Final

EXPLANATION OF SIGNIFICANT DIFFERENCES
(Acreage and Cost Increase for Remedy)

NELLIS SMALL ARMS RGE AX

UNIVERSITY OF NEVADA – LAS VEGAS STUDY AREA

MUNITIONS RESPONSE SITE 02

PROJECT NUMBER – J09NV051002

CLARK COUNTY, NEVADA

U.S. Army Corps of Engineers
Los Angeles District
915 Wilshire Blvd.
Los Angeles, CA 90017

July 2025

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I. INTRODUCTION TO THE SITE AND STATEMENT OF PURPOSE

A. Site Name, Location, and Brief Description

The Formerly Used Defense Site (FUDS), Nellis Small Arms Range (RGE) Annex (AX), University of Nevada, Las Vegas (UNLV) Study Area, Project J09NV051002 (Munitions Response Site [MRS] 02) comprises 2,014 acres in Clark County, Nevada. The MRS02 was used during World War II (WWII) as a moving target range to train aerial gunners. After WWII it was used by the U.S. Marine Corps, U.S. Navy, and U.S. Air Force as a small arms range. The MRS02 is located approximately 6 miles northeast of Las Vegas on property managed by the Bureau of Land Management (BLM). The Federal Facility ID (FFID) for the FUDS site is NV99799F602000.

The U.S. Army Corps of Engineers (USACE) holds the mission execution authority for investigating, reporting, making remedial decisions, and implementing Remedial Actions (RAs) at MRS02. Support agencies include the BLM, city of North Las Vegas, and the Nevada Division of Environmental Protection (NDEP).

B. Statement of Purpose and Statutory Basis

This document sets forth the basis for issuing an Explanation of Significant Differences (ESD) to the 20 July 2020, Decision Document (DD) for MRS02. USACE is issuing this ESD in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act, as amended (CERCLA), 42 U.S. Code Section (§) 9617(c), and the National Contingency Plan (NCP), 40 Code of Federal Regulations (C.F.R.) § 300.435(c)(2)(i).

An ESD is appropriate when the lead agency determines that the RA at a site differs significantly in scope, performance, or cost from the selected remedy, but the change to the RA does not fundamentally alter the selected remedy. The purpose of an ESD is to describe the differences between the RA being undertaken and the RA set forth in the DD, and to explain the reasons such changes are being made.

USACE has determined that the adjustments to certain characteristics of the RA selected in the DD that are described in this ESD are significant but do not fundamentally alter the overall remedy for the site. Specifically, USACE is issuing this ESD to document the 174.9 acre increase of the selected remedy and cost of the RA at the MRS02. This will bring the total remedial action area to 238.8 acres within the 2,014-acre MRS.

Cost estimates presented in a DD are expected to be accurate within a range of +50% to -30% per U.S. Environmental Protection Agency (EPA) Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA (EPA/540/G-89/004, Office of Solid Waste and Emergency Response [OSWER] Directive 9355.3-01) and under Interim Guidance Document Engineering Manual (EM) 200-1-15. However, since issuance of the DD for MRS02, the executed and estimated cost of the RA has significantly increased above the cost estimate identified in the DD. As costs have increased more than 50% over those expected at the time of the DD, the change in cost represents a significant difference.

This ESD serves to document the increase in the soil removal acreage and the cost variation resulting from it and provides an explanation for the significant differences.

This ESD, and all the technical information and data relating to it, shall become part of the Administrative Record for the site in compliance with Section 300.825(a)(2) of the NCP, 40 C.F.R. § 300.825(a)(2). The Administrative Record is available for public view online at https://www.spl.usace.army.mil/Missions/Formerly-Used-Defense-Sites/Nellis-Small-Arms-Range-Annex/ and the central location:

U.S. Army Corps of Engineers, Los Angeles District
915 Wilshire Blvd.
Los Angeles, CA 90017-3401

