwater is discharging to the Wet Meadow DU, it is likely to be flowing to the meadow from upslope southeast direction. The original MRS boundary was revised as a result of the RI to include the Wet Meadow DU.

2.5.5 Vegetation

The majority of the MRS is comprised of a cleared grassy field. The boundary of the MRS is heavily vegetated with trees and shrubs, and the central portion of the MRS is less densely vegetated. King Brothers Masonry Contractors property bounds the MRS to the North.

A depressed area that directly abuts the eastern side of the target wall, referred to as the "Target Berm Ponded Area", collects surface water runoff and becomes temporarily inundated. The Target Berm Ponded Area represents a different habitat type than the cleared grassy fields associated with most of the MRS range floor and the heavily forested adjacent target berm hillside area.

Additionally, a wet meadow area farther to the east of the MRS represents a distinguishably different habitat type from all other areas within the MRS. This freshwater forested/shrub wetland is located east of the original MRS boundary; the revised MRS boundary included within this RI encompasses the wetland area. For this RI, the area is referred to as the Wet Meadow. The Wet Meadow is located southeast of the target berm hillside, on a plateau elevated above the hillside and remaining MRS area. During RI field activities, the deepest standing water observed in this area was only a few inches (AECOM, 2021). According to the NWI, wetlands of this type are a mixture of woody vegetation less than 6 feet tall (shrub, saplings, and/or stunted trees) and broad-leaved deciduous trees (USFWS, 2020). These types of wetlands are seasonally flooded with surface water remaining during the growing season; substrate remains saturated near the surface even during the absence of surface water (USFWS, 2020).

2.5.6 Wildlife

Forested areas, which may provide habitat for ecological receptors, are present within the MRS. No critical habitats are present within the MRS; however, the Northern Long-Eared Bat (Myotis septentrionalis) is listed as federally threatened wherever found and is listed for Wyoming County (USFWS, 2022). New York also lists numerous threatened and endangered species with known ranges or locations within the vicinity of the MRS, including species of mollusks, insects, fish, amphibians, reptiles, birds, and mammals (NYSDEC, 2019).

2.5.7 Cultural Resources

There are no historic or cultural resources at Camp O'Ryan Rifle Range MRS 2. Additionally, there are no National Historic Landmarks located in Wyoming County, New York (National Park Services [NPS], 2022a and 2022b).

2.5.8 Conceptual Site Model

Using the above site characteristics and the results of the RI sampling, the RI updated the CSM based on sampling results and assessed potential MC migration. The CSM was developed to depict the potential relationship or exposure pathway between MC sources and receptors. A CSM diagram depicting exposure pathway relationships is presented on **Figure 2-3**. Small arms MC have been released directly to Camp O'Ryan Rifle Range MRS 2 soil and sediment during historical small arms training activities through fragmentation and pulverization of bullets on impact. Delineation the lateral extent of MC metals in DU surface soil was conducted via XRF analysis, verifying that affected soil is not migrating away from the source areas (soil at the target feature DUs) or off the MRS. Concentrations of antimony, copper, lead, and zinc were compared to their respective NY SCOs.

Complete exposure pathways may exist for site visitors through direct contact (i.e., incidental ingestion, dermal contact, and inhalation of suspended particulates) because MC were discovered to be present in surface soil above background concentrations and human health screening criteria. There also is the potential for exposure to these compounds in subsurface soil; however, these subsurface pathways are incomplete for the site visitors because it is unlikely for the receptors to expose themselves to subsurface soil for anticipated non-intrusive activities.

The Camp O'Ryan Rifle Range MRS 2 is located on a privately-owned parcel consisting mostly of forestland. While the area immediately surrounding the MRS is mostly undeveloped, there are two domestic drinking water wells located 0.25 miles from the MRS. The central portion of the

MRS is densely vegetated. Current receptors include site workers/visitors and ecological receptors. Forested areas, which may provide habitat for ecological receptors, are present within the MRS.

The vertical extent of MC generally decreased with depth at the DUs, as demonstrated by MC concentrations in 12-18-inches bgs and 24-30-inches bgs samples. At three 12-18-inches bgs sample locations (one at each of the three soil DUs), lead values exceeded human health screening criteria. No soil samples at the 100-yard Firing Berm and Target Area DUs exceeded human health screening criteria at depths beyond 12-18-inches bgs; thus, vertical delineation at all DUs was achieved. At one Target Berm - Hillside DU location, the deeper sample collected at 25-inches bgs exceeded human health criteria for copper, lead, and zinc. These concentrations are likely due to mechanical movement of soil during active range use to fill in bullet pockets or the collection of bullet fragments against the hard cobble layer.

Metals MC also has the potential to be released to groundwater through leaching and/or infiltration mechanisms, especially where groundwater is shallow (≤ 5 feet bgs). According to data presented in the 2012 SI report (Parsons, 2012), two domestic water wells located approximately 0.25 miles from the MRS show groundwater depths of 15 feet bgs and 50 feet bgs. Therefore, MC is unlikely to have migrated to groundwater.

The Target Berm - Ponded DU and the Wet Meadow DU were added as additional DUs during the RI due to the potential for contaminants to be captured within the pond surface water and sediment. Because the additional DUs are only temporarily or semi-permanently flooded, the RI focused on sediment in these areas. No surface water bodies were present within the MRS at or near source areas or in the immediate surrounding area; therefore, transport pathways from soil in source areas to surface water bodies were considered incomplete in the CSM.

Metals do not readily weather in the environment. Typically, metals in soil form reaction products that become incorporated into soil minerals, precipitate as oxides or hydroxides, or form coatings on minerals (Oak Ridge National Laboratory, 1989). These forms of metals have low mobility in soils. The inherent insolubility of metals, coupled with their related high soil/water partition coefficients, indicate that the metals would be relatively immobile in DU soil and sediment. Given that elevated metals, lead in particular, are still present in target feature soils but not in soil around the perimeters of the DUs indicate that they are not readily migrating. Lack of vertical migration is supported by the low MC concentrations in deeper discrete soil samples. There are no current receptors for groundwater.

2.6 Current and Potential Future Land and Resources Uses

Currently, the former rifle range is owned by private landowners and is occupied by the King Brothers Fireplace and Stove, Inc. business. The remaining portion of the MRS is private undeveloped land. Live-fire training no longer occurs at the Camp O'Ryan Rifle Range MRS 2. Because the land is privately owned, there is potential that the Camp O'Ryan Rifle Range MRS 2 could be used for residential and/or recreational purposes in the future.

2.7 Summary of Site Risks

MC analytical data generated during the RI (AECOM, 2021) were compared with human health and ecological 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 three DUs (100-yard Firing Berm DU, Target Area DU, and Target Berm-Hillside DU) to determine the concentration of MC that a receptor visiting the site may be exposed to. These data were used to evaluate potential risk at each soil DU because the methodology provides a robust estimate of the true concentration for an area sampled. Discrete subsurface soil samples were collected for the purpose of conservatively determining the vertical extent of MC. Discrete sediment samples were also collected from the Target Berm - Ponded DU and the Wetland Meadow DU to assess potential risk. Because MC metals are also naturally occurring, site-specific background reference ISM samples were collected and analyzed in an area on the western edge of the MRS not affected by training activities at the rifle range.

2.7.1 Human Health Risk Summary

The results of the ISM sampling showed that lead and zinc exceeded their respective human health screening criteria for exposure to surface soils at the Target Berm - Hillside DU. Lead also exceeded human health screening criteria at the 100-yard Firing Berm DU and Target Area DU. At the Target Berm - Ponded DU, lead and antimony concentrations exceeded human health screening criteria in sediment samples. At the Wetland Meadow DU, lead concentrations exceeded human health screening criteria in sediment samples. Due to these exceedances, an HHRA was performed.

The HHRA evaluated the outdoor worker, construction worker, site visitor/recreational user (child/adult), and hypothetical resident (child/adult) receptor exposure scenarios. Soil-related exposure pathways for each receptor include incidental ingestion, dermal contact, and inhalation of wind-blown particulates from soil. Sediment-related exposure pathways for each receptor include incidental ingestion and dermal contact with MC in the Target Berm - Ponded and Wetland Meadow DUs. The HHRA eliminated lead as a soil constituent of potential concern (COPC) at the Wet Meadow DU during secondary screening evaluation through use of the lead mean concentration and lead action levels. Thus, the Wet Meadow DU was eliminated from further evaluation.

The HHRA used a cumulative non-cancer hazard index (HI) of 1 when evaluating MC constituents for potential adverse health effects for antimony, copper, and zinc. Based on the HI results, adverse health effects are possible for the child site visitor/recreational user and hypothetical child resident from exposure to these metals in sediment at the Target Berm - Ponded DU. The cumulative HI results were all below the target HI of 1, therefore, a target organ endpoint analysis was not conducted. The HHRA non-cancer hazard results are presented in **Table 2-1**. These cumulative values represent exposure to antimony, copper, and zinc; lead was evaluated separately.

The USEPA has developed the following two models to estimate the receptor lead blood (PbB) concentrations and what percentage of the exposed population may have PbB levels above the allowable PbB threshold:

- ALM (version date 6/14/17) model (USEPA, 2017a and 2017b);
- IEUBK (win v1.1 build 11) model (USEPA, 2010).

TABLE 2-1 NON-CANCER HAZARD RESULTS FOR HUMAN RECEPTORS

COPC and Exposure Area	Construction Worker HI	Outdoor Worker HI	Child Site Visitor/ Recreational User HI	Adult Site Visitor/ Recreational User HI	Hypothetical Child Resident HI	Hypothetical Adult Resident HI
Target Berm Hillside DU (ISM Surface Soil, 0 – 6 inches bgs)						
Copper	**0.02**	**0.001**	**0.004**	**0.0004**	**0.02**	**0.002**
Zinc	**0.001**	**0.0004**	**0.001**	**0.0001**	**0.006**	**0.0006**
Cumulative HI	**0.02**	**0.001**	**0.005**	**0.0005**	**0.02**	**0.002**
Target Berm - Ponded DU (Sediment)						
Antimony	**0.08**	**0.02**	**0.07**	**0.007**	**0.3**	**0.03**

Notes:
bgs = below ground surface; COPC = Constituent of Potential Concern; DU = Decision Unit; HI = hazard index; ISM = incremental sampling methodology
Results are rounded to one significant figure, Hazard Index (HI) are all unitless.
Black text = Indicated threshold has not been exceeded

The Center for Disease Control and Prevention (CDC) has recommended a target blood lead level (BLL) of 5 micrograms per deciliter (µg/dL) to protect young children from potentially adverse neurological effects (CDC, 1991 and 2012). Currently, USEPA has not formally adopted the CDC-recommended BLL and continues to use a target BLL of 10 µg/dL (USEPA, 2020). The HHRA conducted a sensitivity analysis and evaluated lead exposure to both target BLLs, but the target BLL of 10 µg/dL was used for the HHRA conclusions.

In addition, the threshold for lead is to limit the risk to no more than a 5% probability for the receptor's population PbB concentrations to exceed the selected target BLL in the ALM and IEUBK models (USEPA, 2017a, 2017b, and 2010). If the probability of 5% is exceeded, then adverse health effects from exposure to lead are possible. The HHRA lead modeling results are presented in **Table 2-2**.

