DEPARTMENT OF THE AIR FORCE
377th Civil Engineer Division (AFMC)

FEDERAL EXPRESS

19 Jun 07

MEMORANDUM FOR MR. JOHN KIELING, MANAGER
RCRA PERMITS MANAGEMENT PROGRAM
HAZARDOUS WASTE BUREAU (HWB)
NEW MEXICO ENVIRONMENT DEPARTMENT (NMED)
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SANTA FE, NM 87505-6313

FROM: 377 MSG/CEVR
2050 Wyoming Blvd SE, Suite 118
Kirtland AFB NM 87117-5270

SUBJECT: Submission of Comprehensive Site Evaluation Phase I Report, Air Force Military Munitions Response Program, Final – February 2007, Kirtland Air Force Base (AFB), NM EPA ID # NM9570024423

1. The Environmental Management (EM) Branch at Kirtland AFB is submitting two electronic copies of the Comprehensive Site Evaluation (CSE) Phase I Report. One electronic copy is being submitted to your office, and one copy is being submitted to Mr. Bill McDonald of your staff.

2. The CSE Phase I Report is being submitted as a courtesy copy. Based upon conversations with you and your staff, Kirtland AFB EM understands that NMED HWB considers the MMRP a CERCLA program. As a CERCLA program, NMED HWB does not have the mechanism to review or fee for CERCLA documents. Kirtland AFB is therefore providing the subject document to you and your staff for information purposes.

3. If you have any questions, please do not hesitate to contact me at (505) 853-6534 or Rob Warder at (505) 853-0012

CARL J. LANZ, P.G.
Chief, Restoration Section

Attachment:
1. Comprehensive Site Evaluation Phase I Report, Air Force Military Munitions Response Program, Final – February 2007

KAFB3109

cc:
NMED HWB-KAFB, Mr. Bearzi, wo Atch
NMED HWB-KAFB, Mr. McDonald, w Atch
USEPA-Region 6 (6PD-N), Ms. King wo Atch
HQ AFMC/A7CVP, Mr. McCann, wo Atch
USACE Omaha, Mr. Johansen, wo Atch
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KIRTLAND AIR FORCE BASE
ALBUQUERQUE, NEW MEXICO

Comprehensive Site Evaluation Phase I Report
Air Force Military Munitions Response Program
Volume 1 of 2

Final – February 2007

377 MSG/CEVR
2050 Wyoming Blvd. SE
Kirtland AFB, New Mexico 87117-5270

KIRTLAND AFB COMMENTS ON THE DRAFT FINAL CSE PHASE I REPORT
AIR FORCE MILITARY MUNITIONS RESPONSE PROGRAM

Received 27 OCT 2006

REF #	COMMENTS	RESPONSE TO COMMENTS
General		
1	Repeated comment: By Department of Defense policy through the DERP, CERCLA is the preferred regulatory guidance for MMRP, however states may exercise their authority and request MMRP actions be conducted under RCRA. KAFB has an in-place RCRA permit and New Mexico is an EPA-qualified state, therefore NMED regulators may make this request. Per the AFI 32-7020 § 1.5.4 actions taken under CERCLA can be used to satisfy RCRA when they do not conflict with the existing permit or authorized state requirements. In order to maintain New Mexico regulatory continuity and IRP/MMRP continuity, it would be worth an inquiry to the NMED. This may help to avoid future delays and to save potential extra future work.	Per direction from USACE Omaha District, all comments and discussion regarding regulatory authority is deferred to USACE and AF MMRP Exec. Board.
2	Although the Draft Final is greatly improved from the Draft, please have the contractor complete a thorough technical edit of this document prior to finalizing for grammatical errors.	The document has been reviewed and edited for grammatical errors.
3	The flow of the Draft Final has improved. Overall the report still reads fragmented and jumps around a bit.	The document has been reviewed and edited for grammatical errors.
4	Repeated comment: Suggest including an Executive Summary to include summary tables.	No change. The format of the report was developed in accordance with the Statement of Objectives (SOO) and CSE Phase I Guidance.
5	Repeated comment: The photos in the appendix are great. Some of these photos would add more to the body of the document if added into the flow of the text.	No change. The format of the report was developed in accordance with the Statement of Objectives (SOO) and CSE Phase I Guidance.
Section 2		
1	Figure 2-1: Cibola National Forest is not labeled on the figure though it is called out in the text.	Added label to the figure for Cibola National Forrest.
2	Figure 2-2: Still hard to follow figure. It is unclear as to what was previously identified as CTT Ranges in the initial AF Inventory. Possibly rewording the legend from Non-Operational Ranges to 2000 AF CTT Inventory Ranges and Phase I CSE MRAs/MRSs. I am unsure what the map legend and map are depicting, the legend and labeling require further	Changed the map legend in order to simplify the figure. Closed, Transferred, Transferring (CTT) terminology is no longer used in the MMRP. Changed “Non-Operational Ranges” to “Historical Ranges” and “Munitions Response Areas” to “Original MRAs”. The maps are depicting the original 26 MRAs or areas of investigation as provided in

	clarification.	the Government Furnished Information.
3	Table 2-4 and 2-5 depicts MRA/MRS overlap with existing ERP and DOE/SNL sites. The report does not clearly state under which program these areas will be cleaned. Also, the future report figures do not have these areas labeled.	No change. The report is clearly identifies the sites that are addressed under the AF MMRP CSE Phase I at Kirtland AFB. MEC and MC concerns at the MRAs are addressed under MMRP. ERP/ECP sites are addressed under ERP/ECP. DOE/SNL sites are addressed under DOE/SNL Environmental Stewardship Program. Existing ERP/ECP sites are depicted on the Section 4 Figures.
4	Section and throughout the remainder of the document – 337th ABW is sometimes called 337 ABW or AWB. Please clarify and correct.	337 ABW is the correct abbreviation. Corrected all references to 337 ABW.
Section 4		
1	Repeated comment: Per ITRC Guidance (which is referenced to being followed) time spent collecting records at the various repositories should be included as well the authors confidence in the data collected.	No change. The information in Section 4 does not indicate that the ITRC Guidance was followed for the CSE Phase I for Kirtland AFB. The ITRC is referenced in Section 4, Section 4.1.2 Offsite Data Sources, page 4-2 and relates only to Record Groups reviewed at the National Archives and Records Administration. This section was prepared according to direction given in the Statement of Objectives and the AF Guide for Conducting the CSE Phase I.
2	Repeated comment: With all of the stated information reviewed, why is the reference section in Appendix C so short? References to specific documents are also not cited in the body of the document. As this document will become part of the Kirtland AFB Administrative Record, future readers will find it challenging to recollect this data without the citations.	The information in Section 4 is referenced to the South Kirtland Air Force Base Operations Area – Operational History, August 2006, TLI Solutions (TLI 2006). This report is also referred to as the SKOPA report. The SKOPA report was in draft at the time the CSE Phase I was prepared and as a result was not cited. References to specific documents are cited in the body of the SKOPA document. This will eliminate the challenge for future to reconcile and reference the data presented without citations. The information in the CSE Phase I was developed from Kirtland AFB documents and those documents are referenced where appropriate. The CSE Phase I itself will served as the source of the remainder of the new data developed by site visits and geophysical surveys.
3	Section 4 figures. It is still difficult to distinguish the exact boundaries between the 2000 AF CTT Range Inventory and Phase I CSE update to boundaries. Maybe a change to the legend will clarify. Be sure to label MRSs within the MRAs and show complete boundaries.	Changed Section 4 Figures map legends for clarity. Also added notes to clarify that there are no revisions to the boundaries of some historical ranges (maps depict overlapping boundaries).

4	Table 4-1 acreages conflict with acreages mentioned elsewhere in the report, ie Section 5. NMPG Buffer Zone South – acreage 3,136 vs 3,137 Arroyo del Coyote – 386 vs 387 Explosive Disposal Area – 6 vs 5.5 Firing In-abutment – 1 vs 0.6 Airfield Skeet Range – 25 vs 13? Howitzer Range – Sandia Base???	Corrected acreages.
Section 5		
1	General figure comments – Maintain operational range footprint throughout all figures. Maintain entire historic range fan/SDZ boundaries throughout figures. Please label suspected impact areas based on data as well as firing points and direction of fire. It is discussed in the text, but not transcribed to the maps. Please be sure to delineate MRS footprints within the MRAs.	Some Section 5 figures have been revised for accuracy. Section 5 figures serve to communicate the CSE Phase I survey results. The boundary of each MRA/MRS was defined prior to section 5. The historical ranges are currently depicted with the exception of AL120 where there are numerous range fans that comprised the depicted MRA boundary. The operational range/storage areas (explosive safety limits and surface danger zones) have already been cut out of the MRAs/MRSs. Firing points can be derived from the historical range boundaries. Suspected impact areas can be derived from survey results. The Section 5 figures depict the survey results and are sufficiently busy without depicting firing points and suspected impact areas. Section 5 figures are provided for each MRA surveyed.
2	ML 784 – rationale for being non-MMRP eligible needs further explanation and substantiation.	Sections 4.1.4.1 and 5.2.10 both state that ML784 is not eligible for munitions response under the MMRP because it does not meet the definition of a defense site since it is within the operational range area of the Electro-Explosive Facility. Reworded sentences for clarity.
3	SR 780 - rationale for being non-MMRP eligible needs further explanation and substantiation. Please verify all discussions regarding sites deemed non-eligible at the Phase I stage is explained.	Added paragraph to section 5.2.24 to state that SR780 is not eligible for munitions response under the MMRP because it does not meet the definition of a defense site as codified in 10USC2710 since it is within the operational range area of the DOE/SNL Burn Site.
4	DA130 If DP-101 is not MMRP-eligible, please state so.	No change. DA130 which encompasses DP-101 (TS-5) is eligible for munitions response under MMRP. Although soil remediation has been completed and DP-101 has been approved for NFA by NMED, these response actions did not address MEC risks.
5	Figure 5-39 and Sections 5.2.11 and 5.2.12 – names do not match.	No change. In the draft final report, the range names on Figure 5-39 were consistent with Sections 5.2.11 and 5.2.12. The range names in the new Figure 5-29 are consistent with Sections 5.2.16 through 5.2.20.