II. SITE HISTORY, CONTAMINATION, AND SELECTED REMEDY

A. Site History

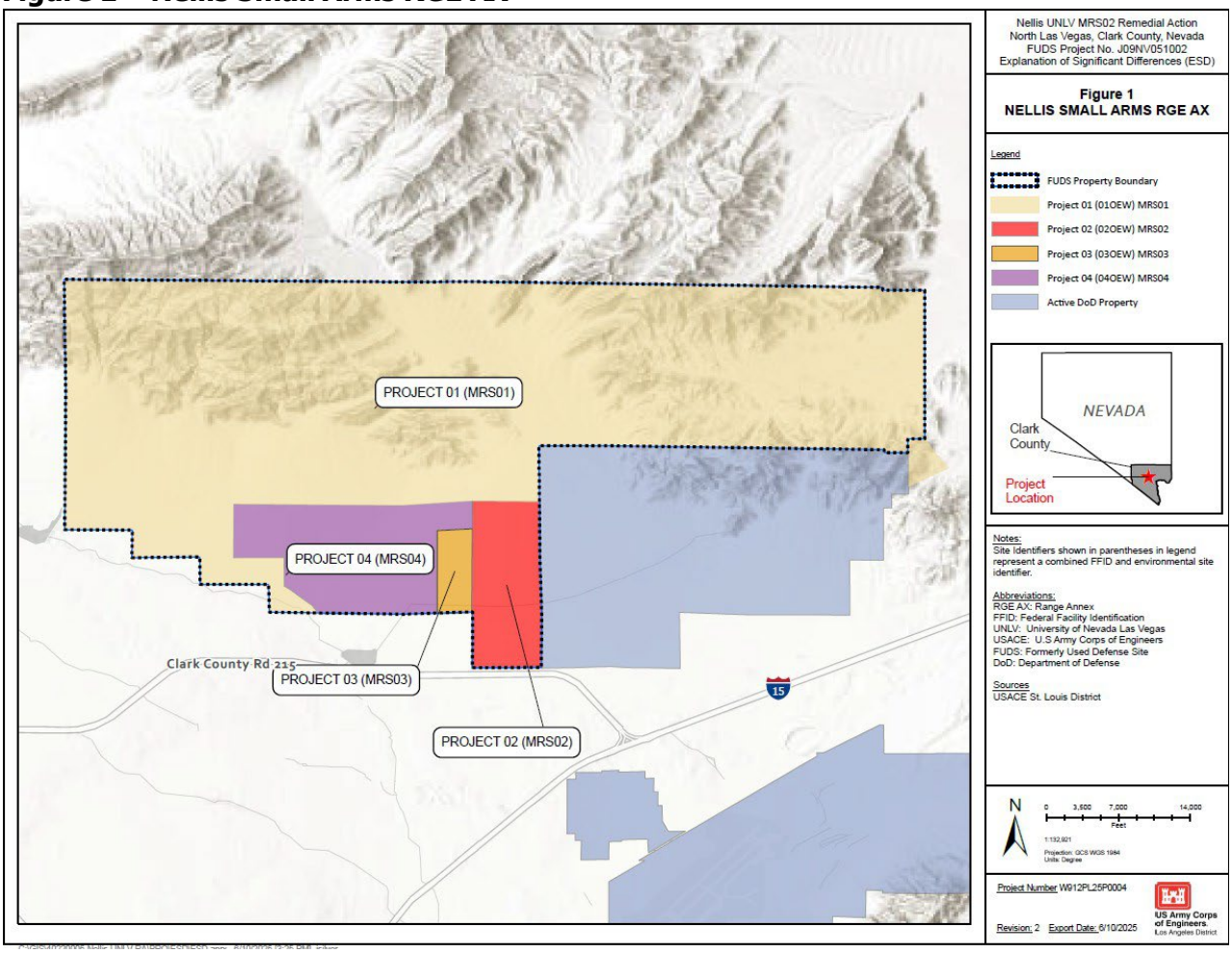
The Nellis Small Arms RGE AX property was acquired from the Department of the Interior in December 1941 for use as a moving target machine gun range. During WWII, the site was used to train aerial gunners. After WWII, the property was used by Air Force, Marine, and Navy personnel from Nellis Air Force Base and Lake Mead Base (currently Nellis Air Force Base, Area II) for small arms weapons training. The property was also used as an emergency drop site for pylons, hung bombs, and wing-tip tanks from aircraft based at Nellis Air Force Base, and a section of the property was used as an explosive ordnance disposal area. In August 1954, 25,620 acres of the property were transferred to the BLM, and another 10,758 acres were transferred to the U.S. Fish and Wildlife Service (USFWS) in July 1961. Approximately 10,600 acres of the original property are still in military use and are not FUDS eligible[i].

A range clearance was conducted in 1953 by the Nellis Air Force Base Explosive Ordnance Disposal Team, and a certificate of clearance was issued for 26,000 acres of the FUDS property. Subsequent range clearances conducted in 1972, 1977, 1978, and 1995 recovered Munitions and Explosives of Concern (MEC)[ii]. It is not known if MRS02 was included in these range clearance activities.

The BLM and USFWS properties are currently undeveloped land used for recreation and wildlife management. However, the UNLV is interested in developing the property within MRS02 for the North Campus which will include family housing for students and faculty[iii]. Housing could include apartment complexes, townhomes, duplexes, and single-family residences.

The MRS02 is one of four MRSs located on the FUDS property and depicted as Project 02 in **Figure 1**. The total FUDS acreage for the four MRSs is 37,461 acres.