The HHRA lead modeling results for each DU are summarized below:

100-yard Firing Berm DU ISM surface soil (0-6 inches bgs):

- Lead modeling results, assuming a target BLL of 10 µg/dL, indicated that adverse health effects are not likely for any of the potential receptors.

Target Area DU ISM surface soil (0-6 inches bgs):

- Lead modeling results, assuming a target BLL of 10 µg/dL, indicated that adverse health effects are not likely for any of the potential receptors.

Target Berm – Hillside DU ISM surface soil (0-6 inches bgs):

- Non-cancer hazard results indicated that adverse health effects are not likely for the any of the human receptors exposed to ISM surface soil (0 to 6 inches bgs). Lead modeling results, assuming a target BLL of 10 µg/dL, indicated that adverse health effects are not likely for any of the potential receptors.

TABLE 2-2 ALM AND IEUBK LEAD MODEL RESULTS FOR ON-SITE RECEPTORS

Receptor	USEPA Lead Model Used [a]	Target BLL of 10 µg/dL			Target BLL of 5 µg/dL		
		Estimated PbB Concentration [b]	Percent Probability Threshold (%)	Above Thresholds? (Yes/No)	Estimated PbB Concentration [b]	Percent Probability Threshold (%)	Above Thresholds? (Yes/No)
100-yd Firing Berm DU (ISM Surface Soil, 0-6 in bgs)							
Outdoor Worker	ALM	1.7	0.0001%	No	1.6	0.02%	No
Construction Worker	ALM	1.8	0.0003%	No	1.8	0.04%	No
Adult Recreator/Visitor	ALM	1.5	0.00006%	No	1.5	0.01%	No
Child Recreator/Visitor and Hypothetical Resident	IEUBK	< 10	0.001%	No	< 5	0.3%	No
Target Area DU (ISM Surface Soil, 0-6 in bgs)							
Outdoor Worker	ALM	1.8	0.0003%	No	1.7	0.03%	No
Construction Worker	ALM	2.1	0.001%	No	2.1	0.09%	No
Adult Recreator/Visitor	ALM	1.6	0.0001%	No	1.6	0.01%	No
Child Recreator/Visitor and Hypothetical Resident	IEUBK	< 10	0.01%	No	< 5	1.16%	No
Target Berm - Hillside DU (ISM Surface Soil, 0-6 in bgs)							
Outdoor Worker	ALM	2.4	0.002%	No	2.1	0.09%	No
Construction Worker	ALM	3	0.01%	No	3	0.60%	No
Adult Recreator/Visitor	ALM	1.7	0.0002%	No	1.7	0.03%	No
Child Recreator/Visitor and Hypothetical Resident	IEUBK	< 10	0.40%	No	**> 5**	**12%**	**Yes**
Target Berm - Ponded DU (Sediment)							
Outdoor Worker	ALM	5.2	0.30%	No	**5.2**	**6%**	**Yes**
Construction Worker	ALM	7.5	2%	No	**7.5**	**17%**	**Yes**
Adult Recreator/Visitor	ALM	2.7	0.01%	No	2.7	0.30%	No
Child Recreator/Visitor and Hypothetical Resident	IEUBK	**> 10**	**31%**	**Yes**	**> 5**	**84%**	**Yes**

Receptor	USEPA Lead Model Used [a]	Target BLL of 10 µg/dL			Target BLL of 5 µg/dL		
		Estimated PbB Concentration [b]	Percent Probability Threshold (%)	Above Thresholds? (Yes/No)	Estimated PbB Concentration [b]	Percent Probability Threshold (%)	Above Thresholds? (Yes/No)
Wet Meadow DU (Sediment)							
Outdoor Worker	ALM	1.8	0.0003%	No	1.8	0.04%	No
Construction Worker	ALM	2	0.001%	No	2	0.07%	No
Adult Recreator/Visitor	ALM	1.5	0.0001%	No	1.5	0.01%	No
Child Recreator/Visitor and Hypothetical Resident	IEUBK	< 10	0.60%	No	< 5	0.9%	No

Notes:

ALM = Adult Lead Methodology; BLL = blood lead level; DU = decision unit; EPC = exposure point concentration; IEUBK = Integrated Exposure Uptake Biokinetic; ISM = incremental sampling methodology; µg/dL = micrograms per deciliter; mg/kg = milligrams per kilogram; PbB = blood lead concentration

(a) Lead model outputs are provided in **Attachment C** of the RI Report HHRA (AECOM, 2021).
(b) Estimated PbB represents the estimated PbBs of fetus in ALM results and young child (less than 7 years) in the IEUBK results.

Red text = Indicated threshold has been exceeded

Black text = Indicated threshold has not been exceeded

USEPA. 2010. Integrated Exposure Uptake Biokinetic Model for Lead in Children, Windows®version (IEUBKwin v1.1 build 11) 32-bit version Office of Superfund Remediation and Technology Innovation, United States Environmental Protection Agency.

USEPA, 2017. Adult Lead Methodology (Version date 6/14/17).

Target Berm – Ponded DU (Sediment):

- Non-cancer hazard results indicated that adverse health effects are not likely for the any of the human receptors exposed to sediment.
- Lead modeling results, assuming a target BLL of 10 µg/dL, indicated that adverse health effects are possible for the child receptors (i.e., site visitor/recreational user and hypothetical resident) from exposure to sediment.
- The heavily vegetated and marshy terrain of the Target Berm-Ponded DU makes access to this DU difficult, especially for a young child receptor ages 0 to 6 years old; the lead modeling results for sediment are likely overestimated due to limited access and conservative modeling assumptions.

Wet Meadow DU (Sediment):

- Lead modeling results, assuming a target BLL of 10 µg/dL, indicated that adverse health effects are not likely for any of the potential receptors exposed to sediment.

2.7.2 Ecological Risk Summary

A SLERA was conducted due to ecological screening criteria exceedances in concentrations of antimony, lead, and zinc in soil at all ISM soil sampling locations, and exceedances in concentrations of copper, lead, and zinc in sediment samples at the Target Berm – Ponded DU and Wet meadow DU. Antimony also exceeded ecological screening criteria at the Target Berm – Ponded DU.

Potential ecological exposure was evaluated in a SLERA, which is Step 1 and 2 of the 8-step *Ecological Risk Assessment Guidance for Superfund* process to identify constituents of potential ecological concern (COPECs). The list of COPECs was then refined per Baseline Ecological Risk Assessment (BERA) Step 3 to reduce uncertainty in the SLERA Step 1 and 2 conclusions and to refine the recommendations by applying more realistic exposure assumptions.

The results of the SLERA, BERA Step 3a COPEC refinement, and consideration of the uncertainties present in the evaluation support the following conclusion for the MRS:

- There is adequate information to conclude that ecological risks are negligible and therefore no need for remediation on the basis of ecological risk.
    - Negligible Risk:
        - Soil macroinvertebrate community
        - Benthic macroinvertebrate community (Wet Meadow DU)
        - Terrestrial wildlife community
        - Aquatic and semi-aquatic wildlife community
        - Groundwater to surface water pathway
- The information indicates a potential for adverse ecological effects, and a more thorough assessment is warranted.
        - Benthic macroinvertebrate community (Target Berm-Ponded DU)
- COCs.
    - Lead was identified as a direct contact based COC in sediment at the Target Berm - Ponded DU within the Camp O'Ryan Rifle Range MRS 2.

2.7.3 Basis for Action

The RI determined that there is unacceptable risk to human health and adverse ecological effects to the benthic macroinvertebrate community at the Target Berm - Ponded DU. The response action selected in this ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment. 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.

2.7.4 Munitions Response Site Prioritization Protocol

In 2005, DoD published the MRS Prioritization Protocol (MRSPP) as a Federal Rule (32 CFR Part 179) to assign a relative risk priority to each defense site in the MMRP Inventory for response activities. These response activities are based on the overall conditions at the MRS, taking into consideration various factors related to explosive safety and environmental hazards. In assigning a relative priority for response activities, DoD generally considers MRSs posing the greatest hazard as being the highest priority.

Investigative results undergo three different evaluations to determine the MRSPP priority. The Explosive Hazard Evaluation Module (EHE) assesses the explosive hazards of a site based on the known or suspected presence of an explosive hazard. The Chemical Warfare Materiel (CWM) Hazard Evaluation (CHE) Module provides an evaluation of the chemical hazards associated with the physiological effects of CWM. The Health Hazard Evaluation (HHE) Module provides a consistent approach for evaluating the relative risk to human health and the environment posed by munition-related contaminants (i.e., MC). MRSPP scores range from 1 to 8. Priority 1 indicates the highest potential hazard, and Priority 8 indicates the lowest potential hazard. Only a site with a potential Chemical Warfare Hazard can receive a Priority of 1. The priority is determined by selecting the highest rating from among the EHE, CHE, and HHE Modules.

The overall MRSPP priority for the Camp O'Ryan Rifle Range MRS (NYHQ-008-R-02) is 4 based on the HHE Module rating. The HHE Module rating was C, which corresponds to an MRSPP priority of 4. The CHE and EHE Module ratings were No Known or Suspected Hazard. The HHE Module rating is based on the soil receptor factor being M because receptors have unrestricted access to soil at the MRS where MC have moved or can move. A summary of the MRSPP scores for each module is provided in **Table 2-3**.

2.8 Remedial Action Objectives

RAOs are site-specific cleanup 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).

2.8.1 Munitions Constituents

The general goal of an MC remedial action is to reduce the risk to ensure the protection of human health, public safety, and the environment. The RAO for MC is to prevent human exposure to lead above NYSDEC's SCO (63 mg/kg) within the Camp O'Ryan Rifle Range MRS 2.

TABLE 2-3 MUNITIONS RESPONSE SITE PRIORITY EVALUATION

Explosive Hazard Evaluation	Factors			EHE Combination Level	EHE Module Rating
	Explosive Hazard	Accessibility	Receptor		
Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02)	4	25	14	43	NKSH

Chemical Warfare Materiel Hazard Evaluation	Factors			CHE Combination Level	CHE Module Rating
	CWM Hazard	Accessibility	Receptor		
Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02)	0	0	0	0	NKSH

Health Hazard Evaluation	Factors			HHE Combination Level	HHE Media Rating
	HHE Hazard	Migration Pathway	Receptor		
Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02) Groundwater	L	L	M	LLM	F
Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02) Surface Water/Human Endpoint	L	L	M	LLM	F
Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02) Sediment/Human Endpoint	M	L	M	MLM	E
Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02) Surface Water/Ecological Endpoint	L	L	M	LLM	F
Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02) Sediment/Ecological Endpoint	M	M	M	MMM	D
Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02) Surface Soil	H	M	M	HMM	C
				HHE Module Rating:	C

Munitions Response Site Priority	EHE Module Rating	CHE Module Rating	HHE Module Rating	MRSPP Priority
Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02)	NKSH	NKSH	4	**4**

Notes:
CHE = Chemical Warfare Materiel Hazard Evaluation
CWM = Chemical Warfare Materiel
EHE = Explosive Hazard Evaluation
H = High
HHE = Health Hazard Evaluation
L = Low
M = Medium
MRS = Munitions Response Site
MRSPP = Munitions Response Site Prioritization Protocol
NKSH = No Known or Suspected Hazard

The primary remedial goal is to prevent human contact with MC-contaminated soil. The MC RAO will address the likelihood of exposure to workers, residents, and visitors 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 media 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 remediation is appropriate given the size of the revised Camp O'Ryan Rifle Range MRS 2 and the lack of critical habitats within the MRS.