6	Where are the figures for SR765, SR766, and SR767?	In the draft final version, these ranges were part of the Sandia Base Small Arms Ranges North, East and West identified in Figures 5-39 and 5-40. Per direction from Omaha District, these MRAs are no longer consolidated. These MRAs are now depicted in the Figure 5-29.
7	TS775 – Airfield Skeet Range. Was this used strictly for training, no recreational use? If so, please state. Recreational skeet ranges are not MMRP eligible per definition.	Added "or type" to text. There is insufficient data to determine whether it was used strictly for training or recreation.
8	TS776 – Skeet Range – this is not MMRP eligible. If it was earlier identified as a potential site in the 2000 AF CTT Range Inventory, please explain why this site is not MMRP eligible – it is a recreational skeet range and therefore not eligible for MMRP funding.	Although TS776 was used a recreational skeet range, the range is on DOD property and MC concerns related to those past activities are eligible for munitions response under the AF MMRP. Added text to state eligibility.
9	The figure for the Bomb Target is missing.	No survey was conducted at this site so there are no survey result figures (Section 5 figures) for this site. This site is not eligible for munitions response under MMRP.
10	Tables 5-4 and 5-5 have incorrect titles.	Corrected titles.
11	Table 5.6 and 6.1 entries do not marry up.	Did you mean Tables 5-1 and 5-6 (Current and Future Land Use)? Table 5-1 revised for consistency with 5-6.
Section 6		
1	Table 6-1 – Confirmed munitions do not always match that stated in Section 5.	Reviewed Table 6-1 and changed confirmed munitions data as appropriate.
Section 8		
1	Section 8.1.1 – Second paragraph – please change Edwards AFB to Kirtland AFB.	Change made as requested.
Section 9		
1	Figures 9-38, 9-41, 9-52 – primary source does not agree with other document text and the receptors also do not agree.	Revised text to reflect that items found were well-dispersed and unlikely to contribute to MC contamination.

Section 10		
1	MRS-PPs missing for SR763-766. Sandia Base Range East labeled as Sandia Base Range South. Cannot see any reason or justification for some of the munitions type scores. Almost all of them are 25 or 30, though many of them say they found only munitions debris during their surveys. Some surveys say nothing found at all, yet still score a 25 or a score of 5 or 3. Is this based on historical use though nothing ever found? Some historical info says use unknown. So if they did the surveys and found nothing or scrap only then why are the ratings so high? (ex – Ordnance Drop Zone, Explosive Disposal Area, Gun Fan Site, Tijeras Small Arms Range, Tijeras Small Arms Training Range, etc. –these are just examples). Stakeholders need to review the MRS-PPs and come to a consensus as to the scoring per 32CFR179.	In the draft final report, the MRSPP modules for SR763-SR766 were grouped into the MRSPP modules for the Sandia Base Small Arms Ranges North, East and West. These MRAs are no longer group in the final report. While scoring the MRSPP tables, the guidance in the DOD MRSPP Primer Instruction Manual was followed. The scoring for each of the three MRSPP modules is based on historical data from past site use, and the known or suspected presence of UXO, DMM or MC along with other factors. The final MRS Priority scores are derived from each of the MRSPP modules three factors, Explosive Hazard, Accessibility and Receptor. High Explosive fragments along with other munitions items containing no energetic material are considered Munitions Debris, if found on site, the protocol is to suspect the presence of UXO or DMM until further investigation concludes otherwise. Phase 1 was only a Preliminary Assessment of the site. The personnel completing the MRSPP modules have successfully completed the DOD MRSPP Work Shop. Along with an annual review of the MRS prioritization protocol, DOD requires that the component (installation) establish a QA Panel that will initially review all MRS prioritization decisions before soliciting Stakeholder comments/participation.
Section 11		
1	Repeated comment: Section 11: Throughout section – acreages don't agree with Table 5-1.	Acreages in Section 11 have been revised to match acreages presented in the new Table 4-1.
2	In many of the sections, no evidence of MC is stated, however no analytical data, whether existing or new was presented to support this statement.	Revised to state "no surface indicators of MC contamination (no HE craters, no concentration of MEC or munitions debris, and no visual evidence of undocumented waste disposal)" for all occurrences.
3	Section 11.1.6 – conflicts with information presented in ICSM.	Changed text to reflect one MD item found, which is not of significant concentration to contribute to MC contamination.
4	Sections 11.12 v 11.13 – present information that is conflicting – one is a rifle range with no MEC/MC and the other a rifle range with MC potential.	There was no evidence of munitions use at SR777/Section 11.12. The potential exist at SR778 due past use, and the lack of survey data collected due to the post field work revision of the historical range boundary.
5	Section 11.15 – states no surface evidence of MC – however it is difficult to detect MC visually. Please reword.	Sentence has been re-worded.

Section 12		
1	Repeated comment: Section 12.2: (a) Throughout section – hard to agree or disagree with tables since borders of MRAs in relation to other MRAs has never been shown in any figures. (b) Would be a big help to have figures here to show these proposed footprints as opposed to the original footprints. Also lack of MC data is prohibitive to drawing conclusions.	Figures in Section 4 and Section 5 have been revised to clearly depict the boundaries of each MRA/MRS. No additional maps should be necessary for Section 12.
2	Section 12.2.4 – please reword first sentence – ".. most of the historical range area is within operational storage area.." is vague and difficult to get a visual – mapping operational range footprints on the maps would clarify this.	Operational areas are depicted in Figure 4-18. The MRA boundary is well defined in Figure 5-25. Do not see any vagueness in depiction of MRA.
3	This may be out of scope, but final figures with the MRA/MRS footprints as of the end of the Phase I would be useful in this section.	Figures in Section 4 and Section 5 have been revised to clearly depict the boundaries of each MRA/MRS. Added Figure 12-1 to the report to depict proposed subdivision of AL120.

DOCUMENT TITLE: Kirtland Air Force Base, New Mexico, Air Force Military Munitions Response Program, Comprehensive Site Evaluation Phase I Report		
DOCUMENT PREPARED BY: USA Environmental, Inc.	**DOCUMENT DATE:** 19 September 2006	**DOCUMENT VERSION:** Draft Final
REVIEWER: Mark Meacham, USACE – Omaha District	**DATE RECEIVED:** 30 November 2006	**NEXT DOCUMENT VERSION:** Final

NO.	SECTION	COMMENT	RESPONSE
1.	General	The Annual Report to Congress (ARC) Maps need to be updated as stated in performance task 4 of the CSE Phase I Performance Requirements.	ARC maps have been updated and provided on the project source data DVD.
2.	General	Need to add Appendix K with the CSE Phase I checklist.	Added Appendix K.
3.	Table of Contents and report contents	Section 12.3 – Additional MRS (splitting the MRA), and Section 12.4 - Newly Identified MRA need to be added to the report according to the new report guidelines. In addition, Section 11 should be titled Summary and Recommendations and Section 12 should be titled Cohort Assignment, Process Streamlining Opportunities, MRA Subdivision, and Newly Identified MRA. A completed CSE Phase I checklist needs to be added as Appendix K. Tab for appendix K. The report needs to be edited using this format.	Revised Section 12 as directed. Re-titled and revised Section 11. Added Appendix K. Report has been edited using this format.
4.	Section 1.1:	Expand the discussion on how the CSE Phase I identifies military munitions areas through the process of conducting historical records reviews, interviews, and visual reconnaissance. Also, include the data uses for the data collected – CSM, MRSPP, HRS data, AFRIMS, RACER, etc.	Expanded discussion of CSE in fourth paragraph of Section 1 consistent with the CSE Phase I guidance. Expanded Section 1.1 discussion.
5.	Figure 1-1:	Bob Nore is the USAE project manager and a name needs to be included for Bhate.	Added Bob Nore, Darrell Thompson, and Jerry Pelfrey to Figure 1-1
6.	Section 1.5:	Appendix K needs to be added for a CSE Phase I checklist – see comment 1.	Added tab for Appendix K.
7.	Section 2.4:	The ARC maps that I have show MRAs ML126 and AL759 as closed under the MMRP. Investigate if these MRAs are closed and edit the text as appropriate.	No change. These MRAs are closed under MMRP. These MRAs were also not listed in the SOO and were not investigated.
8.	Section 4:	Add Section 4.6 to the report to discuss the Evaluation of Additional Investigation Areas.	Added Section 4.6.
9.	Section 4.1.4.1:	Bullet text is out of order. Firing point 6 needs its own bullet	Separated bullet text for Firing Point 6.