Figure 1 – Nellis Small Arms RGE AX



B. Site Contamination and Enforcement Actions

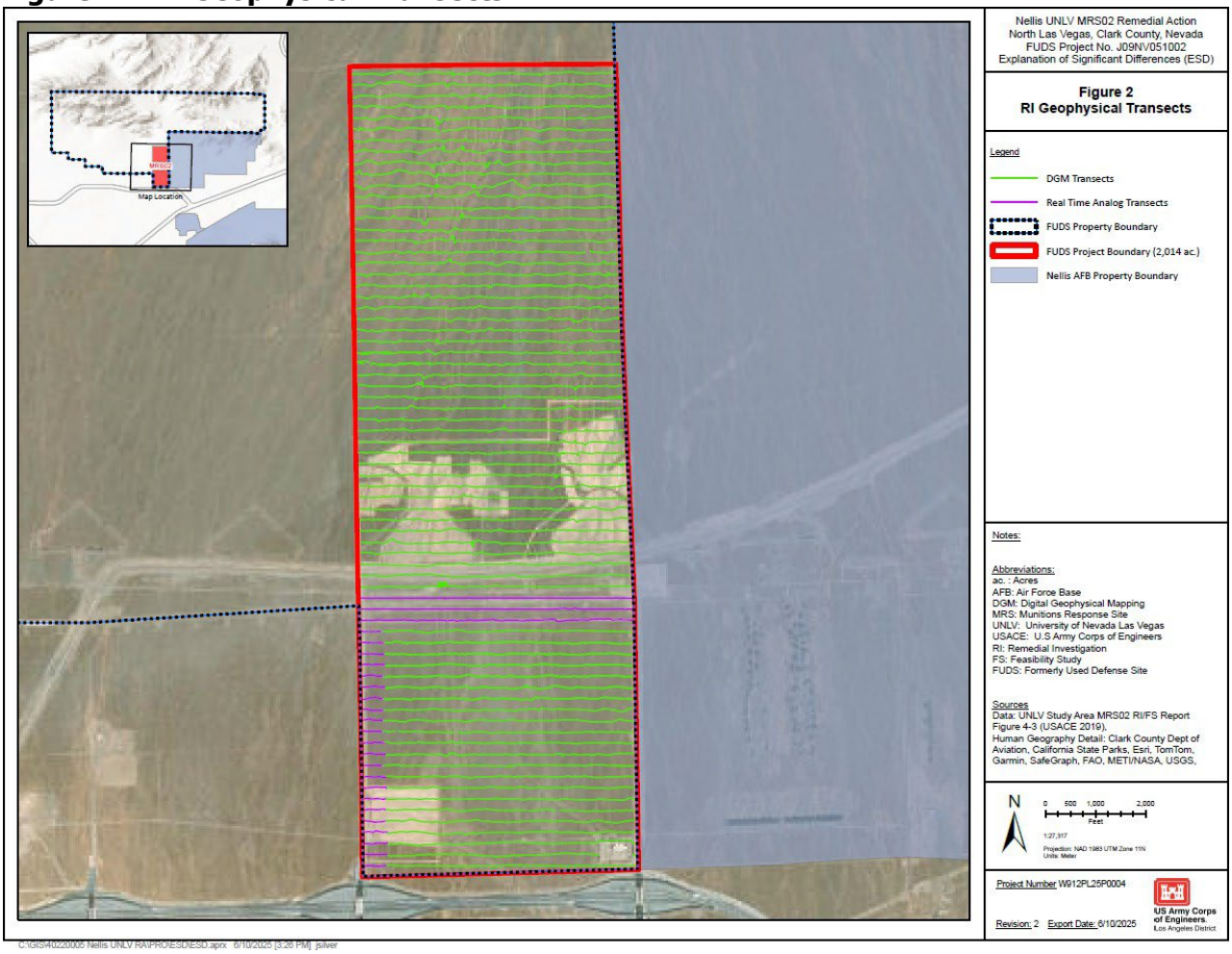
Former Nellis Small Arms RGE AX was determined eligible for the FUDS program in 1994. Between 1994 and 2019, several historical records reviews and investigations were conducted at the former Nellis Small Arms RGE AX: an Inventory Project Report (INPR) (USACE, 1994); an Archives Search Report (ASR) (USACE, 1996); a Site Inspection (SI) Report (USACE, 2007); a revised INPR (USACE, 2016) a Remedial Investigation Report (RI) (USACE, 2019); a Feasibility Study (USACE, 2019), a Proposed Plan (USACE, 2019); a DD (USACE, 2020); and a RA (ongoing).

In December 2006, SI fieldwork included qualitative reconnaissance and soil sampling at the Nellis Small Arms RGE AX FUDS property to determine if further evaluation was warranted under CERCLA beyond the SI phase. The SI report recommended further investigation under a Remedial Investigation for three areas identified as the Burial Area, the Moving Target Area, and the Ordnance Jettison Area[iv].

The 2016 Revised INPR[v] added the UNLV Study Area (MRS02) as a new MMRP project (Project 02), delineated from the original Nellis Small Arms RGE AX project (Project 01). MRS02 included portions of the moving target range and downrange areas which were designated as the "Small Arms Debris Area."