2.9 Description of the Alternatives for MC-Contaminated Media

The alternatives designed to satisfy the RAO for the MC-contaminated media at the Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02) include the following:

- Alternative 1 – No Action
- Alternative 2 – LUCs
- Alternative 3 – Target Berm DUs: Soil Stabilization, Excavation, and Off-Site Disposal as Non-Hazardous Waste with MRS-wide LUCs
- Alternative 4 – All DUs: MC-Contaminated Soil Stabilization and Excavation with Off-Site Disposal

The MRS consists of private property, not owned by ARNG; implementation of Alternatives 2 through 4 would require the approval and participation of the State and private landowners.

2.9.1 Alternative 1 – No Action

The No Action alternative assumes that no remedial action will be taken to change the current existing condition at Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02). This alternative would leave the MRS in its present condition, with no LUCs, remedial actions, or other mitigating activities. This alternative provides a comparative baseline against which other alternatives can be evaluated. This alternative is required by the NCP for baseline comparison purposes (40 CFR 300.430[e][6]). This alternative will have no capital, O&M, or periodic costs.

2.9.2 Alternative 2 – Land Use Controls

This alternative consists of a limited action alternative consisting of physical and legal LUCs. The implementation of a physical LUC through educational controls would include the posting of warning signs along the MRS boundary. The implementation of a legal LUC through proprietary controls would include environmental easements (e.g., deed restrictions). The LUCs would specifically seek to warn users of potential MC-contamination and restrict land use at the Camp O'Ryan Rifle Range MRS 2. Successful implementation of LUCs is contingent upon the cooperation and active participation of the existing landowners/users, NYSDEC, and other government agencies to protect the public from MC hazards. Legal LUCs are not enforceable by ARNG; however, NYSDEC can enforce legal LUCs. LUCs for the Camp O'Ryan Rifle Range MRS 2 will not result in conditions that allow for UU/UE at the MRS. Therefore, Five-Year Reviews would be required under CERCLA Section (§) 121(c) and NCP, CFR §300.430(f)(4)(ii)) to ensure that the remedy continues to be protective of human health and the environment. This alternative involves light construction activities; therefore, there would be no short-term impacts to the community, workers, or environment.

2.9.3 Alternative 3 – Target Berm DUs: Soil Stabilization, Excavation, and Off-Site Disposal as Non-Hazardous Waste with MRS-wide LUCs

Alternative 3 involves stabilization, excavation, and off-site disposal of the lead-contaminated soil at the Target Berm – Ponded DU and the adjoining lower reach of the Target Berm – Hillside DU. The Target Berm – Ponded DU is the only DU at the Camp O'Ryan Rifle Range MRS 2 that poses

unacceptable risk to human health based on the results of the HHRA performed during the 2021 RI (AECOM, 2021). Excavation would eliminate the risk of encountering MC-contaminated soil but would not achieve UU/UE at other areas of the Camp O'Ryan Rifle Range MRS 2. The Camp O'Ryan Rifle Range MRS 2 is privately owned. Approval from the property owners would be needed to implement this remedy. Under Alternative 3, MC-contaminated soil with lead above 63 mg/kg would be excavated and disposed of offsite within the area shown on **Figure 2-4**. The excavation will continue in the direction of the hillside, if necessary, based on step-out sampling; however, step-out sampling will occur where lead concentrations exceed the NYSDEC SCO for Residential Use (400 mg/kg). Based on the results of the RI, the extent of soil removal was estimated to be 0.42 acres to a depth of 1 foot across the Target Berm – Ponded DU; however, after discussion with the NYSDEC, the excavation area was expanded to include 1.55 acres to a depth of 2 feet across the lower reach of the Target Berm – Hillside DU based on concentrations of MC in samples collected during the 2009 NYSDEC Site Investigation. The revised total Alternative 3 excavation area is 1.97 acres (**Figure 2-4**). The estimate of contaminated soil to be stabilized and removed is 5,679 BCY. Prior to excavation, soil will undergo waste classification by sampling and analysis conducted per the requirements of the RCRA Part 261, which establishes standards for generators of solid and hazardous waste and Subtitle D solid waste disposal facilities.

Application of the "20 times rule" to the maximum detected total lead concentration indicates that soil may need to be stabilized in-situ for the excavated soil to pass TCLP criteria and allow disposal as nonhazardous waste. Soil with lead concentrations above landfill disposal criteria will undergo in-situ soil stabilization consisting of the following:

- Mixing a reagent (e.g., Portland cement), ensuring adequate reagent contact, and distribution in soil, to stabilize lead prior to excavation.
- Post-treatment sampling and TCLP analysis of stabilized soil to evaluate stabilization effectiveness.
- If the soil is determined to be a hazardous waste, it will be determined if RCRA Land Disposal Restrictions apply (40 CFR Part 268).

Following soil stabilization, characterization samples will again be collected and analyzed for TCLP lead. If contaminant concentrations remain above landfill disposal criteria, additional treatment, sampling, and analysis will be completed. If, after multiple soil stabilization efforts, areas of soil remain above disposal criteria, then soil exceeding criteria from these areas will be disposed of at an approved RCRA Subtitle C disposal facility. Soil that has undergone stabilization successfully will be excavated and disposed of at an appropriate disposal facility. For cost-estimation purposes, it is assumed that all excavated soil will be successfully stabilized.

Lead concentrations will be evaluated in the field using XRF. Discrete step-out confirmation soil samples will be used at excavation vertical and lateral boundaries to confirm that the RAO is achieved during excavation. For the purposes of confirmation sampling and determining whether additional excavation is needed, soil samples collected at excavation boundaries will be compared to the NYSDEC SCO for Residential Use (400 mg/kg). If XRF results indicate lead concentrations in step-out confirmation samples are above the field delineation value of 400 mg/kg, an additional 1 foot of soil will be removed, and the area will be reevaluated by XRF. Once XRF results indicate the lead concentration is below 400 mg/kg at the vertical and lateral excavation boundaries, discrete confirmation samples will be collected in compliance with Section 9.7 of EPA Method 6200 and submitted for laboratory analysis. Soil excavation and subsequent sampling and analysis

will proceed in the direction of the hillside until the results indicate the contaminant concentrations are below their established screening criteria, or as far as practical due to health and safety concerns related to dense vegetation and steep slopes.

MC-contaminated soil will be excavated with heavy equipment with enclosed cabs to minimize the potential for worker exposure to contaminated soil. Erosion control and air and dust monitoring will be implemented to prevent any contamination to the surrounding soils, site workers, and any run-off downslope. Soil will be mixed with stabilizers using the excavation equipment; this will occur in three, 12-inch lifts. Excavated soil will be loaded directly into haul trucks waiting at the excavation areas and transported off-site to a licensed disposal facility. During excavation, care will be taken to avoid damaging existing roads, fencing, or structures located outside the excavation subareas. Haul trucks will be properly labeled, licensed, and insured for the transportation of soil. When transporting contaminated soil, transport vehicles will be fitted with a tarp or other covering to prevent wind dispersal of material during transport. Before departing from the MRS, vehicles will be inspected to ensure the material is properly sealed in the vehicle and "dry" decontaminated to remove visible soil accumulation from the vehicle body, undercarriage, and tires, so no soil is tracked onto the roadways. Because all excavated materials are anticipated to be non-hazardous after undergoing stabilization, this decontamination process is appropriate. If, after multiple soil stabilization efforts, areas of soil remain above disposal criteria, then vehicle decontamination will be reassessed to include "wet" decontamination, wash water collection and sampling, containerizing of liquid investigation-derived waste, and coordination for appropriate disposal.

During the soil stabilization process, measures such as dust suppression will be taken to minimize the potential for migration of contaminated soil. If necessary, soil covers and fencing materials may also be used to further reduce migration.

Backfill sources would be sampled and submitted for approval prior to bringing on site under Alternative 3. Excavated areas would be backfilled, graded, and returned to pre-excavation conditions. Right-of-entry (ROE) would be obtained from the landowners, and its conditions would be followed. Closure documentation would be completed for the remedial action.

Excavation will result in an estimated minimum disposal volume of 5,679 BCY of soil. The removal action is estimated to take approximately 31 days, which include four (4) days for vegetation clearing, one (1) day for characterization sampling, one (1) day for pre-, post-, and final-topographic surveys, twenty three (23) days for stabilization, excavation, XRF sampling, transport and disposal, one (1) day for confirmation sampling, and one (1) day for site restoration.

Alternative 3 also includes the implementation of physical and legal LUCs at the Camp O'Ryan Rifle Range MRS 2. The implementation of a physical LUC through educational controls would include the posting of warning signs along the entire MRS boundary. The implementation of a legal LUC through proprietary controls would include environmental easements (e.g., deed restrictions). Legal LUCs are not enforceable by the ARNG. NYSDEC may be able to enforce legal LUCs. Such LUCs would specifically seek to warn users of the potential MC-contamination and to restrict disturbance to soil in the entire Camp O'Ryan Rifle Range MRS 2.

Alternative 3 stabilizes and removes soil that poses an unacceptable risk to human health at the Target Berm – Ponded DU and the adjacent hillside, but it will not result in conditions that allow for UU/UE at the other areas of the Camp O'Ryan Rifle Range MRS 2. Therefore, Five-Year Reviews are required under CERCLA.

Successful implementation of Alternative 3 is contingent upon the cooperation and active participation of the existing landowners/users, NYSDEC, and other government agencies to protect the public from MC hazards.

2.9.4 Alternative 4 – All DUs: MC-Contaminated Soil Stabilization and Excavation with Off-Site Disposal

Alternative 4 involves stabilization, excavation, and off-site disposal of the lead-contaminated soil with concentrations above established unrestricted use screening criterion (63 mg/kg) at all Camp O'Ryan Rifle Range MRS 2 DUs. This alternative would excavate areas where no unacceptable risk to human health was identified, but where lead concentrations in soil meet or exceed 63 mg/kg. The excavation would eliminate the risk of encountering MC-contaminated soil and achieve UU/UE across the entire Camp O'Ryan Rifle Range MRS 2. The Camp O'Ryan Rifle Range MRS 2 is privately owned. Approval from the property owners would be needed to implement this remedy. Under Alternative 4, MC-contaminated soil with lead above 63 mg/kg would be excavated and disposed of offsite.

Based on the results of the RI, the extent of MC-contaminated soil was determined to cover 20.54 acres to a depth of 2 feet (at the 100-yd Firing Berm DU, Target Area DU, and Target Berm – Hillside DU) and cover 3 acres to a depth of 1 foot (at the Target Berm - Ponded DU and Wet meadow DU). In total, approximately 48.7% of the Camp O'Ryan Rifle Range MRS 2 area would be stabilized and excavated under Alternative 4 (AECOM, 2021). The estimate of MC-contaminated soil to be stabilized and removed is 71,116 BCY. The excavation area includes all DUs, not just those identified by the HHRA where adverse health effects are possible for human receptors.