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10.	Section 5.6.1	Explain why MRAs ML784 and SR780 are ineligible for munitions responses under MMRP.	The new Section 5.6.10 explains ineligibility of ML784. The new Section 5.6.24 explains ineligibility of SR780
11.	Section 5.6.14	Explain why MRA TS775 was not surveyed during the CSE Phase I investigation.	The new Section 5.6.25 explains why TS775 was not surveyed during the CSE Phase I.
12.	Section 6.6:	Provide a table that displays the MC associated with each suspected specific munition. Discuss the chemical components found in photoflash powder. Do we know that photoflash powder could be present – if so, from which munition. Photoflash powder can contain perchlorate and this may change our MC interests.	The existing Table 6-4 lists the MC associated with suspected munitions at Kirtland. There is no documented evidence of photoflash powder use.
13.	Section 6.7:	There is no need for ESS information. Remove this information from the text. No ESS was used for the CSE Phase I investigations.	Edited Section 6.7 as recommended.
14.	Section 8.2.2, second paragraph	The last sentence is not applicable. No perchlorate was shown as a potential MC. Therefore, perchlorate has not been linked to past munitions-related activities. Edit the text to state that perchlorate is not concerned as a potential MC from the listed MEC in Section 6.	Revised last sentence of Section 8.2.2 to state that perchlorate is not a potential MC.
15.	Section 11	Section 11 should be titled Summary and Recommendations. This section will summarize the findings at each MRA with the recommendations for each MRA (including all the off-base MRAs) that is the inventory and the new identified MRAs should be included in this section as well.	Section 11 revised as directed.
16.	Section 12	Chapter 12 should be titled Cohort Assignment, Process Streamlining Opportunities, MRA subdivision, and Newly Identified MRAs. This section focuses on the programmatic needs and information. Section 12.3 focuses on the MRA subdivision. Section 12.4 captures the new MRAs identified during CSE Phase I activities.	The entire Section 12 has been revised as directed.
17.	Section 12.2:	Add this section to the report. MRA Subdivision should be 12.3 and the newly identified MRAs should be 12.4.	The entire Section 12 has been revised as directed.

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18.	Appendix K:	Put a tab in for Appendix K and put appendix K in the table of contents.	Added Appendix K. Added Appendix K to the TOC. Added tab for Appendix K.
19.	Appendix G	Explain where the AL120 MRSPP is located.	Added MRSPP Tables for AL120
20.	Appendix I	Explain where the AFRIMS data sheet is for ML784. Also, data sheets should be completed for MRAs AL757, AL758, AL759, ML126, ML760, ML762, and TS756. AL759 and ML126 are shown in my book as closed under MMRP. Check the status of these two MRAs and edit the text as appropriate. AL758 is listed as being a FUDS project – so that should be explained in the AFRIMS data sheet.	Added AFRIMS data sheets for AL757, AL758, ML760, ML762, and TS756. AL759 and ML126 are closed under the AF MMRP and were not listed in the SOO.
21.	End of Comments.		

KIRTLAND AIR FORCE BASE
ALBUQUERQUE, NEW MEXICO

Comprehensive Site Evaluation Phase I Report
Air Force Military Munitions Response Program

Final – February 2007

Prepared for
U.S. Army Corps of Engineers
Omaha District
Omaha, Nebraska

Contract No. W912DY-04-D-0006
Task Order No. DK01

Prepared by
USA Environmental, Inc.
720 Brooker Creek Boulevard, Suite 204
Oldsmar, Florida 34677

NOTICE

USA Environmental, Inc. prepared this Comprehensive Site Evaluation Phase I Report for the U.S. Army Corps of Engineers Omaha District and Kirtland Air Force Base to support the execution of the Air Force Military Munitions Response Program. As the report relates to actual or possible presence of munitions and explosives of concern, discarded military munitions, or releases of potentially hazardous munitions constituents, its release prior to a final approval may be in the public's interest. The limited objectives of this report and the ongoing nature of the Environmental Restoration Program, along with the evolving knowledge of site conditions and potential impacts to human health and the environment, must be considered when evaluating this report, since subsequent facts may become known which may require modification to subsequent munitions response actions.

Government agencies and their contractors registered with the Defense Technical Information Center (DTIC) should direct requests for copies of this report to: DTIC, Cameron Station, Alexandria, Virginia 22304-6145.

Non-government agencies may purchase copies of this document from: National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161.

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1. AGENCY USE ONLY	2. REPORT DATE 5 February 2007	3. REPORT TYPE AND DATES COVERED Kirtland AFB CSE Phase I Report, February 2007	
4. TITLE AND SUBTITLE Kirtland Air Force Base, New Mexico Air Force Military Munitions Response Program Comprehensive Site Evaluation Phase I Report		5. FUNDING NUMBERS Contract No. W912DY-04-D-0006 Task Order No. DK01	
6. AUTHOR(S) David Synakorn, USA Environmental, Inc. Steve Swanson, TLI Solutions, Inc.			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) USA Environmental, Inc. 720 Brooker Creek Boulevard, Suite 204 Oldsmar, Florida 34677		8. PERFORMING ORGANIZATION REPORT NUMBER	
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11. SUPPLEMENTARY NOTES			
12a. DISTRIBUTION/AVAILABILITY STATEMENT		12b. DISTRIBUTION CODE	
13. ABSTRACT This report presents the results of the Air Force Military Munitions Response Program (MMRP) Comprehensive Site Evaluation (CSE) Phase I at Kirtland Air Force Base (AFB).			
14. SUBJECT TERMS			15. NUMBER OF PAGES 1464
Report, Air Force MMRP CSE Phase I, Kirtland AFB			16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION Unclassified	20. LIMITATION OF ABSTRACT

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40 CFR 270.11
DOCUMENT CERTIFICATION
FEBRUARY 2007

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

_____

CARL LANZ, P.G., GS-13
Chief, Restoration Section

This document has been approved for public release.

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PREFACE

This report presents the results of the Comprehensive Site Evaluation Phase I performed under the United States Air Force Military Munitions Response Program, at Kirtland Air Force Base.

USA Environmental, Inc. (USAE) performed this work under the authority of the U.S. Army Corps of Engineers (USACE), Contract Number W912DY-04-D-0006, Task Order Number DK01. Field activities were performed between November 2005 and December 2005. Mr. David Johansen is the Project Manager for the USACE, Omaha District.

Mr. Carl Lanz is the Kirtland AFB Restoration Program Manager. Mr. David Synakorn (USAE) is the contractor Project Manager. Mr. James Walden (USAE) reviewed this report for quality control and quality assurance.

David Synakorn, P.E.
USA Environmental, Inc.
MR Technical Manager

James Walden
USA Environmental, Inc.
UXO Quality Control Manager

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1. INTRODUCTION

The United States Armed Forces have historically conducted live-firing, weapons testing, and munitions disposal to ensure military readiness. Decades of these munitions-related activities have resulted in the presence of unexploded ordnance (UXO), discarded military munitions (DMM), and munitions constituents (MC) on ranges and disposal areas throughout the country. UXO, DMM, and other materials potentially presenting an explosive hazard (MPPEH) are referred to as munitions and explosives of concern (MEC). Due to changes in military structure and locations of installations, the military is currently using many of these ranges and disposal areas in ways that may be incompatible with the presence of MEC or MC contamination.

In 1986, Congress created the Defense Environmental Restoration Program to clean up sites owned or used by the United States Department of Defense (DoD). For nearly 20 years, this program has focused on cleanup of hazardous chemicals (e.g., solvents, oils, pesticides) in environmental media. In September 2001, DoD established the Military Munitions Response Program (MMRP) to address hazards associated with MEC and MC within areas that are no longer used for operational range activities. These non-operational range areas are called Munitions Response Areas (MRAs) and may encompass one or more discrete munitions response sites (MRAs). The goal of the Air Force MMRP is to make MRAs safe for reuse while protecting human health and the environment. In December 2001, the Congress passed the National Defense Authorization Act for Fiscal Year 2002 that required DoD to develop and maintain an inventory of MRAs. This requirement is codified in Title 10, Section 2710 of the United States Code (10 USC 2710).

The Air Force under the MMRP is responsible for addressing MEC and MC at MRAs under its administrative controls or responsibility. The goal of the Air Force MMRP is to make MRAs safe for reuse, while protecting human health and the environment. Although initial inventories were completed in 2002, the Air Force officially launched the MMRP in October 2004. The Air Force MMRP comprises 57 active Air Force installations nationwide, including Kirtland Air Force Base (AFB).

A critical component of the Air Force MMRP is the Comprehensive Site Evaluation (CSE), which serves as the initial assessment of MRAs pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substance Pollution Contingency Plan (NCP). The Air Force is implementing the CSE in two phases. The CSE Phase I fulfills the requirements of the CERCLA Preliminary Assessment (PA) and Phase II fulfills the requirements of the CERCLA Site Inspection (SI). However, the CSE Phase I and Phase II investigations differ from the traditional CERCLA PA and SI with respect to the data requirements.

The CSE Phase I generally consists of historical records reviews (HRRs), visual surveys, and interviews, while CSE Phase II generally consists of environmental sampling and geophysical surveys. The CSE also utilizes an expanded array of analytical, tracking and reporting tools to support decision-making, and therefore, has greater data requirements. Tools utilized as part of the CSE include:

- Conceptual Site Model (CSM) for project communication, hazard assessment, and data gap analysis;
- Munitions Response Site Prioritization Protocol (MRSPP) to prioritize sites for further munitions response actions, based on relative risk;
- Hazard Ranking System (HRS) data elements to ensure full characterization of the MRA;

- Air Force Restoration Information Management System (AFRIMS) for a range of program management functions, including data calls and audits; and
- Remedial Action Cost Engineering Requirements, MMRP Module (RACER) for estimating the costs of future munitions response actions.

Headquarters United States Air Force, in conjunction with the Air Force MMRP Executive Board, is centrally-managing the CSE and has designated the United States Army Corps of Engineers (USACE) Omaha District as the Contract Service Center for the CSE program. The USACE Omaha District provides technical oversight and management of the CSE for seven Major Commands, including the Air Force Materiel Command (AFMC).

The USACE Omaha District has tasked USA Environmental, Incorporated (USAE) to conduct the CSE Phase I investigation for Kirtland AFB under Contract Number W912DY-04-D-0006, Task Order Number DK01. USAE performed the work in accordance with the Statement of Objectives (SOO) issued by the USACE, titled "*Air Force Military Munitions Response Program (MMRP) Comprehensive Site Evaluation (CSE) Phase I at Installations Reporting to Air Force Materiel Command (AFMC) and Air Force Special Operations Command (AFSOC)*", dated 24 May 2005 (USACE, 2005).