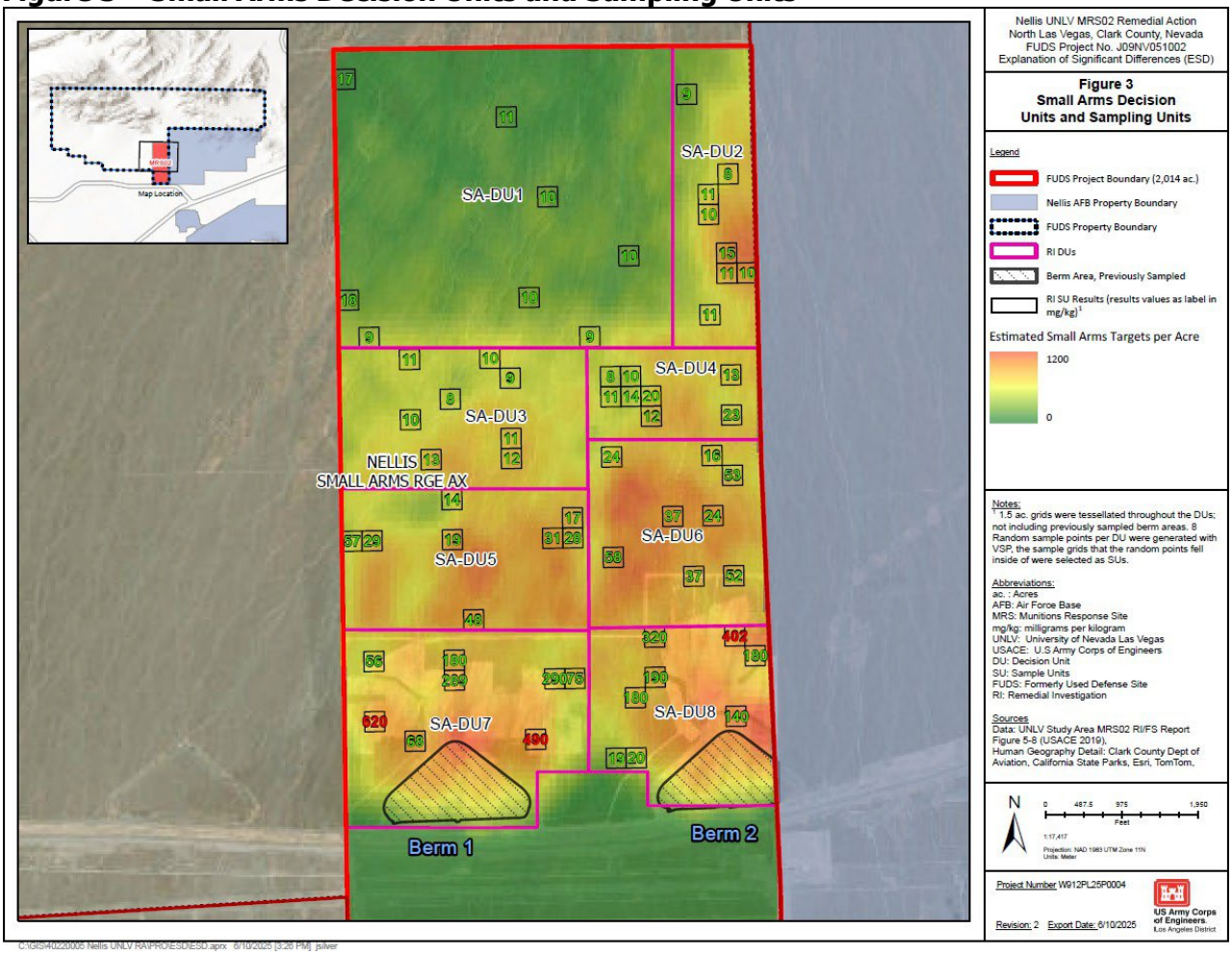
Between November 2017 and March 2018 RI fieldwork was conducted within MRS02. The RI field effort included digital geophysical mapping (DGM), analog geophysical surveys (in areas with high-voltage lines adjacent to transect lines), intrusive investigations, and munitions constituents (MC) sampling[vi]. Geophysical surveys are depicted in **Figure 2**[vii].

Figure 2 – RI Geophysical Transects



For MC sampling during the RI, MRS02 was divided into decision units (DUs) based on the density of small arms projectiles identified during DGM and intrusive investigations. The DUs ranged in size and in each DU, eight sampling units (SUs) were randomly selected for incremental surface soil sampling and MC metals analysis (**Figure 3**)[viii].

Figure 3 – Small Arms Decision Units and Sampling Units



Analytical results from the individual SUs were applied in a spatial interpolation used to create the confidence limits for the area where soil lead concentrations are predicted to exceed the human health residential soil screening level (identified in the DD) of 400 milligrams per kilogram (mg/kg)[ix]. Based on the sample results, the RI determined there was an unacceptable risk to human receptors from lead and antimony contamination in soil at the Moving Target Berms and within portions of the Small Arms Debris Area.