Prior to excavation, significant vegetation clearing will need to be completed as the majority of the Camp O'Ryan Rifle Range MRS 2 is densely vegetated. MC-contaminated soil will undergo waste classification by sampling and analysis conducted per the requirements of the RCRA Part 261, which establishes standards for generators of solid and hazardous waste and Subtitle D solid waste disposal facilities.

The process by which soil stabilization, excavation, offsite disposal, and backfilling would be completed under Alternative 4 are the same as described in Section 2.9.3 for Alternative 3. An ROE would be obtained from the landowners, and its conditions would be followed. Closure documentation would be completed for the remedial action.

Based on the results of the RI, the extent of MC-contaminated soil was determined to cover 20.45 acres to a depth of 2 feet and cover 3 acres to a depth of 1 foot. Soil excavation will result in a minimum disposal volume of 71,116 BCY of soil. The removal action is estimated to take approximately 311 days, which includes one (1) day for characterization sampling, ten (10) days for vegetation clearing, one (1) week for pre-, post-, and final-topographic surveys, fifty-seven (57) weeks for stabilization, excavation, XRF sampling/, transport and disposal, one (1) week for confirmation sampling, and one (1) week for site restoration.

Alternative 4 has the potential to achieve conditions that allow for UU/UE at the MRS; therefore, Five-Year Reviews are not required.

2.10 Summary of Comparative Analysis of Alternatives for MC-Contaminated Media

During the process of selecting the most appropriate remedial alternative for Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02), a comparative analysis of the remedial alternatives was performed (**Table 2-4**). Section §300.430(e) of the NCP lists nine CERCLA criteria against which each remedial alternative must be assessed. The NCP (Section 300.430[f]) states that the first two criteria, protection of human health and the environment and compliance with ARARs, are 'threshold criteria,' that must be met by the selected remedial action unless a waiver is granted under Section 121(d)(4) of CERCLA. The next five criteria are 'primary balancing criteria', and the trade-offs within this group must be balanced.

The selected alternative is the alternative that is protective of human health and the environment, complies with ARARs, and provides the best combination of primary balancing attributes. The final two criteria, state and community acceptance, are 'modifying criteria', which have been considered based on any comments submitted by the public on the PP. The defining characteristics of the nine CERCLA criteria are listed below.

Threshold Criteria:

- Overall protection of human health and the environment – determines whether an alternative eliminates, reduces, or controls threats to public health and the environment.
- Compliance with or an applicable waiver of ARARs – evaluates whether the alternative meets selected federal and state environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.

Balancing Criteria:

- Long-term effectiveness and permanence – considers the ability of an alternative to maintain protection of human health and the environment over time.
- Reduction of toxicity, mobility, or volume (TMV) through treatment – evaluates an alternative's use of treatment technologies to reduce the TMV of a contaminant at a site.
- 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.
- Implementability – considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
- Cost – includes estimated capital and annual O&M costs. Cost estimates are expected to be accurate within a range of +50 percent to –30 percent.

Modifying Criteria

- State acceptance – considers whether the State agrees with the remedial alternative.
- Community acceptance – considers whether the local community agrees with the remedial alternative. Comments received on the PP are an important indicator of community acceptance.

TABLE 2-4 COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES FOR MC-CONTAMINATED MEDIA

Screening Criteria		Alternative 1 No Action	Alternative 2 LUCs	Alternative 3 Target Berm DUs: Soil Stabilization, Excavation, and Off-Site Disposal as Non-Hazardous Waste with MRS-wide LUCs	Alternative 4 All DUs: MC-contaminated Soil Stabilization and Excavation with Off-Site Disposal as Non-Hazardous Waste
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 (x1,000)	$0	$153	$2,016	$25,150
Modifying (a)	State Acceptance	TBD	TBD	TBD	TBD
	Community Acceptance	TBD	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)
ARAR = Applicable or Relevant and Appropriate Requirement
LUC = Land Use Control
TMV = toxicity, mobility, or volume

2.10.1 Overall Protection of Human Health and the Environment

Alternatives 3 and 4 are protective of human health and the environment by reducing or eliminating the MC-contaminated soil from the Camp O'Ryan Rifle Range MRS 2. Alternatives 1 and 2 do not provide protection of both human health and the environment. Alternative 2 does not eliminate the possibility of lead leaching and migrating into the environment or mitigate the risk to potential future residents from contacting/handling contaminated soil. Alternative 4 would be protective of human health and ecological receptors because the MC-contaminated soil would be removed from all MC-impacted soil across the MRS, preventing the lead from leaching into the environment, and therefore achieve UU/UE.

2.10.2 Compliance with Applicable or Relevant and Appropriate Requirements

There are no ARARs associated with Alternative 1. The NYSDECs SCO for Unrestricted Use for lead is 63 mg/kg. The cleanup objective is based on complete exposure pathways and is considered by NYSDEC to be protective for human receptors. MC-contaminated soil will remain in-situ for Alternatives 1 and 2. Partial or complete removal of MC-contaminated soil under Alternatives 3 and 4 would be performed to comply with all ARARs. In addition to ARARs, other non-promulgated advisories or guidance documents, such as the NYSDEC SCOs, that are to be considered may be used to supplement an ARAR.

2.10.3 Long-Term Effectiveness and Permanence

Alternatives 3 and 4 would provide the most long-term effectiveness and permanence. Alternatives 1 and 2 would not be effective or permanent in the long-term. The long-term effectiveness of Alternative 2 is contingent upon the cooperation and active participation of the existing landowners/users, NYSDEC, and other government agencies. Maintaining the LUCs in the long term is physically and administratively feasible. Alternative 2 does not eliminate the possibility of lead leaching and migrating into the environment or mitigate the risk to potential future residents from contacting/handling contaminated soil. Alternatives 3 and 4 would provide long-term effectiveness in reducing or eliminating the possibility of lead leaching and migrating into the environment from the associated excavation areas. Alternative 4 would be highly effective and permanent as all MC-impacted soil would be removed, which could allow for UU/UE of the MRS.

2.10.4 Reduction of TMV through Treatment

Alternatives 1 and 2 would not reduce the TMV at the MRS. Alternatives 3 and 4 would satisfy the statutory preference for treatment as a principal element of the remedy and would reduce the mobility of leachable lead. Alternative 3 would be moderately effective in meeting the removal action objectives and would reduce the toxicity of the contaminated soil at Target Berm – Ponded DU (the only DU identified with unacceptable risk to human health) because the material will be stabilized, removed, and disposed off-site in a RCRA Subtitle D landfill. Alternative 4 would be very effective in meeting the removal action objectives and would reduce the toxicity of the contaminated soil throughout the Camp O'Ryan Rifle Range MRS 2 because all contaminated material would be stabilized and disposed off-site in a RCRA Subtitle D landfill.

2.10.5 Short-Term Effectiveness

Alternative 2 would be the most effective in the short term, whereas Alternatives 3 and 4 would be less effective in the short term due to required site disturbance and handling of the contaminated soil. Because there are minimal to no construction or operation activities associated with Alternatives 1 or 2, there would be no additional risks to the community, site workers, or the environment. Approximately 6 months would be required to establish LUCs associated with Alternative 2, and the behavior of site workers and visitors would be expected to change immediately thereafter. Exposure to contaminants during implementation of the in-situ treatment portion of Alternatives 3 and 4 would be minimal because the material handling would be conducted using appropriate equipment and following proper health and safety procedures. Alternatives 3 and 4 consist of transporting the soil off-site and creates additional potential risks that must be evaluated.

2.10.6 Implementability

Alternative 1 would be implementable as it requires no action. Alternative 2 can be implemented by NYSDEC with the cooperation of the landowners; there are minimal technical difficulties associated with this alternative, and the materials and services needed to implement this alternative are available. Alternative 3 is considered relatively easy to implement, technically and administratively, as the excavation area is relatively small and shallow. Some vegetation clearing would be required to create access to the DUs for treatment and excavation. Alternative 4 is considered difficult to implement technically, administratively, and with heightened safety concerns due to the large area of excavation, the dense vegetation throughout the Camp O'Ryan Rifle Range MRS 2, the steep slopes across the Target Berm – Hillside DU, and the length of time required to complete this alternative. Alternatives 3 and 4 require approval and acceptance of all excavated material as potentially hazardous material by a disposal facility. Successful implementation of Alternatives 2, 3 and 4, is contingent upon the cooperation and active participation of the private landowners, NYSDEC, and other government agencies to protect the public from MC hazards in the short term during remedy implementation and in the long-term where LUCs are applied.

2.10.7 Cost

The net present value costs for each remedial alternative are presented in **Table 2-6** below. Remedy costs are projected over a duration of thirty (30) years. As shown in this table, Alternative 1 incurs no cost to implement, while Alternative 4 would be the costliest to implement.

TABLE 2-5 POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Standard, Requirement, Criteria or Limitation	Citations	Description	ARAR Type	Applicability to Site
Soil and Hazardous Waste Management				
RCRA Miscellaneous Units	40 CFR Part 264.601, Subpart X*	Environmental performance standards that require miscellaneous units be located, designated, constructed, operated, maintained, and closed in a manner that will prevent any release that may have adverse effects on human health and the environment.	Chemical and Action	ARAR/Applicable to soils containing elevated levels of lead at concentrations that may affect human health.
RCRA Military Munitions Rule	40 CFR Part 266, Subpart M*	Identifies when military munitions become solid waste, and, if these wastes are also hazardous under this subpart or 40 CFR part 261, the management standards that apply to these wastes.	Action	ARAR/Applicable if military munitions (i.e., soil containing lead from small arms waste) meeting the definition of a solid waste are encountered during the remedial action.

Notes:
* = The ARARs include 40 CFR 266 Subpart M and 264.601 Subpart X, to the extent that there is a cleanup standard, standard of control, or other substantive requirement that specifically addresses a hazardous substance, pollutant or contaminant, remedial action, location, or other circumstance found at the Camp O'Ryan Rifle Range MRS 2.
RCRA = Resource Conservation and Recovery Act
USEPA = United States Environmental Protection Agency
MRS = Munitions Response Site
MC = Munitions Constituents

TABLE 2-6 COST COMPARISON OF REMEDIAL ACTION ALTERNATIVES FOR SOIL CONTAINING ELEVATED MC

Cost	Alternative 1 No Action	Alternative 2 LUCs	Alternative 3 Target Berm DUs: Soil Stabilization, Excavation, and Off-Site Disposal as Non-Hazardous Waste with MRS-wide LUCs	Alternative 4 All DUs: MC-Contaminated Soil Stabilization and Excavation with Off-Site Disposal
Capital	$0	$42,698	$1,905,665	$25,150,108
O&M / Periodic	$0	$110,260	$110,260	$0
Total	**$0**	**$152,598**	**$2,015,925**	**$25,150,108**
Total Present Value	$0	$128,356	$1,991,319	$25,150,108

Notes:
LUCs = Land Use Controls
MC = munitions constituents
MRS = Munitions Response Site
O&M = operations and maintenance

The cost for each alternative includes:

- Alternative 1 – No Action: No associated capital, O&M, or periodic costs.
- Alternative 2 – LUCs: Capital costs include implementation of an environmental covenant (e.g., deed restriction) and the installation of warning signs. Periodic costs for Five-Year Reviews include site inspections and reporting. The cost estimate is based on a duration of 30 years and the best available information regarding the anticipated scope of the remedial alternative.
- Alternative 3 – Target Berm DUs: Soil Stabilization, Excavation, and Off-Site Disposal as Non-Hazardous Waste with MRS-wide LUCs: Capital costs include labor and materials for mechanized excavation, stabilization and disposal of lead-contaminated soil, as well as vegetation removal, oversight of surveying by subcontractors, and required field quality and safety equipment. Includes completion of a Soil Removal Work Plan and Site-Specific Final Report, as well as additional physical and legal LUCs. Periodic costs for Five-Year Reviews include site inspections and reporting. The cost estimate is based on a duration of 30 years and the best available information regarding the anticipated scope of the remedial alternative.
- Alternative 4 – All DUs: MC-Contaminated Soil Stabilization and Excavation with Off-Site Disposal: Capital costs include labor and materials for mechanized excavation, stabilization and disposal of lead-contaminated soil, as well as vegetation removal, oversight of surveying by subcontractors, and required field quality and safety equipment. Includes completion of a Soil Removal Work Plan and Site-Specific Final Report, as well as additional physical and legal LUCs. There are no periodic or annual costs associated with this alternative.