The CSE Phase I at Kirtland AFB followed the CERCLA process for a PA as modified by the *Air Force Guide for Conducting the Comprehensive Site Evaluation Phase I at Air Force Munitions Response Areas, Draft, Version 8.3* (USAF, 2005). The CSE Phase I is also similar to the Resource Conservation and Recovery Act (RCRA) Solid Waste Management Unit (SWMU) Assessment Report or a RCRA Facility Assessment.

This CSE Phase I Report documents the findings of the CSE Phase I investigation performed at Kirtland AFB. In accordance with CERCLA and the NCP, no Federal, State, or local permits were required for the CSE Phase I investigation. All activities that were conducted in locations that may contain MEC and MC were performed in accordance with DoD, Air Force, Army, and USACE Huntsville Mandatory Center of Expertise requirements regarding personnel, equipment, and procedures.

1.1 Purpose

The purpose of this CSE Phase I investigation was to identify areas where past military munitions activities or MRAs associated with Kirtland AFB may have impacted the environment. The CSE Phase I investigation utilized existing data along with additional detector-assisted visual surveys to identify areas known or suspected to contain MEC or MC contamination, and determine if further investigation is necessary. The CSM, MRSPP, HRS, AFRIMS, and RACER data generated during the CSE Phase I will be used to support Air Force decisions on further investigation as part of the CSE Phase II or No Further Action (NFA) determinations.

1.2 Project Data Quality Objectives

Data Quality Objectives (DQOs) are qualitative and quantitative statements that clarify the objectives of each response action, define the appropriate type of data needed, and specify the tolerable levels of potential decision errors for the data used to support decisions. The DQO development process used for the CSE Phase I investigation at Kirtland AFB is described in Engineer Manual 200-1-2, *Technical Project Planning (TPP) Process*, U.S. Environmental Protection Agency (EPA) Publication QA/G-4, Guidance for the Data Quality Objectives Process, and Engineers Regulation 1110-1-2, *Engineering Design and Quality Management*. DQOs are dynamic elements of the CSE program and will be updated

in response to input from stakeholders and availability of new data to guide the data collection for the subsequent CSE Phase II activities. The DQOs for the CSE Phase I at Kirtland AFB are as follows:

- Maximize the outcome of the detector-assisted visual survey of MRAs associated with Kirtland AFB.
- Document sufficient MEC and MC data necessary for completion of the Air Force MMRP data input worksheets and development of the Interim Conceptual Site Model (ICSM) for each MRA.
- Implement reliable detection methods and provide documentation regarding the location and type of MEC and munitions debris on the surface along survey transects.
- Detect in a reliable manner subsurface anomalies along survey transects to the depth detection capabilities of the Minelab Explorer II all-metal detector.
- Incorporate the available MEC and MC data into the Kirtland AFB CSE Phase I Geographic Information System (GIS) Project and develop the ICSM based on all available data.

1.3 Project Management

The CSE Phase I project team consists of Kirtland AFB Environmental Management (EM), the USACE Omaha District, the New Mexico Environment Department (NMED), and the USAE Team. Kirtland AFB Environmental Management is the end-client for this CSE Phase I project. The USACE Omaha District is the project management and lead technical agency for this project. USAE is the prime contractor providing munitions response (MR) and environmental services for the execution of the CSE Phase I investigation at Kirtland AFB. USAE Team members include Bhate Associates (Bhate) for environmental restoration (ER) support and TLI Solutions, Incorporated (TLI) for HRR support. The CSE Phase I project organization is depicted in Figure 1-1.

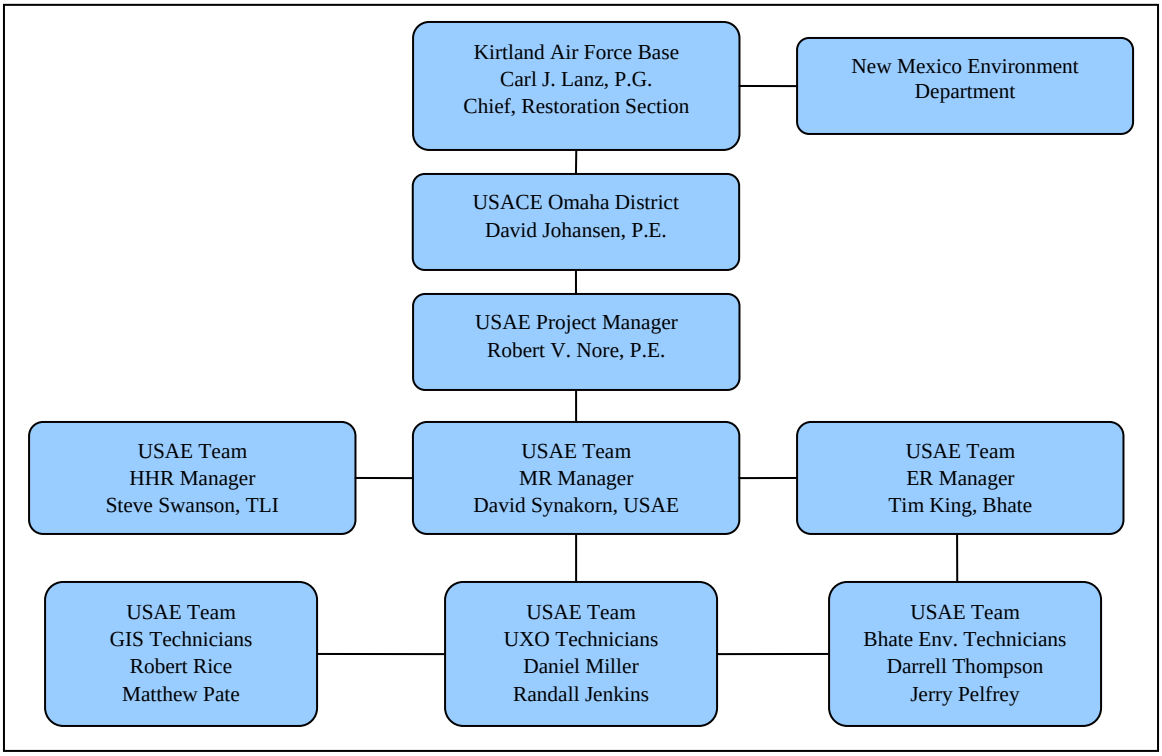

Figure 1-1. Kirtland AFB Project Organization

At the present time, the role of the NMED in the Air Force MMRP has not been defined. Kirtland AFB is conducting restoration activities under a Hazardous Waste Permit (HWP) that was issued on 14 November 1990, by the United States Environmental Protection Agency (EPA). The NMED was delegated RCRA authority by the EPA in 1996. As a result of EPA's delegation of authority, NMED's Hazardous Waste Bureau (HWB) is currently the primary regulatory agency responsible for oversight of the HWP. NMED's other bureaus such as the Groundwater Bureau and Petroleum Storage Tank Bureau oversee Kirtland AFB environmental restoration and compliance sites not contained in the HWP. Kirtland AFB's HWP has established deadlines and processes to be followed as sites are discovered, investigated, remediated, and moved to NFA.

1.4 Project Scope

The CSE Phase I investigation involved three primary data collection efforts:

1) The HRR, which included review of data repositories located both on and off Kirtland AFB;
2) Interviews of personnel identified as having information or knowledge relevant to specific ranges and related military activities within the base's MRAs; and
3) Installation survey using a knowledge-driven, instrument-assisted visual survey of areas within the MRAs that have the greatest potential for MEC presence and MC contamination.

Kirtland AFB's EM and the USACE Albuquerque District have performed comprehensive archives searches and HRRs in support of on-going investigations of adjacent Formerly Used Defense Sites (FUDS), response actions at Kirtland AFB Environmental Restoration Program (ERP) sites, and maintenance of the Military Munitions Range Management Action Plan (MAP) and Air Force MMRP Site Inventory.

To minimize the duplication of efforts, the project team agreed that:

- Due diligence has been practiced in the HRR of past military munitions activities at Kirtland AFB.
- Additional archives searches would not likely identify additional information and that information from searches that were performed under other projects would be used and incorporated to this report.

The scope of the CSE Phase I investigation of Kirtland AFB included:

- Evaluation of available historical data from the existing HRR to identify additional Kirtland AFB MRAs.
- Field data collection to confirm or disprove existing historical and anecdotal information on the Kirtland AFB MRAs previously identified in the Preliminary Conceptual Site Model.
- Field data collection to confirm or disprove existing historical and anecdotal information on additional Kirtland AFB MRAs.

1.5 Report Organization

USAE organized this report according to the CSE Phase I Report outline provided in the SOO. Major sections of the report include:

Section 1: Introduction

Section 2:	Installation Background
Section 3:	Physical and Environmental Setting
Section 4:	Summary of Data Collection Activities
Section 5:	Site Characteristics
Section 6:	Evaluation of Known/Suspected MEC
Section 7:	Evaluation of Hazardous Waste/Substances
Section 8:	Exposure Pathway and Hazard Assessment
Section 9:	Interim Conceptual Site Model
Section 10:	Munitions Response Site Prioritization Protocol
Section 11:	Summary and Recommendations
Section 12:	Cohort Assignment, Process Streamlining Opportunities, MRA Subdivision, and Newly Identified MRAs

This report also includes the following appendices:

Appendix A	Definitions
Appendix B	Acronyms and Abbreviations
Appendix C	References
Appendix D	Photo-Documentation Log
Appendix E	Project Source Data
Appendix F	Ordnance Technical Data Sheets
Appendix G	MRSPP Tables
Appendix H	RACER Data Input Worksheets
Appendix I	AFRIMS Data Input Worksheets
Appendix J	Documentation of Public Participation Support (Fact Sheets)
Appendix K	CSE Phase I Checklist

Figures and tables are incorporated within the section in which they are referenced.