A Proposed Plan outlining the recommended remedy for MRS02 was published on 19 June 2019, and distributed to the public. A public comment period was open from 24 June 2019 to 2 August 2019, and a public meeting was held on 1 August 2019. Public comments, documented in the Responsiveness Summary in the DD, did not result in a revision of the remedy and the Proposed Plan remedy was selected for the DD. NDEP concurred with the selected remedy and USACE Headquarters signed the DD on 20 July 2020[x].

C. Selected Remedy

The selected remedy for MRS02 is Alternative 3 - Excavation, Transportation, and Disposal of Contaminated Soils. The Remedial Action Objective (RAO) for MRS02 is:

> "To reduce risks to human health presented by ingestion, inhalation, and dermal exposures by (1) construction workers developing the UNLV campus; (2) residents of student and family housing and clients of daycare/childcare facilities; and (3) UNLV faculty, staff, students, and guests of the university, for the future land use of UNLV Study Area MRS02 (i.e., development as UNLV Campus) to soil concentrations of lead and antimony in the Moving Target Berms and Small Arms Debris Areas, and PAHs[1] in the Clay Target Debris Area to acceptable levels (400 mg/kg lead, 31 mg/kg antimony, and 0.11 mg/kg benzo[a]pyrene equivalent), allowing for unlimited use/unrestricted exposure."

The estimated depths of removal are based on site features; 12 inches below ground surface (bgs) at the Berms (face and back) based on small arms penetration depth, 6 inches bgs at the Berm floor (inside) and perimeter (outside); 3 inches bgs at the Small Arms Debris Areas based on surface deposits from impacts to aerial targets; and 6 inches bgs at the Clay Target Debris Area based on consolidation of clay targets. Actual depth of removal will be based on meeting the RAO and performing soil confirmation sampling to meet the remedial action goals as presented in the DD. This ESD addresses metals, lead and antimony, as the constituents of concern associated with the increased acreage requiring soil sampling and removal. PAHs (benzo[a]pyrene equivalent) associated with the Clay Target Debris Area are not subject of this ESD.

The selected remedy in the DD, Alternative 3 - Excavation, Transportation, and Disposal of Contaminated Soils, was determined to be overall protective of human health and the environment. This remedy will remove all soil containing contaminants at levels above remedial goals from MRS02, and is expected to allow for unlimited use/unrestricted exposure. There are no unacceptable explosives hazards at UNLV Study Area MRS02; therefore, explosives hazards are not addressed in the development of RAOs.

Pre-remediation activities that have been and will continue to be performed to support the soil remediation fieldwork phase are as follows:

- Biological and Cultural surveys and Mojave Desert tortoise relocation.
- Haul road determination (and/or construction) and site access at the intersection of North Pecos Road and Clark County Highway 215.
- Clearing and grubbing site vegetation and dust control logistics set-up.
- Pre-remediation areas boundary and topographical survey using Global Positioning System (GPS).
- Confirmation soil sampling for lead and antimony within the 95% upper confidence limit (UCL) 400 mg/kg Lead Concentration Areas excluding the removal areas (blue border in **Figure 4**) to determine if additional areas require remediation. All pre-remediation confirmation sampling has been completed.