2.10.8 State Acceptance

NYSDEC and NYSDOH comments on the PP concerning the implementation of Alternative 3 were resolved during regulatory review. NYSDEC and NYSDOH support the implementation of Alternative 3 at the Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02).

2.10.9 Community Acceptance

No comments were received from community members or the property owners, and there were no requests for a public meeting. No change to the proposed remedy is warranted based on the community response.

2.11 Principal Threat Wastes for Elevated MC in Soil

MC-contaminated media present at the Camp O'Ryan Rifle Range MRS 2 may constitute a principal threat to human health due to the potential exposure to lead in soil. The ARNG will determine if the material encountered poses a risk and should be classified as a Principal Threat Waste (PTW), as defined by CERCLA, the NCP, and USEPA guidance. If the material is determined to be a PTW, the ARNG will take the necessary actions to ensure protectiveness of human health and the environment to address unacceptable risks posed by the material designated as a PTW.

The principal threat identified at the Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02) is addressed by Alternative 3. The alternative addresses the potential for PTW to exist by taking actions to avoid such risk by physically removing MC-contaminated soil from the MRS at the DUs identified as having unacceptable risk to human health.

2.12 Selected Remedy

The primary indicator of remedial action performance will be satisfying the RAO for the MRS. Performance measures are defined herein as the RAO plus the required actions to achieve the objectives, as defined in this section. It is anticipated that successful implementation, operation, maintenance, and completion of the performance measures will achieve a protective and legally compliant remedy for the Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02).

Alternative 3 – Target Berm DUs: Soil Stabilization, Excavation, and Off-Site Disposal as Non-Hazardous Waste with MRS-wide LUCs was selected based on its ability to achieve the RAO, and its cost effectiveness. The selected remedy focuses on providing effective control and elimination in mobility and toxicity by stabilizing MC in the soil and removing the source of MC-contaminated soil from the MRS.

2.12.1 Remedy Cost Estimate Summary

The estimated total cost of Alternative 3 is $2,015,925. This cost is an order-of-magnitude engineering cost estimate that is expected to be within +50 to -30 percent of the actual project cost. The cost estimates include the total for implementation of the MC-contaminated soil excavation and disposal. For cost-estimation purposes, it is estimated that soil stabilization will be successful, and the soil removed will be disposed of as non-hazardous waste. Changes in the costs are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. Major changes may be documented in the form of a memorandum in the Administrative Record File, an Explanation of Significant Differences, or a ROD amendment.

2.12.2 Expected Outcomes of Selected Remedy

The expected outcome of Alternative 3 will be to reduce exposure to MC-contaminated media to human receptors. Alternative 3 does not achieve UU/UE, but it does remove MC from soil at the only DU where unacceptable risk to human health was identified at the Camp O'Ryan Rifle Range MRS 2.

2.13 Statutory Determinations

The selected remedy for the MRS is protective of human health and the environment, complies with federal and state requirements that are ARARs (unless justified by a waiver), is cost effective, and uses permanent solutions and alternative treatment technologies to the maximum extent practicable.

The ARNG and NYSDEC have determined that the selected remedy meets the requirements of CERCLA §121 and the NCP. Based on the information available at this time, the ARNG and NYSDEC believe the selected remedy will be protective of human health and the environment, will comply with ARARs, will be cost-effective, and will utilize permanent solutions to the maximum extent practicable. This selected remedy also satisfies the statutory preference for treatment as a principal element of the remedy (i.e., reduces the TMV of hazardous substances, pollutants, or contaminants as a principal element through treatment).

2.13.1 Protection of Human Health and the Environment

The selected remedy will protect human health and the environment by permanently removing MC-contaminated soil from the Camp O'Ryan Rifle Range MRS (NYHQ-008-R-02) where unacceptable risk to human health was identified, and by implementing LUCs across the entire MRS.

2.13.2 Compliance with Applicable or Relevant and Appropriate Requirements

Section 121(d) of CERCLA and NCP 40 CFR §300.430(f)(1)(ii)(B) state that on-site remedial actions selected in a ROD must attain those ARARs that are identified at the time of ROD signature or provide grounds for invoking a waiver under §300.430(f)(1)(ii)(C). Applicable requirements were previously defined in **Section 2.10.2**.

Table 2-5 summarizes the ARARs for the selected remedy at the Camp O'Ryan Rifle Range MRS 2. The selected remedy complies with the chemical-specific, location-specific, and action-specific ARARs. The implementation of the remedy is required to meet the substantive portions of these requirements at agreed-upon points of compliance.

2.13.3 Cost Effectiveness

In the ARNG's judgement, the selected remedy is cost-effective and represents a reasonable value for the money to be spent. In making this determination, the following definition was used: "A remedy shall be cost-effective if its costs are proportional to its overall effectiveness" (40 CFR 300.430[f][1][ii][D]). This determination was accomplished by evaluating the "overall effectiveness" of those alternatives that satisfy the threshold criteria (i.e., protection of human health and the environment).

Overall effectiveness was evaluated by assessing three of the five balancing criteria in combination: long-term effectiveness and permanence; reduction in TMV through treatment; and

short-term effectiveness. Overall effectiveness was then compared to costs to determine cost-effectiveness. The overall effectiveness of the selected remedy for the Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02) was demonstrated in the comparative analysis of alternatives (**Section 2.10**). The estimated present value cost of the selected remedy (in 2021 dollars) is $2,015,925. Alternative 3 reduces potential human exposure to MC-contaminated soil by direct removal and disposal of source area contamination. Alternative 3 provides achievement of the RAO at a reasonable cost for implementation, making it the most cost-effective alternative to achieve the RAO for this MRS.

2.13.4 Use of Permanent Solutions and Alternative Treatment Technologies

The ARNG has determined that the selected remedy provides the best balance of trade-offs among the alternatives considered with respect to the five-balancing criteria set out in NCP §300.430(f)(1)(i)(B). The selected remedy represents the maximum extent to which permanence can be practicably applied at the Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02). NCP §300.430(f)(1)(ii)(E) provides that the balancing will emphasize the factors of "long-term effectiveness" and "reduction of toxicity, mobility or volume through treatment", and it will consider the preference for treatment and bias against off-site disposal.

The ARNG has determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be used in a practicable manner at the MRS. Of the alternatives that are protective of human health and the environment and comply with ARARs, the ARNG has determined that the selected remedy provides the best balance of trade-offs in terms of the five balancing criteria, while also considering the (a) statutory preference for treatment as a principal element; (b) the bias against off-site treatment; and (c) disposal and considering state and community acceptance.

The selected remedy manages the potential risks to human health and the environment by permanently removing MC-contaminated soil from the MRS where unacceptable risk to human health was identified, and it results in a permanent reduction in exposure that can be implemented in a relatively short period of time. The selected remedy manages the potential risk for human exposure to MC in soil where no unacceptable risk was identified through the implementation of physical and legal LUCs. The selected remedy is technically and administratively feasible and provides the best balance of long-term effectiveness and reduction of risk to human health.

2.13.5 Preference for Treatment as a Principal Element

The selected remedy and the remedial action at the Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02) focus on treatment of the principal site threat (i.e., lead in source area sediment and soil) by stabilizing MC in media and removing the source of MC-contaminated soil from the MRS. The Selected Remedy satisfies the statutory preference for treatment as a principal element of the remedy. The selected remedy would subject soil with lead concentrations above landfill disposal criteria to in-situ soil stabilization prior to excavation and off-site disposal at an approved facility.

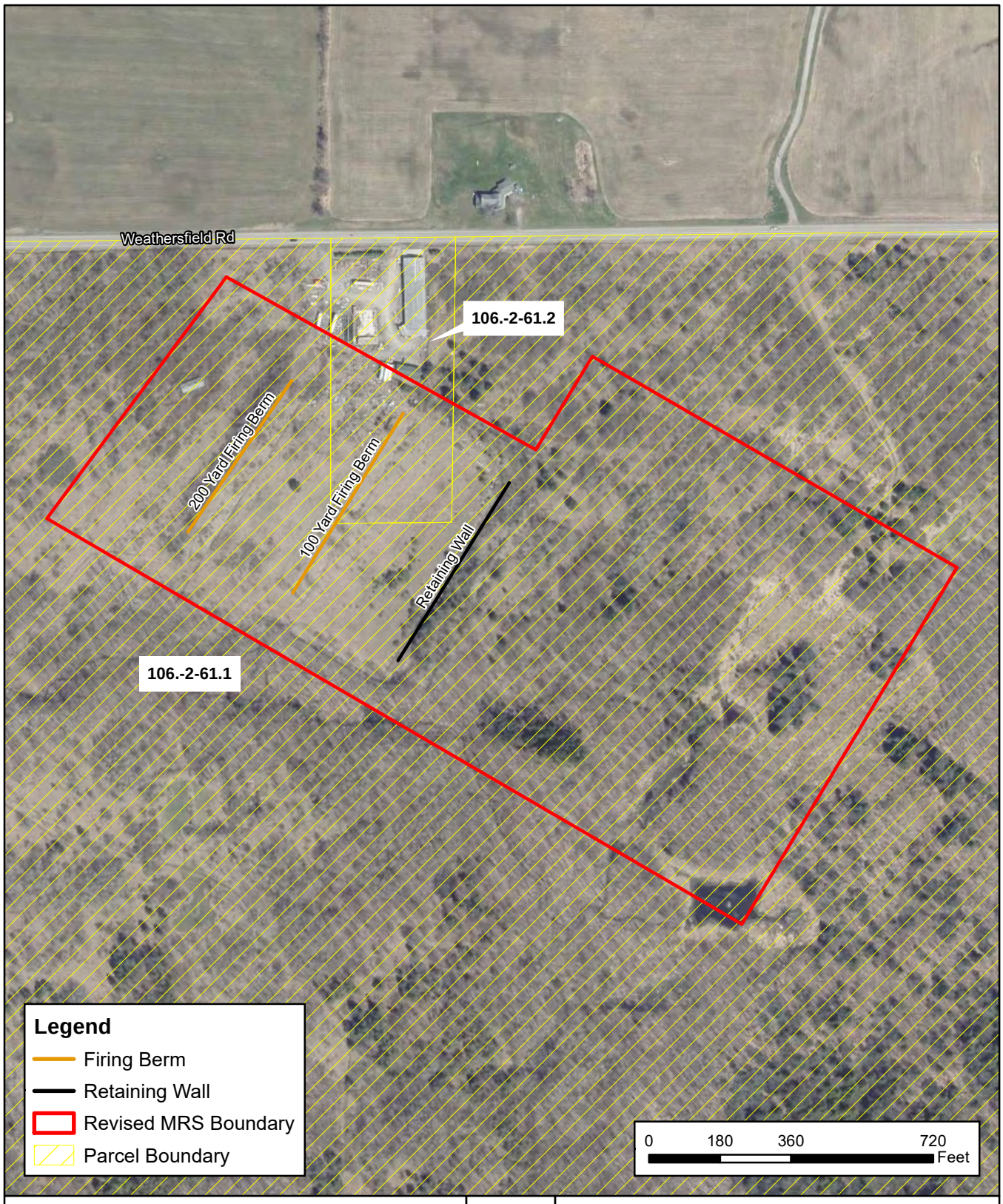
2.13.6 Recurring Review Requirements

Pursuant to CERCLA §121(c) and NCP §300.430(f)(5)(iii)(C), Five-Year Reviews are required because the selected remedy will not achieve UU/UE. Five-Year Reviews are required to ensure that the remedy continues to achieve the RAO.