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2. INSTALLATION BACKGROUND

2.1 Location and Setting

Kirtland AFB is located in southeast Albuquerque, Bernalillo County, New Mexico. The installation is adjacent to the City of Albuquerque airport, the Albuquerque International Sunport. Kirtland AFB occupies approximately 51,558 acres and is depicted in Figure 2-1. Kirtland AFB is bounded to the north and west by the City of Albuquerque, to the south by the Pueblo of Isleta, and to the east by the Cibola National Forest.

Kirtland AFB is the third largest installation in the AFMC, employing over 23,000 people, including more than 4,200 active duty personnel, 1,000 National Guard personnel, 3,200 part-time reserve personnel, and 14,600 civilian employees. The installation is home to the 377 Air Base Wing (ABW), Kirtland AFB's host organization (Kirtland AFB, 2006a).

2.2 Installation Mission and Operational History

2.2.1 Installation Mission

The Nuclear Weapons Center (NWC) was recently activated at Kirtland AFB on 31 March 2006. All other organizations at Kirtland AFB are now subordinate to the NWC. The NWC mission, encompassing the missions of both the NWC and the 377 ABW, is to ensure safe, secure, and reliable nuclear weapons support to the National Command Structure and the Air Force warfighter. The 337 ABW was activated under the AFMC on 1 January 1993, and is responsible for nuclear surety, expeditionary forces, and operating support for associate units on base. In addition, the 337 ABW, serves as Kirtland AFB's host organization.

The primary mission of the 377 ABW is munitions maintenance, which is provided at the depot level by two squadrons. The squadrons perform in-depth maintenance on Air Force and Department of Energy (DOE) assets around the world. Their objective is to deliver all munitions and support to the correct location on time and in prime operating condition.

In addition to munitions maintenance, the 377 ABW provides operating support for the associate units in over 2,000 buildings. In supporting this mission, the 377 ABW has the largest security forces squadron in the command.

The 377 ABW also provides quality and professional support services to the Kirtland AFB community-active duty, retirees, dependents and civilians with services such as security, medical, housing, fire protection and transportation support (Kirtland AFB, 2006b).

2.2.2 Installation Operational History

In 1928, construction began on Oxnard Field, the first private airport in Albuquerque, New Mexico. The airfield was expanded in the mid-1930s to provide U.S. Army and Navy pilots with a transient refueling/maintenance stop location. From the late 1930s to 1941, Oxnard Field was used for this purpose and as a training site for air crews that ferried bomber aircraft to England.

In 1935, the City of Albuquerque began plans for a new municipal airport. In the same year, the U.S. Army leased 2,000 acres of land adjacent to the airport site and plans began for what would become Kirtland AFB, one of the country's largest bomber training bases. By 1941, construction had been

completed on Albuquerque Army Air Base west of Oxnard Field, and B-17 and B-18 bomber combat crew training was under way. In February 1942, Albuquerque Army Air Base was renamed Kirtland Field. Later that year, the Army Air Force acquired Oxnard Field, along with its approximately 460 acres in addition to another 1,100 acres to the east of Kirtland Field. The Army Air Force soon began construction of the Albuquerque Air Depot Training Station, a training depot for aircraft mechanics (which later became Sandia Base).

From 1944 to 1945, Kirtland Field was used as an Army Air Force Medical Convalescent Center for returning veterans. Kirtland Field was also used as a dismantling and storage facility for war-weary and surplus aircraft. Runways were extended at the Field and bomb-loading pits were built. In 1948, Kirtland Field was designated as Kirtland AFB. The Navy brought a weapons test detachment to Kirtland AFB in 1949. The unit was deactivated in 1993 and moved to Naval Air Weapons Station China Lake, in California.

Units of the Los Alamos Scientific Laboratory (now Los Alamos National Laboratory) were relocated to the Albuquerque Air Depot Training Station in September 1945 to manage the development of weapons assemblies. The station was reassigned to the Armed Forces Special Weapons Project; which was renamed multiple times as the Air Force Special Weapons Center (AFSWC), the Air Force Weapons Laboratory (AFWL), the Phillips Laboratory, and finally, its current title, the Air Force Research Laboratory (AFRL). In 1947, initial construction of a weapons storage area was begun in the foothills of a small sub-range of the Manzano Mountains near the northeastern boundary of Sandia Base. This storage area was known as “Site Able” and later became Manzano Base. The Sandia Branch of the Los Alamos Scientific Laboratory, established in 1949, later became Sandia National Laboratories (SNL), the largest tenant on Kirtland AFB property. SNL is currently involved in the development and testing of special weapons as well as the research and development of energy source systems. [NOTE: The DOE’s SNL is referred to as DOE/SNL through the remainder of this CSE Phase I report.) The AFRL continued operations into the 1980s, primarily involving special weapons and laser research.

In July 1971, Manzano and Sandia Bases merged with Kirtland AFB, and the Air Force Space Command assumed management responsibilities. In the 1970s, the AFRL evolved into a research and development organization, hosting other military organizations.

In 1976, the 4900 ABW was created to oversee operational testing of emergency aircraft systems, and the 1550 Aircrew Training and Test Wing (later designated the Combat Crew Training Wing) brought regular flight operations to Kirtland AFB. Military Airlift Command (MAC) assumed control of Kirtland AFB and activated the 1606 ABW as a host base wing at Kirtland AFB.

On 1 October 1991, the 1550 Combat Crew Training Wing (CTW) merged with the 1606 ABW to form the 542 CTW, the host organization at Kirtland AFB. The 542 CTW’s operational mission was to train Air Force helicopter and HC-130 crews and pararescue personnel for worldwide operations.

On 1 January 1993, the 542 CTW split from the host wing to once again become a separate flying training wing under the Air Mobility Command (AMC), formerly MAC. The 377 ABW was activated as the new host base wing, and Kirtland AFB was reassigned from AMC to the AFMC, headquartered at Wright-Patterson AFB in Ohio. The 542 CTW continued its role of training aircrews and pararescue personnel for worldwide duty with AFSOC and Air Rescue Service. The 377 ABW supports the organizations at Kirtland AFB and continues to have a significant wartime mobility requirement in various critical specialties. In addition, Kirtland AFB continues to be one of the nation’s leading research and development, testing, and evaluation facilities (Kirtland AFB, 2005a).

On 31 March 2006, the NWC was officially activated at Kirtland AFB. The 377 ABW now reports to the NWC. The activation of the NWC resulted in the activation of the 498 Armament Systems Wing, the 498 Nuclear Systems Group, the 498 Missile Sustainment Group (formerly the inactivated 498 Missile Sustainment Group), and the 498 Munitions Maintenance Group (formerly the inactivated 377 Maintenance Group). The 377 ABW remains Kirtland's host organization, responsible for nuclear surety, expeditionary forces, and operating support for more than 100 associate units on base. The 377 ABW commander reports to the new center commander, who reports directly to the AFMC commander at Wright-Patterson AFB, Ohio. The NWC will function as a central organization for nuclear management and information. The Air Force role in regard to nuclear capability is to be the custodial agent with the NWC leadership at Kirtland AFB providing input into Air Force nuclear policy, which in turn influences the DoD and national policy levels (Kirtland AFB, 2006b).

2.3 Summary of MEC-Related Activities

MEC-related activities at Kirtland AFB include the development and testing of the Proximity/Variable Timing (VT) Fuze and other ordnance at the New Mexico Proving Ground (NMPG), later known as the New Mexico Experimental Range (NMER) (see Section 2.3.1). Other MEC-related activities have also been performed by DoD organizations at the former Sandia Base, which was merged into the current Kirtland AFB.

Active ranges at Kirtland AFB are not eligible for munitions response under the Air Force MMRP and were not the subject of this CSE Phase I investigation. Kirtland AFB's largest tenant, DOE/SNL, has also performed munitions-related activities on Kirtland AFB, which are also not subject of this investigation. The following subsections contain additional information on the MEC-related activities at Kirtland AFB for those areas included in this investigation. [NOTE: The information found in the following subsections and in Sections 4 and 5 below that relate to MEC related activities and histories of munitions activities include summaries of information found in the *Kirtland Air Force Base, Albuquerque, New Mexico, South Kirtland Air Force Base Operations Area, Operational History*, August 2006 (TechLaw, 2006).]

2.3.1 NMPG/NMER – 1941 through 1952

The NMPG/NMER was in existence from 31 December 1941, to 30 June 1952, and was used to develop and test the VT fuze and other ordnance. During the initial development of the NMPG, it was located on a combination of private property, New Mexico Lands Commission property, and withdrawn National Forest lands. The NMPG/NMER was operated under contracts through several Universities in New Mexico. The Office of Scientific Research and Development, and later the Navy's Bureau of Ordnance (BuOrd), were the responsible Federal government agencies. At the end of World War II, most of the land that made up the NMPG/NMER was acquired by the Federal government and today, most of the NMPG/NMER property lies within the boundaries of Kirtland AFB.

The VT fuze development involved fuzes for rotated projectiles (artillery shells) and fuzes for non-rotated projectiles (bombs-rockets-mortars). The Navy sponsored the artillery fuze development and the Army sponsored the bomb, rocket, and mortar task. The Navy's BuOrd was responsible for the Navy's program and was charged with monitoring its development and procuring the fuzes for distribution to all branches of the armed services.