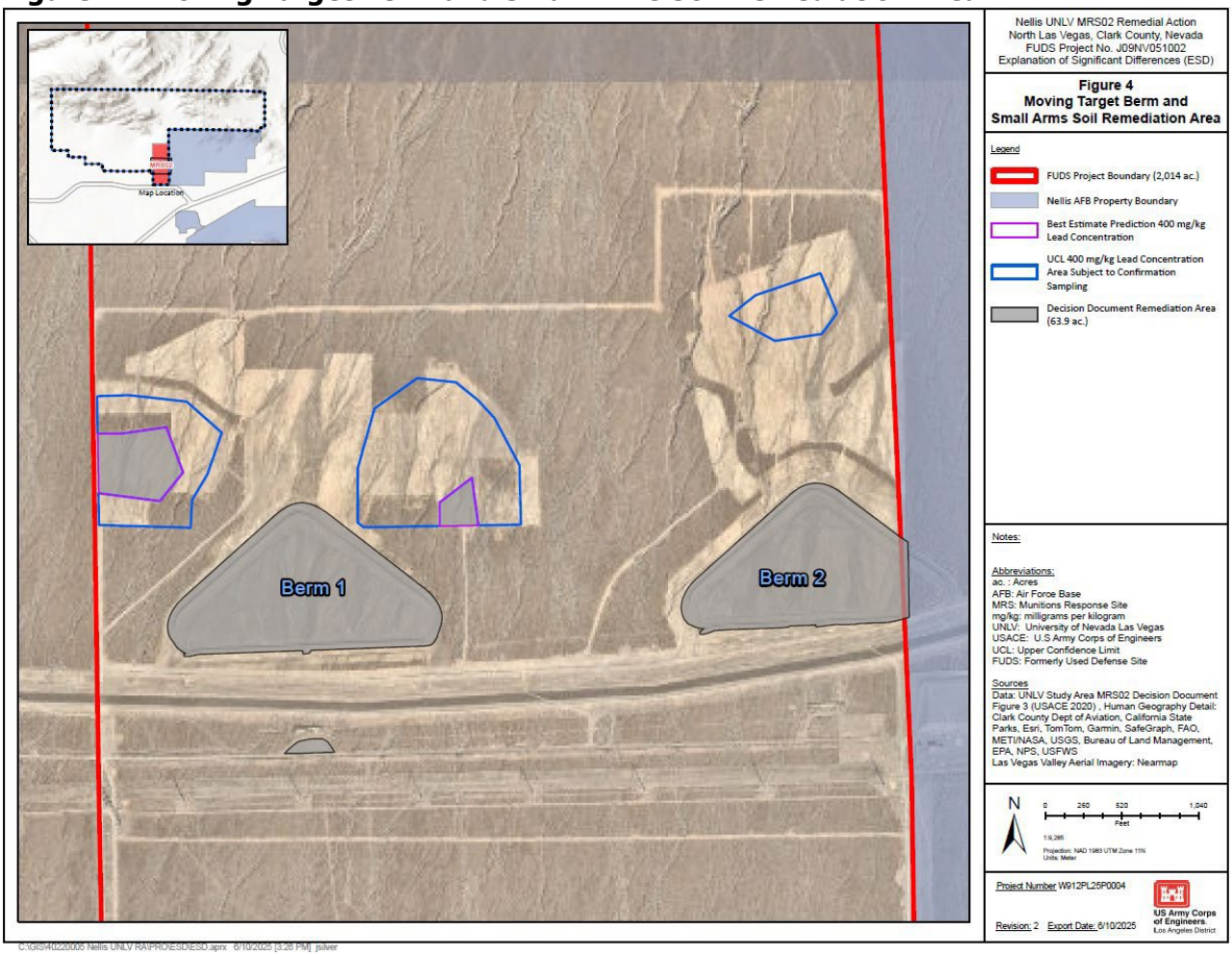
The following bullets provide a summary of completed and pending contaminated soil

[1] PAHs – Polycyclic Aromatic Hydrocarbons

remediation, stockpiling, hauling, and disposal; confirmation sampling; and stormwater control installation work activities:

- Prepare an area for stockpiling of rock and other debris encountered during the remediation activities.
- All contaminated soils will be hauled, per toxicity characteristic leaching procedure (TCLP) analysis results, to an approved landfill.
- Post-remediation topographical survey.
- Post-remediation confirmation soil samples collected subsequent to remediation activities in soil removal areas to determine if removal has achieved the RAO
- Best Management Practice/Stormwater Pollution Prevention Measures will include methods used to stabilize the slope and prevent erosion.

Figure 4 – Moving Target Berm and Small Arms Soil Remediation Area



The soil removal area from the DD included 63.9 acres[1] comprised of the entirety of two moving target berms and floor areas within the MRS as well as two areas north of the moving target areas that were identified as the "Best Estimate Prediction 400 mg/kg Lead Concentration" based on statistical analysis (purple boundary in **Figure 4**). Pre-

[1] The 63.9-acre removal area from the DD also included a 0.53-acre Clay Target Debris Area which is not the subject of this ESD.

remediation activities (completed under the RA phase) described in the DD for the selected alternative included confirmation sampling within the areas identified as the 95% UCL 400 mg/kg lead concentration areas to determine if additional areas require remediation (blue boundary in **Figure 4**)[xi].

III. BASIS FOR THE DOCUMENT

The purpose of this document is to present the difference in cost and the increased acreage requiring soil sampling and removal at MRS02 in comparison to the acreage and cost estimated in the DD. These are significant changes but do not fundamentally alter the selected remedy. A summary of the acreage and cost increase is presented in **Table 1**.

Table 1 – Summary of Acreage and Cost Increase[1, 2]		
Decision Document	63.9 acres	$23,489,493
Remedial Action Increase	174.9 acres	$25,065,119

The RI underestimated the area within MRS02 that contained soil lead concentrations exceeding 400 mg/kg. Based on the RI data, the DD estimated the scope for the RA to include 63.9 acres of lead contaminated soil, as well as pre-remediation sampling. Although the DD acknowledges pre-remediation confirmation sampling outside of the original 63.9-acre soil removal area at MRS02, it does not explicitly address the path forward if additional contamination is identified that requires additional soil removal areas.

Pre-remediation sampling to be completed under the RA phase included confirmation sampling within the areas identified as the 95% UCL 400 mg/kg lead concentration areas to determine if additional areas require remediation (blue boundary in **Figure 4)**[xi].

Pre-remediation sampling results for lead were above 400 mg/kg requiring additional step-out sampling to determine the horizontal extent of lead. Pre-remediation and additional step-out sampling and subsequent analysis completed during the RA phase revealed significant additional areas containing soil lead concentrations exceeding 400 mg/kg to the north of both target berms (**Figure 5**).

USACE notes that the purpose of the ESD is limited to a description of costs and increased acreage for sampling and soil removal. The RAO listed in Section 2.8 of the DD remains unchanged and will continue to be met.