2.14 Documentation of Significant Changes

ARNG released the PP (AECOM, 2022b) for public comment and identified Alternative 3 – Target Berm DUs: MC-Contaminated Soil Stabilization and Excavation with Off-Site Disposal as Non-Hazardous Waste with MRS-wide LUCs as the preferred alternative for the Camp O'Ryan Rifle Range MRS 2 (NYHQ-008-R-02) to address MC-contaminated media. No comments were received from the community or the landowner, and there were no requests for a public meeting. No change to the proposed remedy is warranted based on the community response.

Site conditions, as well as current and potential future land and resource uses, have not changed at the MRS. Therefore, ARNG has determined that no significant changes to the selected remedy were necessary. Accordingly, ARNG has not made any significant changes to the preferred remedy identified in the PP.



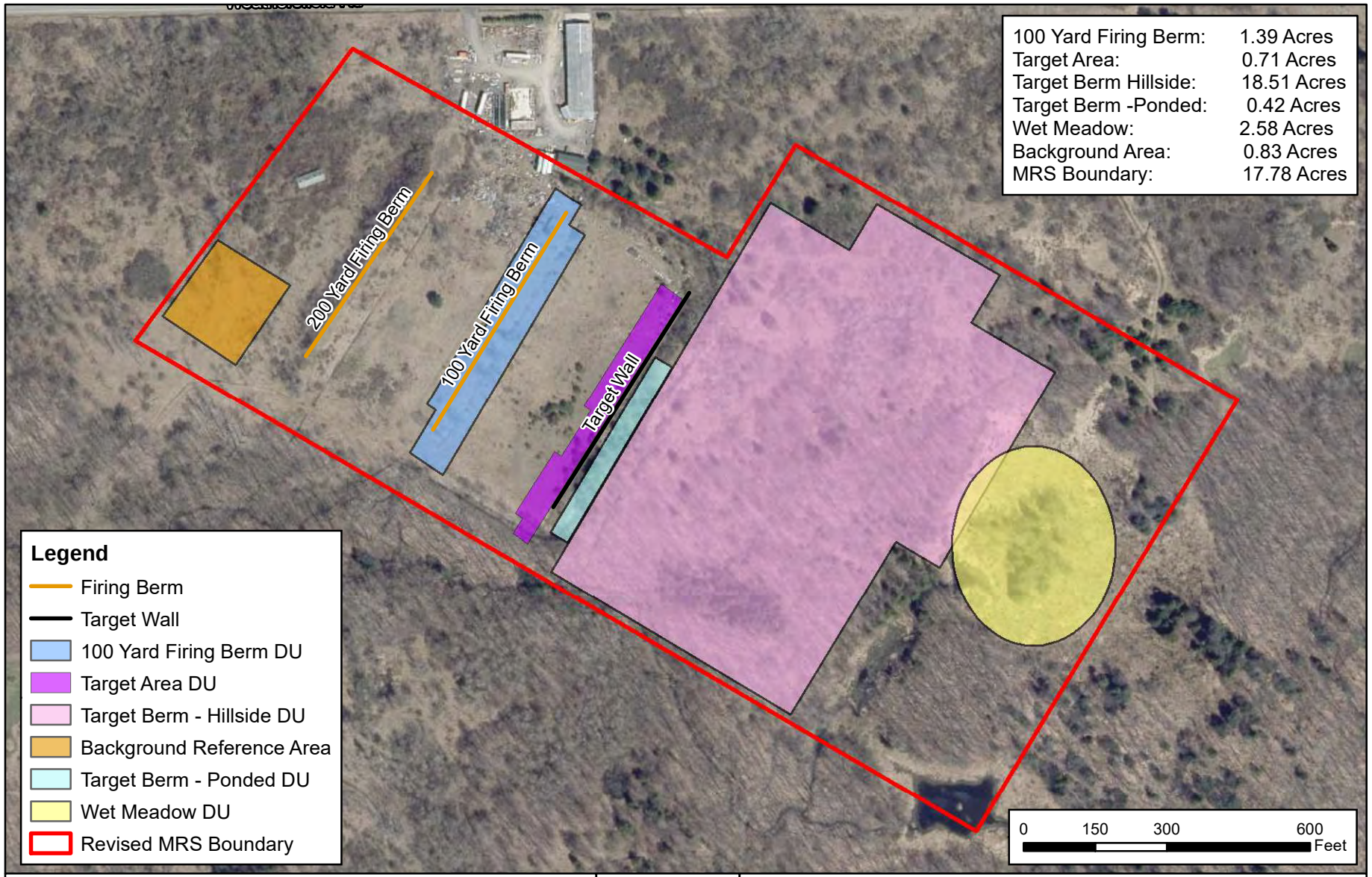
CLIENT	Army National Guard			
PROJECT	Record of Decision for Camp O'Ryan, NY MRS			
REVISION NO	0	GIS BY	MS	5/19/2022
SCALE	1:4,320	CHK BY	JW	5/19/2022
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	LS	5/19/2022

N

Camp O'Ryan Rifle Range MRS 2 Layout

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 2-1



CLIENT	Army National Guard			
PROJECT	Record of Decision for Camp O'Ryan, NY MRS			
REVISION NO	0	GIS BY	MS	5/19/2022
SCALE	1:3,600	CHK BY	JW	5/19/2022
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	LS	5/19/2022

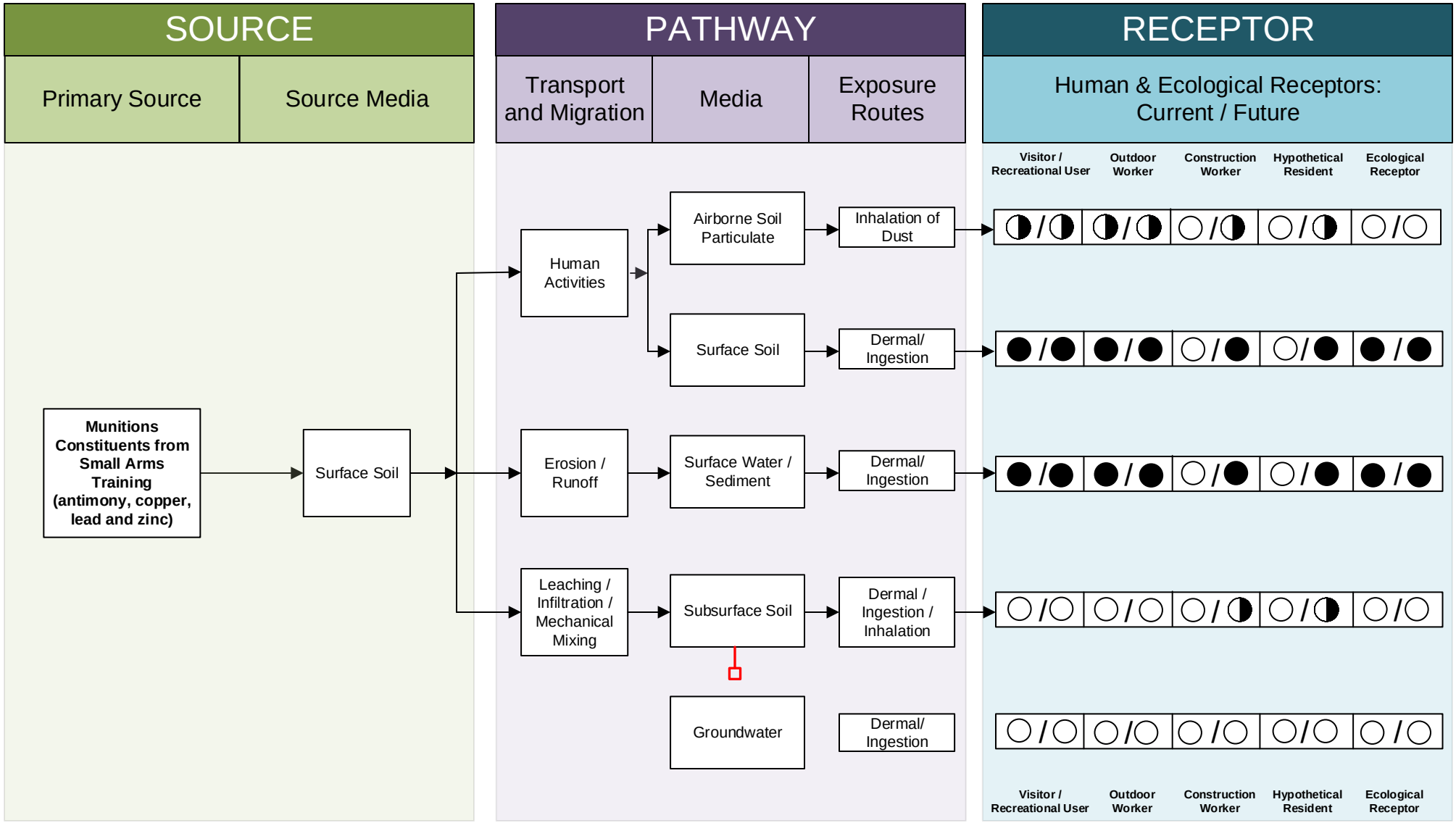
N

Camp O'Ryan Rifle Range MRS 2 DUs

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 2-2

Prepared for: Army National Guard



LEGEND

- Flow-Chart Stops
- Flow-Chart Continues
- Partial / Possible Flow
- Incomplete Pathway
- Potentially Complete Pathway
- Complete Pathway

Figure 2-3
Revised Conceptual Site Model Diagram
Camp O'Ryan Rifle Range MRS 2, New York

CLIENT	Army National Guard			
PROJECT	Record of Decision for Camp O'Ryan, NY MRS			
REVISION NO	0	GIS BY	MS	5/19/2022
SCALE	1:3,600	CHK BY	JW	5/19/2022
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	LS	5/19/2022

N

Camp O'Ryan Rifle Range MRS 2: Alternative 3 Excavation Area

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 2-4

Prepared for: Army National Guard

3 Responsiveness Summary

This section provides a summary of the public comments regarding the PP for the preferred alternative at the Camp O'Ryan Rifle Range MRS 2 and the ARNG response to comments. The public comment period was announced through a notice that was placed in the newspaper the *Batavia Daily News* on 22 March 2022 (**Appendix A**). The public comment period was held from 22 March 2022 through 21 April 2022. No public comments or questions were received during the public comment period, and the community did not request a meeting.