During the existence of the NMPG/NMER the following guns were used in the research and development project: Navy 6 pounder, 5-inch/54, 5-inch/38, 3.7-inch, 3.4-inch/92, 3.4-inch/97, 3.2-inch/65.5, 3.06-inch, 3-inch/70, 3-inch/50, 120 millimeter (mm), 105mm, 90mm, 78mm, 76mm, 75mm, 58mm, 57mm, and smoothbore guns. In addition, the following rockets were used in the research and development

project: 4.5-inch rockets, 5-inch rockets, and high velocity rockets. The explosives that were used as listed in reports prepared under the NMPG/NMER research and development project included Explosive D, Royal Demolition Explosive (RDX), Composition A, black powder, tetryl, and trinitrotoluene (TNT). Inert rounds were used as well. During the project, over 49,000 rounds of ordnance were fired (TechLaw, 2006).

2.3.2 Other DoD MEC-Related Activities

During the history of Kirtland AFB, numerous munitions related activities have taken place. These activities are related to both a normal Air Force installation and to special defensive requirements brought about as result of Kirtland AFB's special status with nuclear surety, and research and development activities. These activities included training activities at Sandia Base as well as at Kirtland AFB in order to provide a defensive capability. The training included the following (TechLaw, 2006):

- Defense Training Areas
- Pistol, Skeet, Rifle, and Machine Gun Ranges
- Mortar Range
- Howitzer Range (75mm)
- Chemical Warfare Training
- Bombardier Training

2.3.3 DOE/SNL MEC-Related Activities

Kirtland AFB's tenant DOE/SNL, became an entity in 1946 as a result of the Manhattan Project, and has conducted MEC-related and other hazardous waste generating activities at over 200 sites on Kirtland AFB. DOE/SNL is responsible for the clean up of these sites. Historically, the principal mission of DOE/SNL has been to provide technical expertise in the design, development, and testing of weapons for the nation's nuclear arsenal (TechLaw, 2006).

2.4 Introduction of Munitions Response Areas

In fiscal year 2000, Headquarters United States Air Force established a baseline range inventory for the Air Force by fielding an Air Force-wide range information data call and conducting installation site visits. In an effort to update and validate initial range information, URS Corporation (URS), under contract with the Air Force Center for Environmental Excellence, conducted a range inventory site visit at Kirtland AFB in August 2001.

URS initially identified 36 historical ranges during the range inventory. Some of the historical ranges overlapped one another, and in many cases, overlapped operational ranges. A final report for the range inventory for Kirtland AFB was not developed. URS did develop range maps as a result of the inventory. The range maps were further refined by Shaw Environmental and Infrastructure, Inc. (Shaw), a Kirtland AFB contractor.

Portions of the historical ranges that did not overlap operational ranges area were adopted as MRAs in the Air Force MMRP Site Inventory and updated annually in the Defense Environmental Programs Annual Report to Congress. As of 30 September 2005, DoD reported 34 MRAs at Kirtland AFB (DoD, 2005).

Eight of these 34 MRAs are off-base range areas which were not investigated under the CSE Phase I. Table 2-1 lists these off-base MRAs and their MMRP status during the CSE Phase I data collection efforts. AL757, AL758, ML760, ML762 and TS756 were undergoing evaluation for FUDS eligibility AL759, ML126, and PT779 were closed under the Air Force MMRP.

Table 2-1. Off-Base MRAs Not Investigated During the CSE Phase I

Site ID	Site Name	Status During the CSE Phase I
AL757	Proximity Fuze Range North	Under evaluation for FUDS eligibility
AL758	Proximity Fuze Range East	Under evaluation for FUDS eligibility
AL759	Proximity Fuze Range South	Closed under Air Force MMRP
ML126	McCormick Ranch Range	Closed under Air Force MMRP
ML760	Gun Site Fan	Under evaluation for FUDS eligibility
ML762	McCormick Ranch Buffer	Under evaluation for FUDS eligibility
PT779	Air Force Training Area	Closed under Air Force MMRP
TS756	Skeet Range	Under evaluation for FUDS eligibility

The remaining 26 MRAs were investigated under this CSE Phase I. The AFRIMS source information for these MRAs indicated that they vary in size from 6 acres to 4,086 acres and comprise a total land area of 11,688 acres. Table 2-2 lists the MRAs under investigation, their reported acreages, cohort types, and descriptions prior to the CSE Phase I investigation. Cohort types are described in Section 12.1 of this report. Figure 2-2 depicts the original 26 MRAs associated with Kirtland AFB prior to the CSE Phase I investigation.

Table 2-2. MRAs Under Investigation

MRA ID	MRA Name	Size (Acres)	Cohort	Site Description
AL120	Proximity Fuze Range	4086	F	Air-to-Ground Range
AL769	Ordnance Drop Zone	337	F	Air-to-Ground Range
AL771	Old Cable Site	172	F	Air-to-Ground Range
DA130	Arroyo del Coyote Demolition Area	256	C	OB/OD Site
DA782	Explosive Disposal Area	26	C	OB/OD Site
ED770	Experimental Range	1848	C	EOD Range
ML125	Field Firing Range	1619	F	Multi-Use Range
ML774	Gun Site Fan	643	F	Medium/Large Caliber Range
ML781	Firing In-Abutment	6	F	Multi-Use Range
ML784	40mm Test and Training Range	150	F	Rifle Grenade Range
MU772	H-25 Site	46	F	Multi-Use Range
PT123	Tijeras Small Arms Range	812	F	Multi-Use Range
PT761	Tijeras Small Arms Training Range	34	F	Multi-Use Range
PT773	Coyote Canyon Tech Site	131	E	Pyrotechnics Range

MRA ID	MRA Name	Size (Acres)	Cohort	Site Description
PT783	Bazooka Training Range	145	F	Multi-Use/Training & Maneuver Area
SR763	Rifle Range	500	A	Small Arms Range
SR764	Rifle Range	103	A	Small Arms Range
SR765	WWII Pistol Range	242	A	Small Arms Range
SR766	Sub-Machine Gun	149	A	Small Arms Range
SR767	Rifle Range	189	A	Small Arms Range
SR768	Close Combat Infiltration Course	22	F	Multi-Use Range
SR777	Rifle Range	51	A	Small Arms Range
SR778	Airfield Pistol Range	10	A	Small Arms Range
SR780	Impact Area	88	F	Multi-Use Range
TS775	Airfield Skeet Range	12	A	Trap and Skeet Range
TS776	Skeet Range	11	A	Trap and Skeet Range

2.5 Previous Investigations

2.5.1 Responsible Service Investigations

Responsible Service Investigations include investigations conducted by Kirtland AFB for ERP and Environmental Compliance Program (ECP) sites. Investigations conducted by DOE/SNL are found in Section 2.5.2, Other Investigations.

2.5.1.1 Air Force MMRP Wide Area Assessment

In March 2006, after the completion of the CSE Phase I field investigation, the Air Force began the MMRP Wide Area Assessment (WAA) data collection at Kirtland AFB. The WAA serves as both a technology evaluation and a characterization tool for assessment of MRAs currently in the Air Force MMRP Site Inventory. The airborne characterization technologies deployed during the WAA include Digital High-Resolution Color Orthophotography (Orthophotography) and Light Detection and Ranging (LiDAR). Orthophotography and LiDAR data combine to produce high-resolution imagery with high-accuracy horizontal positioning capable of identifying surface features associated with munitions activities (e.g., craters, berms, etc). The WAA data collection effort included Orthophotography of approximately 30,645 acres and LiDAR survey of approximately 30,595 acres associated with Kirtland AFB.

The Air Force will use the data collected during the WAA in conjunction with the CSE Phase I data to scope the CSE Phase II efforts, develop defensible cost/schedule estimates for each MRA, provide valuable information for determining the most applicable removal methodologies, and assist in removing MRAs from the Air Force MMRP Site Inventory.

The final *Orthophotography/LiDAR Report* (USACE, 2006) identified thirteen areas of interest (AOI), including:

- Three high-confidence areas, totaling 4,856 acres, where historical evidence and WAA analysis indicate a high probability of MEC impact or contamination;

- Five low-confidence areas, totaling 1,817 acres, where WAA data suggests that MEC impact or contamination may exist; and
- Five survey sampling areas, totaling 2,610, where historical evidence does not indicate a significant probability of MEC contamination and the weight of the WAA evidence indicates a moderate-to-low possibility of contamination.

WAA findings relevant to the MRAs under investigation are further discussed in Section 5 of this report.

2.5.1.2 Range Clearances

References to range clearance efforts at Kirtland AFB were found during the HRR, but no copies of the clearance reports were found. The information indicated certified clearance of properties, but did not identify the types or the location of munitions removed during the clearances.

2.5.1.3 Kirtland AFB ERP/ECP Sites

Some of the Kirtland AFB MRAs either contains portions of, or entire ERP/ECP sites. The ERP/ECP sites have been investigated and in some case have been approved for NFA by NMED. Table 2-3 lists these ERP/ECP sites and their current status.