IV. DESCRIPTION OF SIGNIFICANT DIFFERENCES

The soil removal area from the DD included 63.9 acres, however, the soil removal area has increased to 238.8 acres based on pre-remediation sampling results (**Figure 5 and Table 2**). As of this ESD, 186.3 acres have been remediated, achieving the RAO. The RA is ongoing and approximately 52.5 acres require remediation.

[1] The cost subject to a pending Request for Equitable Adjustment (REA) of $1,221,964.27 for 9 acres is not included in Table 1.
[2] The 9 acres subject to the pending REA have been remediated achieving the RAO and are included in Table 1.

Figure 5 – RA-C Lead Sample Results

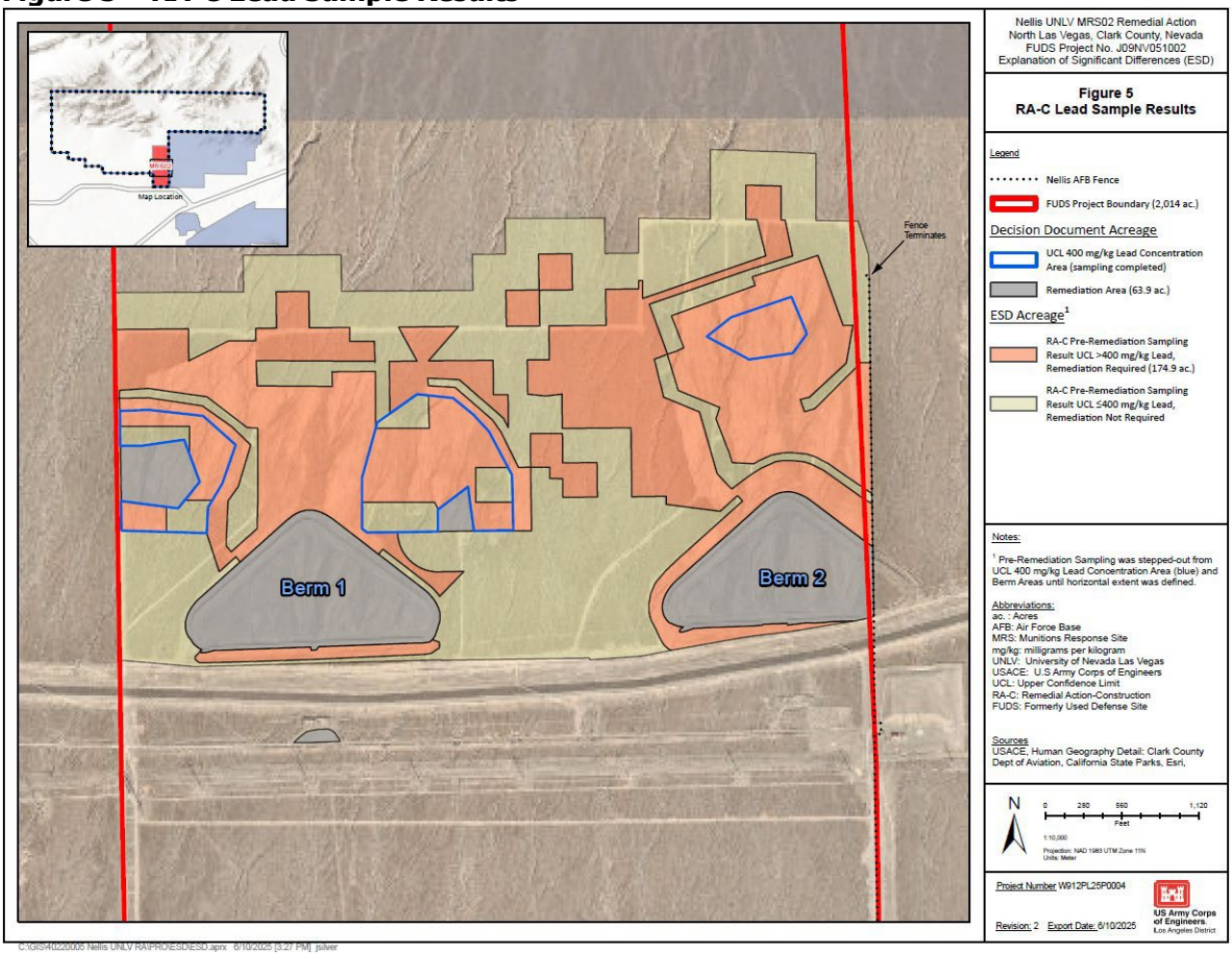


Table 2 – Contract Costs and Removal Area Acreage[1, 2]		
Contract Action	(U.S. $)	Acres
New Contract[3]	$12,000,000	52.5
Current Awarded Contract (Base + Modifications 1-6 Award)[4]	$36,554,612	186.3
Total for Current and New Contract	**$48,554,612**	**238.8**
2020 Selected Remedy Estimate from Final DD	$23,489,493	63.9
Difference	**$25,065,119**	**174.9**

The total cost increase above the original DD estimate is $25,065,119, which represents a 107% increase and the total acreage increase above the original DD estimate is 174.9 acres representing a 274% increase.