3.1 Stakeholder Comments and Lead Agency Responses

No issues with the selected remedial alternative were identified by the public or the landowners. During PP development, the NYSDEC requested that the excavation area originally identified in Alternative 3 for the Target Berm – Ponded DU area should be expanded to include the adjoining lower reach of the Target Berm – Hillside DU. The ARNG concurred and the expanded excavation area was included in the Final PP as documented in the 22 April 2022 teleconference notes (**Appendix A**).

3.2 Technical and Legal Issues

No technical or legal issues were identified during the public review period of the PP.

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4 References

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Appendix A: Stakeholder Participation and Response

NYSDEC and NYSDOH email of approval for the Draft Final PP

Witte, Joe

From: Melnyk, Eugene W (DEC) <eugene.melnyk@dec.ny.gov>
Sent: Tuesday, May 24, 2022 9:22 AM
To: Witte, Joe; allison.l.burke2.mil@army.mil; Haines, John B CTR (USA); Austin, Gregory T NFG NG NYARNG (USA); Lawrence, Stephen (HEALTH)
Cc: Stenberg, Laurie; Caprio, Andrea (DEC); Swartwout, John (DEC); Bethoney, Charlotte M (HEALTH)
Subject: [EXTERNAL] RE: (W9133L-14-D-0001/0006): Camp O'Ryan MRS 2, NY (NYSDEC # 961012) - Revised Draft Final Proposed Plan and RTCs

Joe/John:
NYSDEC and NYSDOH have reviewed the revised Proposed Plan dated May 2022, and do not have any further technical comments with this document.

As an editorial comment, please add "NYSDEC Site No. 961012" to the document title, just below the ARNG site number. It is good that the site number is noted in the body of the first paragraph of this page, but adding the site NYSDEC site number to the title makes it more prominent.

If you have any questions regarding the above, please contact us.

Sincerely
Gene

Eugene Melnyk, PE
Project Manager
Division of Environmental Remediation

New York State Department of Environmental Conservation
700 Delaware Avenue, Buffalo, NY 14209
P: 716-851-7220 | F: 716-851-7226 | eugene.melnyk@dec.ny.gov

NEW YORK STATE | Department of Environmental Conservation

www.dec.ny.gov |

From: Witte, Joe <joe.witte@aecom.com>
Sent: Tuesday, May 10, 2022 3:01 PM
To: allison.l.burke2.mil@army.mil; Haines, John B CTR (USA) <john.b.haines.ctr@army.mil>; Austin, Gregory T NFG NG NYARNG (USA) <gregory.t.austin.nfg@army.mil>; Melnyk, Eugene W (DEC) <eugene.melnyk@dec.ny.gov>; Lawrence, Stephen (HEALTH) <Stephen.Lawrence@health.ny.gov>
Cc: Stenberg, Laurie <laurie.stenberg@aecom.com>
Subject: (W9133L-14-D-0001/0006): Camp O'Ryan MRS 2, NY (NYSDEC #961012) - Revised Draft Final Proposed Plan and RTCs

Good afternoon,

Please find attached responses to comments (RTCs) received from NYSDEC and NYSDOH on the Draft Final Camp O'Ryan Proposed Plan. The Proposed Plan has been revised based on our teleconference with NYSDEC and NYSDOH on 22 April 2022. Two versions of the revised Draft Final Proposed Plan are provided: one version highlights all changes made for ease of review; the other version does not. If you are satisfied with the revised document we will finalize it and send to the entire team and landowners.

As discussed during our teleconference, the contract for this work expires in July 2022. Your expedited review of this revised version of the report would be appreciated. The Draft Record of Decision, which is the document that formally establishes the preferred remedial alternative and follows the Final Proposed Plan, has been started in the meantime.

Thank you,

Joe Witte
Environmental Scientist, Remediation, DC Metro Region
D +1-301-944-3617
M +1-301-300-9873
joe.witte@aecom.com

AECOM
12420 Milestone Center Drive
Suite 150
Germantown, MD 20876, USA
T +1-301-250-2934
aecom.com

Draft Final PP Teleconference Meeting Minutes

Camp O'Ryan Rifle Range Munitions Response Site (MRS) 2
Draft Final Proposed Plan Teleconference with New York State Department of Environmental Conservation (NYSDEC) and Department of Health (NYSDOH)
Summary Notes
Friday, 22 April 2022
1400 to 1430 hrs

Participants:

Name	Affiliation	E-Mail
John Haines	ARNG G9	john.b.haines.ctr@army.mil
Mark Leeper	HQDA	mark.s.leeper.civ@army.mil
Greg Austin	NYARNG	gregory.t.austin.nfg@army.mil
Eugene Melnyk	NYSDEC	eugene.melnyk@dec.ny.gov
John Swartwout	NYSDEC	john.swartwout@dec.ny.gov
Stanley Radon	NYSDEC	stanley.radon@dec.ny.gov
Michael Cruden	NYSDEC	michael.cruden@dec.ny.gov
Andrea Caprio	NYSDEC	andrea.caprio@dec.ny.gov
Kevin Glaser	NYSDEC	not available
Stephen Lawrence	NYSDOH	stephen.lawrence@health.ny.gov
Charlotte Bethoney	NYSDOH	charlotte.bethoney@health.ny.gov
Laurie Stenberg	AECOM	laurie.stenberg@aecom.com
Joe Witte	AECOM	joe.witte@aecom.com

I. Introduction

The meeting began at 1400 hours Eastern Standard Time (EST) with introductions. Members of the extended project team from the Army National Guard (ARNG), New York ARNG (NYARNG), NYSDEC, NYSDOH, and AECOM participated. The purpose of the call was to discuss comments provided by NYSDEC and NYSDOH on the Camp O'Ryan Rifle Range MRS 2 Draft Final Proposed Plan (PP). The information below is a summary of the main topics discussed and conclusions reached.

II. Camp O'Ryan Rifle Range MRS 2 (NYSDEC ID 961012) Discussion

Preferred Alternative:

Alternative 3 – Target Berm - Ponded Decision Unit (DU): Soil Stabilization, Excavation, and Off-site Disposal as Non-Hazardous Waste with Additional Land Use Controls (LUCs)

Gene Melnyk (NYSDEC) stated that the NYSDEC and NYSDOH consider the Preferred Alternative identified in the PP to be incomplete. The Preferred Alternative comprises excavation of impacted soil and sediment at the Target Berm – Ponded DU and additional LUCs for the entire MRS. NYSDEC recommends including approximately 1.9 additional acres across the lower reach of the Target Berm – Hillside DU in the excavation footprint. A figure was provided showing the recommended additional excavation area. This recommendation is based on the concentrations of munitions constituents observed in discrete samples collected by the NYSDEC during a previous investigation. It was noted that the samples collected during the NYSDEC investigation were not sieved to remove bullet fragments.

John Haines (ARNG G9) stated that Alternative 3 will be revised to expand the Target Berm – Ponded DU excavation footprint to include the area outlined in NYSDEC's memo ("lower reach of the Target Berm-Hillside DU"). The new total excavation area for Alternative 3 is approximately 2.32 acres. The cost associated with the revised alternative will be re-evaluated to account for

additional soil volume, clearing, and restoration. The Draft Final PP will be revised to include the revised excavation footprint and submitted for NYSDEC backcheck review. The MRS private landowners must approve the revised excavation area before remedial action can begin.

LUCs

Laurie Stenberg (AECOM) clarified that the LUCs included in both Alternatives 2 and 3 address all MRS DUs, not just the excavated area. The revised PP will clarify the use of LUCs across the MRS.

No additional LUCs beyond those described in the Draft Final PP are necessary. While the ARNG cannot enforce LUCs on private property, NYSDEC stated that LUCs are potentially enforceable by their agency. An environmental easement and/or deed restriction may be applied to the MRS. Gene Melnyk notified the project team that a prospective buyer of property at the MRS intends to build a residence there.

Applicable or Relevant and Appropriate Requirements (ARARs)

Per ARNG legal guidance, the Draft Final PP includes only federal standards as ARARs. The New York Soil Cleanup Objectives (SCOs) used for excavation delineation supplement the federal ARARs and are included as To Be Considered (TBC).

John Haines noted that ARARs may be reconsidered during the development of the Record of Decision (ROD) which formally establishes the selected remedial action or during remedial design.

Public Meeting

John Haines indicated that the no comments or requests for a public meeting were received during the Public Comment Period that ended on 21 April 2022. NYSDEC concurred that based on the proposed revisions to the Preferred Alternative and lack of community request, a public meeting is not needed at this time.

The call ended at 1430 hours EST.

Action Items:

AECOM

- Provide revised Draft Final PP to NYSDEC and NYSDOH for review.
- Provide written responses to comments to NYSDEC and NYSDOH for review.

dddc346c-6737-4c49-aaaf-d4a1d360187c joe.witte@aecom.com

AFFIDAVIT OF PUBLICATION

Batavia Daily News

State of New York,

County of, Wyoming

The undersigned is the authorized designee of **Batavia Daily News**, a **Daily** Newspaper published in **Wyoming** County, New York. I certify that the public notice, a printed copy of which is attached hereto, was printed and published in this newspaper on the following dates:

March 22, 2022

This newspaper has been designated by the County Clerk of **Wyoming** County, as a newspaper of record in this county, and as such, is eligible to publish such notices.