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Table 2-3. Kirtland AFB ERP/ECP Sites and Their Status

No.	Site ID	Site Name	Kirtland AFB ERP/ECP Sites Status
1.	DP-067	Three Mine Shafts	NFA
2.	DP-099	Building 29015 Disposal Pit	NFA
3.	DP-101	Old EOD Disposal Pits	NFA
4.	LF-001	Landfill No. 1	Corrective Action in Progress
5.	LF-002	Landfill No. 2	Corrective Action in Progress
6.	LF-007	Landfill No. 3	Corrective Action Complete
7.	LF-009	Abandoned Landfill	NFA
8.	LF-015	Landfill B	NFA
9.	LF-044	Fill Area SE of Sewage Lagoons	NFA
10.	LF-045	Unnamed Dump (Explosive Test Site Dump)	NFA
11.	OT-010	Radiation Training Sites 5–8	NFA
12.	OT-029	EOD Range	Active Site
13.	OT-046	Lake Christian	NFA
14.	OT-086	Former Small Arms Range	NFA
15.	OT-091	South Coyote Firing Site	NFA
16.	RW-068	Rad Dump/Slag Pile & Cratering Area	NFA
17.	SS-063	Jet Engine Test Cell	NFA
18.	SS-069	Drum Storage Area	NFA
19.	SS-103	Jet Engine Test Cell Spill Site	NFA
20.	ST-051	Sewage Effluent Line	NFA
21.	ST-059	ART Drum	NFA
22.	ST-060	ART Pit	NFA
23.	ST-066	Trestle Facility OWS and Pit	NFA
24.	ST-296	Building 702 Septic System,	Response to Request for Supplemental Information
25.	ST-321	Battery Storage Area, Bldg 57007	NFA
26.	ST-328	Blast Overpressure Site Cesspools	NFA
27.	ST-346	Trestle Site Septic Tank	Response to Request for Supplemental Information
28.	ST-347	Building 29015 Cesspool	NFA
29.	ST-351	Building 635 Septic Tank	NFA
30.	WP-026	Sewage Lagoons and Golf Course Ponds	RCRA Facility Investigation
31.	WP-057	NMERI Pits	NFA
32.	WP-087	GRABS Waste Pile	NFA

Table 2-4 lists the association between MRAs and ERP/ECP sites. Thirteen Kirtland AFB MRAs overlap ERP/ECP sites.

Table 2-4. Kirtland AFB ERP/ECP Sites and Associated MRAs

MRA ID	MRA Name	Kirtland AFB ERP/ECP Site Associated with the MRA
AL120	Proximity Fuze Range	DP-067, LF-015, OT-046, OT-091, RW-068, WP-087
AL769	Ordnance Drop Zone	None
AL771	Old Cable Site	DP-067
DA130	Arroyo del Coyote Demolition Area	DP-101, OT-010, SS-069, ST-051
DA782	Explosive Disposal Area	None
ED770	Experimental Range	DP-099, LF-015, OT-029, OT-046, RW-068, ST-321, ST-328, ST-347, WP-057
ML125	Field Firing Range	DP-067, OT-091
ML774	Gun Site Fan	None, DOE/SNL Tech Area III (Active Site)
ML781	Firing In-Abutment	None
ML784	40mm Test and Training Range	None
MU772	H-25 Site	DP-067
PT123	Tijeras Small Arms Range	None
PT761	Tijeras Small Arms Training Range	None
PT773	Coyote Canyon Tech Site	None
PT783	Bazooka Training Range	None
SR763	Rifle Range	None
SR764	Rifle Range	LF-002, LF-007, LF-009, LF-044, OT-086, ST-059, ST-060, ST-066, ST-346, WP-026
SR765	WWII Pistol Range	LF-007, LF-009, LF-044, OT-086, ST-066, ST-346, WP-026
SR766	Sub-Machine Gun	LF-001, LF-044, OT-086, SD-025, ST-059, ST-060, WP-026
SR767	Rifle Range	OT-086, ST-059, ST-060, WP-026
SR768	Close Combat Infiltration Course	None
SR777	Rifle Range	None
SR778	Airfield Pistol Range	LF-045, SS-063, SS-103, ST-296
SR780	Impact Area	None
TS775	Airfield Skeet Range	ST-351
TS776	Skeet Range	None

Investigation summaries for the 32 ERP/ECP sites listed above may be found in the *Kirtland Air Force Base, Environmental Restoration Program, ERP Site Specific Summaries, June 2005* (Kirtland AFB, 2005b).

2.5.2 Other Investigations

This subsection includes investigations and/or clearances conducted by organizations other than Kirtland AFB.

2.5.2.1 The 29000 Area, The New Mexico Proving Ground, the New Mexico Experimental Range, and the Development of Kirtland Air Force Base, December 1993

Argonne National Laboratory prepared a report for Kirtland AFB's 377 ABW EM Office discussing the 29000 Area at Kirtland AFB in order to assist with the evaluation of its historical and cultural significance. The 29000 Area includes portions of the NMPG/NMER. The report was titled *The 29000 Area: The New Mexico Proving Ground, the New Mexico Experimental Range, and the Development of Kirtland Air Force Base, December 1993* (TechLaw, 2006).

The 29000 Area Report provided the historical context of buildings remaining from the NMPG/NMER era and examined their potential significance. Three of the remaining buildings were identified as eligible for inclusion in the National Register of Historical Places. In addition, the report recommended entering into a Memorandum of Understanding with the New Mexico State Historical Preservation Office for management guidelines for the structures (TechLaw, 2006).

2.5.2.2 DOE/SNL Operations and Investigations

This subsection lists investigations at sites conducted by DOE/SNL on property within Kirtland AFB. DOE/SNL is responsible for the investigation and remediation of sites at Kirtland AFB where DOE/SNL conducted operations. Table 2-5 presents the DOE/SNL Site ID numbers and Site Names.

Table 2-5. DOE/SNL Site ID and Site Names

No.	DOE/SNL Site ID #	DOE/SNL Site Name
1.	8	Open Dump (Coyote Canyon Test Site)
2.	9	Burial Site/Open Dump (Schoolhouse Mesa)
3.	10	Burial Mounds (Bunker Area North of Pendulum Site)
4.	11	Explosive Burial Mounds
5.	12	Burial Site/Open Dump (Lurance Canyon)
6.	13	Oil Surface Impoundment (Lurance Canyon Burn Site)
7.	15	Trash Pits (Frustration Site)
8.	18	Concrete Pad
9.	19	TRUPAK Boneyard Storage Area (NW End of Old Aerial Cable)
10.	20	Schoolhouse Mesa Burn Site
11.	22	Storage/Burn Area (West of Directed Energy Experimental Range [DEER])
12.	26	Burial Site (Western Part of TA-III)
13.	28	Mine Shafts
14.	35	Vibration Facility Oil Spill (TA-III)
15.	47	Unmanned Seismic Observatory (Building 9820 Drains)

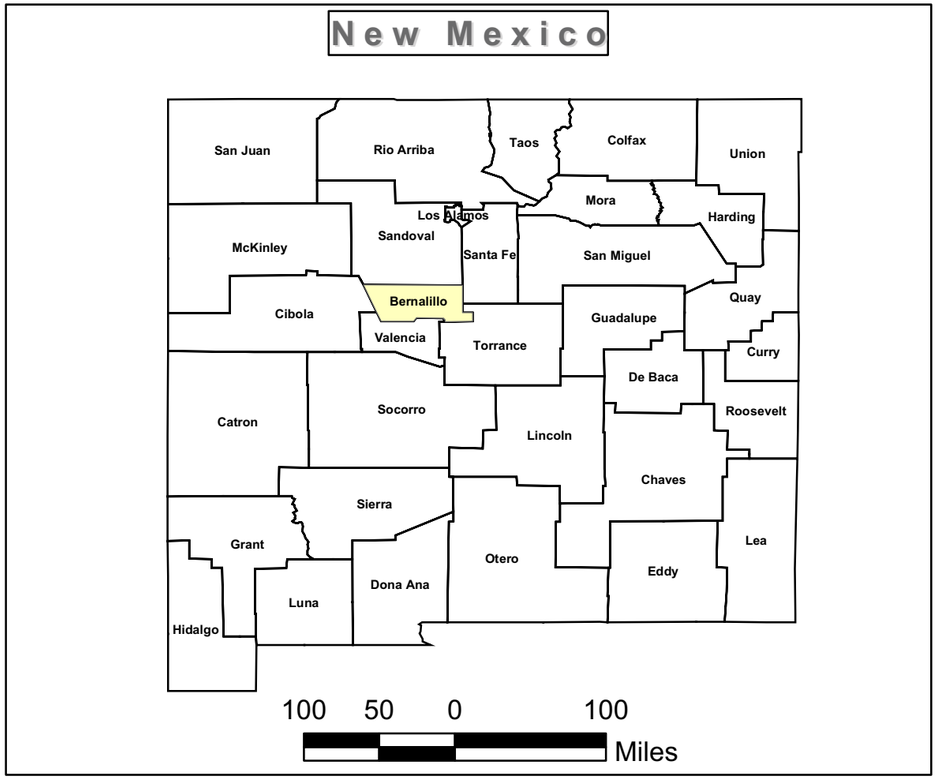
No.	DOE/SNL Site ID #	DOE/SNL Site Name
16.	57A	Workman Site: Firing Site
17.	57B	Workman Towers Site
18.	58	Coyote Canyon Blast Area (Bunker Area North of Pendulum Site)
19.	59	Pendulum Site
20.	60	Bunker Area (North of Pendulum Site)
21.	61	Schoolhouse Mesa Test Site
22.	66	Boxcar Site
23.	67	Frustration Site
24.	68	Old Burn Site
25.	69	Old Borrow Pit
26.	70	Explosives Test Pit (Water Towers)
27.	71	Moonlight Shot Area
28.	72	Operation Beaver Site
29.	76	Mixed Waste Landfill (Technical Area III)
30.	81	New Aerial Cable/Burial Site/Dump/Test Area
31.	82	Old Aerial Cable Site
32.	83	Long Sled Track (Tech Area III)
33.	84	Gun Facilities
34.	87	Building 9990 Firing Site
35.	92	Pressure Vessel Test Site (Coyote Canyon Blast Area)
36.	94	Lurance Canyon Burn Site: Debris/Soil Mound Area
37.	100	Building 6620 HE Sump/Drain (Tech Area-III)
38.	109	Firing Site (Building 9956)
39.	112	Explosive Contaminated Sump (Building 9956)
40.	116	Building 9990 Septic System
41.	117	Trenches (Building 9939)
42.	137	Building 6540/6542 Septic System
43.	145	Building 9981/9982 Septic Systems
44.	147	Building 9925 Septic Systems
45.	150	Building 9939/9939A Septic Systems
46.	152	Building 9950 Septic System
47.	153	Building 9956 Septic Systems
48.	161	Building 6636 Septic System
49.	180	Building 6503 Underground Storage Tank (UST) (TA-III)
50.	240	Short Sled Track