[1] The cost subject to a pending REA of $1,221,964.27 for 9 acres is not included in Table 2.
[2] The 9 acres subject to the pending REA have been remediated achieving the RAO and are included in Table 2.
[3] Based on pre-remediation sampling results, an additional 52.5 acres require remediation which will be performed under a new contract. Estimated cost, pending contract award.
[4] Modifications 5 and 6 include pre-remediation sampling only.

V. SUPPORT AGENCY COMMENTS

The ESD for Nellis Small Arms RGE AX MRS02 was coordinated with NDEP, the support agency. NDEP has concurred with the ESD and proposed changes to the selected remedy.

VI. STATUTORY DETERMINATIONS

The remedy provides the greatest reduction of risk within the constraints imposed by the environmental conditions at a reasonable cost when compared to the other options. USACE expects the remedy to fulfill the following statutory and regulatory requirements of §121(b) of CERCLA: (1) be protective of human health and the environment; (2) comply with applicable or relevant and appropriate requirements; and (3) be cost-effective when evaluated against the nine criteria described in the NCP.

The Reduction in Toxicity, Mobility, or Volume through Treatment criterion addresses the preference for Remedial Action Alternatives that use treatment technologies to remove or destroy hazardous substances, pollutants, or contaminants to the maximum extent feasible. Excavation of MC-contaminated soils within the MRS02 footprint will provide for the reduction of toxicity, mobility, and volume through removal only. Treatment-based alternatives were screened out in the initial evaluation of alternatives because they would result in alterations/redesign to the current UNLV campus design and would not allow full land development. The removal of MC-contaminated soils will eliminate the potential risks to receptors that could be exposed to soil within MRS02.

Because the remedy would not result in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use/unrestricted exposure, a Five-Year Review will not be required for this remedial action (USEPA Record of Decision guidance [USEPA 540-R-98-031] §6.2.5). The remedy is also acceptable to the community and the state regulator.

VII. PUBLIC PARTICIPATION COMPLIANCE

USACE will place this ESD in the Administrative Record which is available at the information repository locations listed above in Section I.B. USACE will ensure that a notice that briefly summarizes this ESD and provides a basic reason for the cost change is published in a newspaper of local circulation after the ESD is approved. By so doing, USACE will meet the public participation requirements of the NCP, 40 C.F.R. § 300.435(c)(2)(i).

VIII. AUTHORIZING SIGNATURE

Approved by:

GIBBS.KIRK.ELLIS.1142352369 Digitally signed by GIBBS.KIRK.ELLIS.1142352369
Date: 2025.07.09 09:31:39 -04'00'

Kirk E. Gibbs
Brigadier General, USA
Deputy Commanding General
for Military and International Operations

9 July 2025
Date

IX. REFERENCES

[i] USACE. 2016. Revised Inventory Project Report. July
[ii] USACE. 1996. Archives Search Report (ASR), Nellis Small Arms Range. July
[iii] USACE. 2020. Decision Document, Nellis Small Arms RGE AX, Section 2.2.1.5
[iv] USACE. 2007. Final Site Inspection Report Former Nellis Small Arms Range Site. July
[v] USACE. 2016. Revised Inventory Project Report. July
[vi] USACE. 2019. Final Remedial Investigation Report, Nellis Small Arms RGE AX, University of Nevada – Las Vegas Study Area, Munitions Response Site 02, Formerly Used Defense Sites Project Number J09NV051002, Contract No. W912PL-16-C-0024. February, Section 4.3.2 and 5.5.2.3
[vii] USACE. 2019. Final Remedial Investigation Report, Nellis Small Arms RGE AX, University of Nevada – Las Vegas Study Area, Munitions Response Site 02, Formerly Used Defense Sites Project Number J09NV051002, Contract No. W912PL-16-C-0024. February, Figure 4-3
[viii] USACE. 2019. Final Remedial Investigation Report, Nellis Small Arms RGE AX, University of Nevada – Las Vegas Study Area, Munitions Response Site 02, Formerly Used Defense Sites Project Number J09NV051002, Contract No. W912PL-16-C-0024. February, Figure 5-8
[ix] USACE. 2019. Final Remedial Investigation Report, Nellis Small Arms RGE AX, University of Nevada – Las Vegas Study Area, Munitions Response Site 02, Formerly Used Defense Sites Project Number J09NV051002, Contract No. W912PL-16-C-0024. February, Section 7.2.2.4
[x] USACE. 2019. Proposed Plan for University of Nevada – Las Vegas (UNLV) Study Area Munitions Response Site (MRS) 02, Clark County, Nevada
[xi] USACE. 2020. Decision Document, Nellis Small Arms RGE AX MRS02, Table 3 and Figure 3