Eliot T. Putnam

Signature

Eliot T. Putnam

Printed Name

Subscribed and sworn to before me,

This 24 day of March 2022

Notary Signature

Notary Public Stamp

DOUGLAS W. REA
STATE OF NEW YORK
NOTARY PUBLIC
ALBANY
01RE6398443
MY COMMISSION EXPIRES 09/30/2023

dddc346c-6737-4c49-aaaf-d4a1d360187c joe.witte@aecom.com

AFFIDAVIT OF PUBLICATION

Batavia Daily News

Army National Guard
Seeks Public Input on Proposed Plan
For Camp O'Ryan Rifle Range MRS (NYHQ-008-R-02)
The Camp O'Ryan Rifle Range Munitions Response Site (MRS)/ NYHQ-008-R-02 was historically used by the National Guard for small arms training from 1949 to 1974 and from 1989 to 1994. The Proposed Plan (PP) provides information on how the Army National Guard (ARNG) assessed munitions constituents (MC) in environmental media at the MRS and summarizes the multiple clean up alternatives considered, how the alternatives were evaluated, and the selection of the preferred alternative. The PP identifies Alternative 3 Target Berm-Ponded Decision Unit Soil Stabilization, Excavation, and Off-site Disposal as Non-Hazardous Waste with Additional Land Use Controls (LUCs) as the preferred remedial alternative for addressing MC in environmental media at the Camp O'Ryan Rifle Range MRS. This alternative achieves the effective long-term results for ensuring the protection of human health, public safety, and the environment through the removal of affected environmental media. The ARNG is required to issue a PP and seek public comment and participation on the preferred decision.
The PP summarizes information that can be found in greater detail in the Final Remedial Investigation Report, Feasibility Study, and other relevant documents that are available upon request. 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. The public is invited to review and comment on the Camp O'Ryan Rifle Range MRS PP. The ARNG will consider all written comments or requests for a public meeting received during the public comment period (22 March 2022 through 21 April 2022) and will accept comments by e-mail or postal mail. All comments and requests must include the name, address, and telephone number of the person commenting. A public meeting will be held, if requested, to review the information provided in the PP. Public input to the PP will be documented in a Responsiveness Summary Report that will be included in a Record of Decision that documents the selected remedial action.
Written comments may be submitted to the following address:
Rob Halla

Affidavit of Publication for the Draft Final PP Public Notice in the Batavia Daily News

dddc346c-6737-4c49-aaaf-d4a1d360187c joe.witte@aecom.com

AFFIDAVIT OF PUBLICATION

Batavia Daily News

ARNG G-9, Cleanup & Restoration Branch
111 S. George Mason Drive, Arlington, VA 22204-1382
Phone: (703) 607-7995; Email: walter.r.halla2.civ@army.mil
The PP can be reviewed at the Information Repository
at:
Gainesville Town Hall
2 Toolhouse Road, Gainesville, NY 14066
Phone: 585-493-2809
To request a copy of the Camp O'Ryan Rifle Range MRS
PP and other relevant documents, contact Mr. Rob Halla.
Hard copies may be delivered for review by mail, and
electronic copies may be delivered by email.

Responses to Comments from NYSDEC on the Draft Final ROD

Responses to Comments for the
Draft Final Record of Decision for Camp O'Ryan Rifle Range MRS 2, New York
Remedial Investigation through Decision Document for Six Army National Guard Munitions Response Sites

Response Code: A = Agree with comment D = Disagree with comment C = Comment requires clarification

Comment Number	Commenter	Page(s)	Section	Line(s)	Comment	Response Code	Response
TECHNICAL COMMENTS							
EDITORIAL COMMENTS							
1	EWM	TOC-i	1.3		Change "Pittsfield" to Camp O'Ryan	A	The text has been corrected.
2	EWM	1-1	1.3	23	Change "Pittsfield" to Camp O'Ryan	A	The text has been corrected.
3	EWM	1-2	1.4 Desrcription of Selected Remedy	50-54	Though residential use SCOs may be protective of human health from exposure without having to resort to unrestricted use SCOs. It should be noted that residential use criteria restricts land use activities such as agricultural use for growing crops for human consumption or for livestock feed and grazing to ensure human health is fully protected.	A	We appreciate this distinction, and have revised the text as follows: "…It should be noted that the NYSDEC SCO for Unrestricted Use is the value for Protection of Ecological Resources. **Residential use SCOs may be protective of human health from exposure without having to resort to unrestricted use SCOs. It should be noted that residential use criteria restricts land use activities such as agricultural use for growing crops for human consumption or for livestock feed and grazing to ensure human health is fully protected.** The NYSDEC SCO for Protection of Public Health (Residential) is 400 mg/kg. Thus, it is possible for a remedial alternative to achieve protection of human health **from a direct exposure standpoint** without achieving unlimited use and unrestricted exposure (UU/UE) at the Camp O'Ryan Rifle Range MRS 2."
4	EWM	2-17	2.9 Desription of Alternatives for MC-Contaminated Media	108	The sentence notes that the MRS consists of "public" property, not owned by ARNG. It appears that the reference to to "public" property be revised to state "private" property. Please confirm the appropriate property owner designation.	A	The text has been corrected to state that the MRS consists of private property not owned by ARNG.
5	EWM	2-25	Table 2-5	Table Header and Notes	Change "Pittsfield" to Camp O'Ryan	A	The text has been corrected.

Comments Provided By:						
Initials	Name	Department/Organization	Email Address	Phone	Comments Received	Date Comments Received
EWM	Eugene Melnyk	NYSDEC	eugene.melnyk@dec.ny.gov	716-851-7220	Y	6/15/2022

Witte, Joe

NYSDEC and NYSDOH email of approval for the Draft Final ROD

From: Melnyk, Eugene W (DEC) <eugene.melnyk@dec.ny.gov>
Sent: Monday, June 20, 2022 9:23 AM
To: Witte, Joe; Haines, John B CTR (USA)
Cc: Stenberg, Laurie; Lawrence, Stephen (HEALTH); Austin, Gregory T NFG NG NYARNG (USA); Caprio, Andrea (DEC); Bethoney, Charlotte M (HEALTH); Swartwout, John (DEC); Radon, Stanley (DEC)
Subject: [EXTERNAL] Re: Camp O'Ryan MRS 2, NY (NYSDEC #961012) Draft Final Record of Decision Transmittal (W9133L-14-D-0001/0006)

Joe/John:
NYSDEC and NYSDOH have reviewed the revised Draft Final record of Decision dated June 2022, and do not have any further technical comments with this document. The minor text revisions are accepted.

If you have any questions regarding the above, please contact us.

Sincerely
Gene

Eugene Melnyk, PE
Project Manager
Division of Environmental Remediation

New York State Department of Environmental Conservation
700 Delaware Avenue, Buffalo, NY 14209
P: 716-851-7220 | F: 716-851-7226 | eugene.melnyk@dec.ny.gov
www.dec.ny.gov

****Region 9 DEC has moved! Please note our new office location as of May 9, 2022.**

From: Witte, Joe <joe.witte@aecom.com>
Sent: Thursday, June 16, 2022 12:11 PM
To: Melnyk, Eugene W (DEC) <eugene.melnyk@dec.ny.gov>
Cc: Stenberg, Laurie <laurie.stenberg@aecom.com>; Lawrence, Stephen (HEALTH) <Stephen.Lawrence@health.ny.gov>; Haines, John B CTR (USA) <john.b.haines.ctr@army.mil>; Austin, Gregory T NFG NG NYARNG (USA) <gregory.t.austin.nfg@army.mil>; Caprio, Andrea (DEC) <Andrea.Caprio@dec.ny.gov>; Bethoney, Charlotte M (HEALTH) <charlotte.bethoney@health.ny.gov>; Swartwout, John (DEC) <john.swartwout@dec.ny.gov>; Radon, Stanley (DEC) <stanley.radon@dec.ny.gov>
Subject: RE: Camp O'Ryan MRS 2, NY (NYSDEC #961012) Draft Final Record of Decision Transmittal (W9133L-14-D-0001/0006)

Good afternoon Gene,

Thank you for your expedient review. Attached are responses to NYSDEC comments as well as a red-line strike-out version of the text that incorporates the edits specified in the table. Please let us know if these if you have any remaining concerns, and if NYSDOH will be providing any separate comments. As a reminder, the review period ends today. If the responses are satisfactory, we will proceed with finalizing the ROD.

Thanks again for your continued support,

Joe Witte
Environmental Scientist, Remediation, DC Metro Region
D +1-301-944-3617
M +1-301-300-9873
joe.witte@aecom.com

AECOM
12420 Milestone Center Drive
Suite 150
Germantown, MD 20876, USA
T +1-301-250-2934
aecom.com

From: Melnyk, Eugene W (DEC) <eugene.melnyk@dec.ny.gov>
Sent: Wednesday, June 15, 2022 12:59 PM
To: Witte, Joe <joe.witte@aecom.com>; Haines, John B CTR (USA) <john.b.haines.ctr@army.mil>
Cc: Stenberg, Laurie <laurie.stenberg@aecom.com>; Lawrence, Stephen (HEALTH) <Stephen.Lawrence@health.ny.gov>; Austin, Gregory T NFG NG NYARNG (USA) <gregory.t.austin.nfg@army.mil>; billk@kingbrosconstruction.com; George, Edward <George@chaffe.com>; allison.l.burke2.mil@army.mil; Caprio, Andrea (DEC) <Andrea.Caprio@dec.ny.gov>; Bethoney, Charlotte M (HEALTH) <charlotte.bethoney@health.ny.gov>; Swartwout, John (DEC) <john.swartwout@dec.ny.gov>; Radon, Stanley (DEC) <stanley.radon@dec.ny.gov>
Subject: [EXTERNAL] RE: Camp O'Ryan MRS 2, NY (NYSDEC #961012) Draft Final Record of Decision Transmittal (W9133L-14-D-0001/0006)

Joe/John:
Attached is the comment matrix spreadsheet for the Camp O'Ryan Rifle Range MRS-2 ROD. There are editorial corrections needed for the site name, clarification of "public" versus "private" ownership of the MRS, and a commentary on the human health protectiveness of achieving NYS "residential" use soil criteria.

If you have any questions concerning the above, please contact us.

Sincerely
Gene

Eugene Melnyk, PE
Project Manager
Division of Environmental Remediation

New York State Department of Environmental Conservation
700 Delaware Avenue, Buffalo, NY 14209
P: 716-851-7220 | F: 716-851-7226 | eugene.melnyk@dec.ny.gov

www.dec.ny.gov | |

FrJohom: Witte, Joe <joe.witte@aecom.com>
Sent: Thursday, June 02, 2022 3:30 PM
To: allison.l.burke2.mil@army.mil; Haines, John B CTR (USA) <john.b.haines.ctr@army.mil>; Austin, Gregory T NFG NG NYARNG (USA) <gregory.t.austin.nfg@army.mil>; Melnyk, Eugene W (DEC) <eugene.melnyk@dec.ny.gov>; Lawrence, Stephen (HEALTH) <Stephen.Lawrence@health.ny.gov>; George, Edward <George@chaffe.com>; billk@kingbrosconstruction.com
Cc: Stenberg, Laurie <laurie.stenberg@aecom.com>
Subject: Camp O'Ryan MRS 2, NY (NYSDEC #961012) Draft Final Record of Decision Transmittal (W9133L-14-D-0001/0006)

Good afternoon,

In accordance with our project procedures, this email serves to document the electronic transmittal of the Draft Final Record of Decision for the Camp O'Ryan Rifle Range Munitions Response Site in New York (NYSDC #961012). An electronic copy of the document is attached to this email along with a transmittal letter and comment response table. Please let me know if you have any trouble receiving the document.

Comments from the NYSDEC, NYSDOH, and the MRS landowners (the Edward George Estate and Mr. William King) are respectfully requested by Thursday, 16 June 2022. We are asking for your expedited review because the project contract expires soon. Please provide comments on the attached comment response table.

We appreciate the opportunity to serve the ARNG. Please let us know if you have any questions or concerns.

Thank you,

Joe Witte
Environmental Scientist, Remediation, DC Metro Region
M +1-301-300-9873
joe.witte@aecom.com

AECOM
12420 Milestone Center Drive
Suite 150
Germantown, MD 20876, USA
T +1-301-250-2934
aecom.com

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