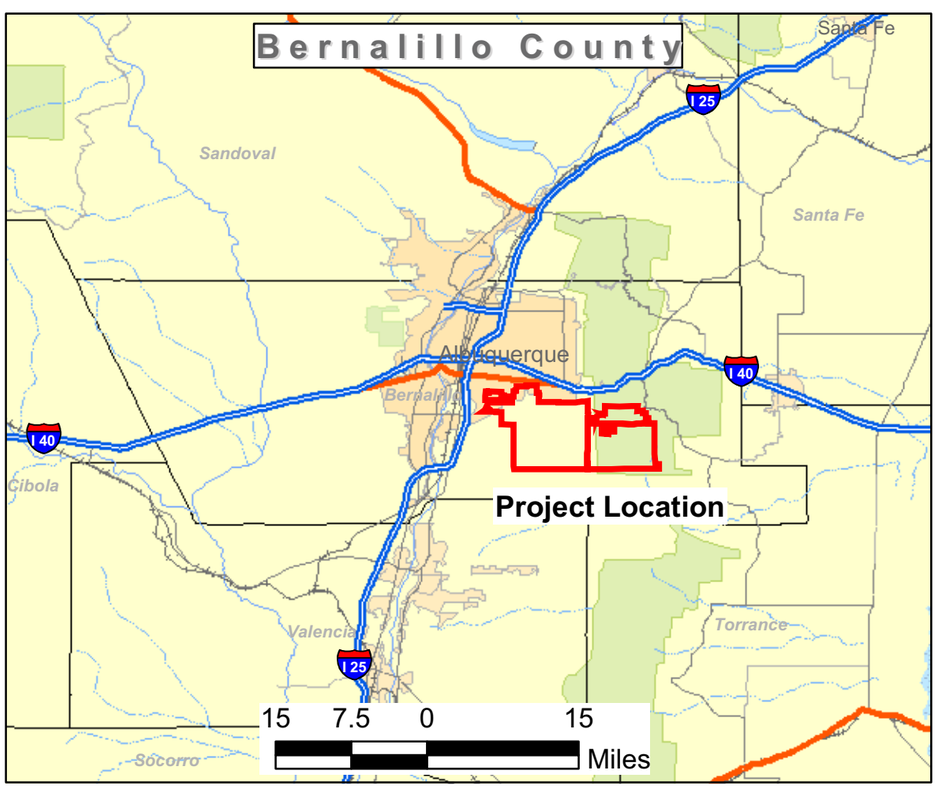
Table 2-6 lists the MRAs that are associated with DOE/SNL sites.

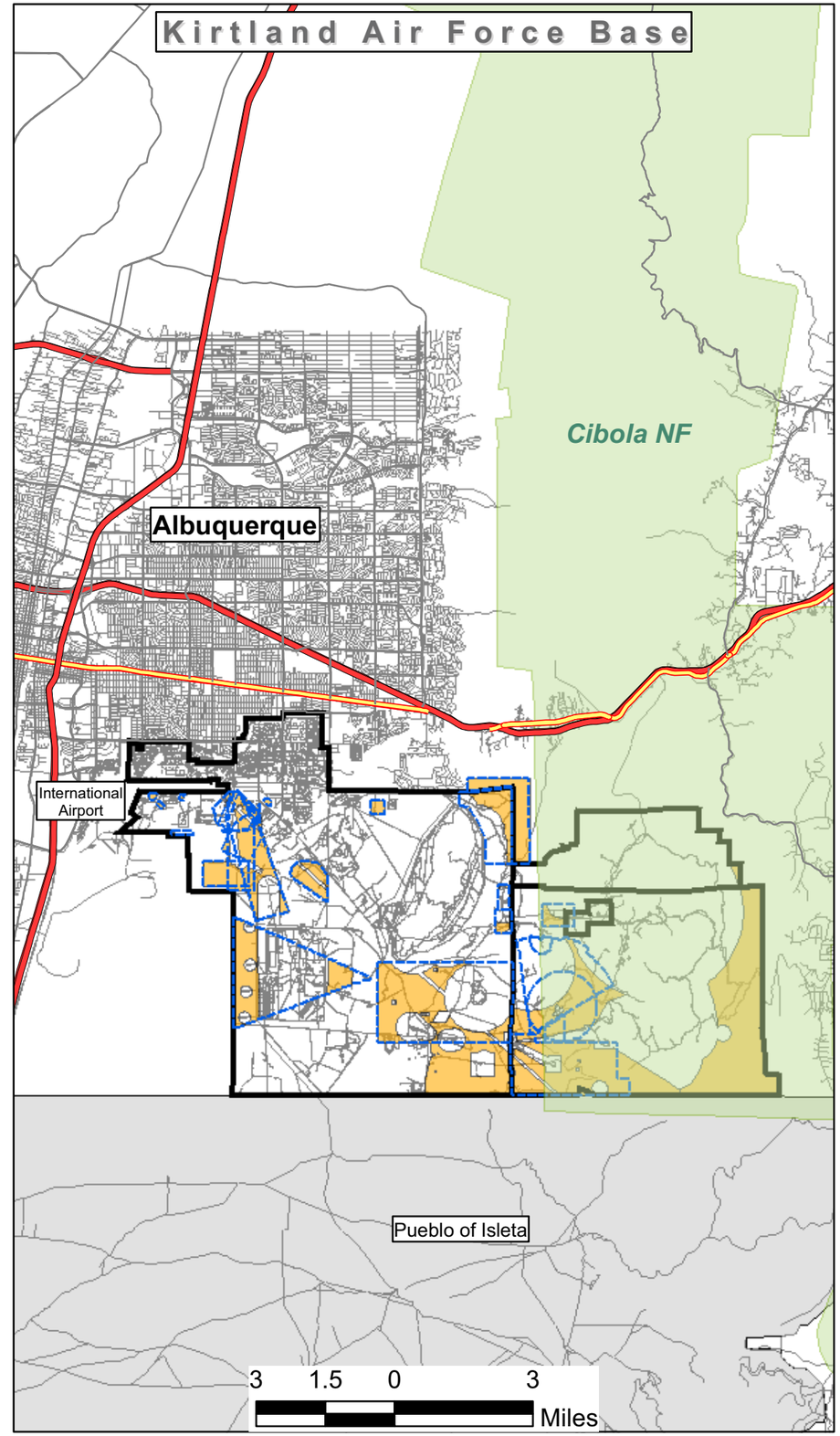
Table 2-6. Kirtland AFB DOE/SNL Sites and Associated MRAs

MRA ID	MRA Name	DOE/SNL Site Associated with the MRA
AL120	Proximity Fuze Range	11, 12A, 12B, 13, 15, 19, 22, 220, 277, 28-10, 28-2, 28-3, 28-4, 28-5, 28-7, 28-9, 47, 57A, 57B, 65A, 65B, 65C, 65D, 65E, 65F, 66, 67, 68, 69, 70, 71, 72, 81A, 81B, 81C, 81D, 81E, 81F, 82, 94A, 94B, 94C, 94D, 94E, 94F, 94H
AL769	Ordnance Drop Zone	None
AL771	Old Cable Site	19, 82
DA130	Arroyo del Coyote Demolition Area	None
DA782	Explosive Disposal Area	None
ED770	Experimental Range	103, 117, 145-A, 145-B, 147-A, 147-B, 150-A, 150-B, 153-A, 154-B, 20, 61A, 61B, 61C, 9
ML125	Field Firing Range	15, 277, 28-10, 28-2, 28-7, 28-9, 57B, 67
ML774	Gun Site Fan	100, 109, 112, 137-A, 137-B, 138, 152, 153-A, 153-B, 161, 18, 180, 240, 26, 35, 76, 83, 84
ML781	Firing In-Abutment	None
ML784	40mm Test and Training Range	None
MU772	H-25 Site	None
PT123	Tijeras Small Arms Range	10, 59, 60
PT761	Tijeras Small Arms Training Range	None
PT773	Coyote Canyon Tech Site	58, 8, 92
PT783	Bazooka Training Range	21, 62, 8, 88
SR763	Rifle Range	None
SR764	Rifle Range	None
SR765	WWII Pistol Range	None
SR766	Sub-Machine Gun	None
SR767	Rifle Range	None
SR768	Close Combat Infiltration Course	None
SR777	Rifle Range	None
SR778	Airfield Pistol Range	None
SR780	Impact Area	None
TS775	Airfield Skeet Range	None
TS776	Skeet Range	None

DOE/SNL anticipates that all of its environmental restoration sites will be approved for NFA by NMED by the end of 2006. Some sites will continue with Long Term Monitoring (LTM) or Long Term Operations.







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Scale Varies

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 2-1

Location Map

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- MRA Boundaries
- Non-Operational Ranges
- Pueblo of Isleta
- KAFB Boundary

Road Classification

- Interstate Highways
- Highways
- Secondary Roads

USA Environmental, Inc.		US Army Corps Of Engineers Omaha District	
Drawn By:	JAL	Scale: Varies	Rev: 2
Checked By:	DS	Date Drawn: 11-17-2005	
Submitted By:	BN	Revision Date: 01-18-2007	

Path: S:\CSE\Kirtland\Report MXDs\2-1_Location Map.mxd

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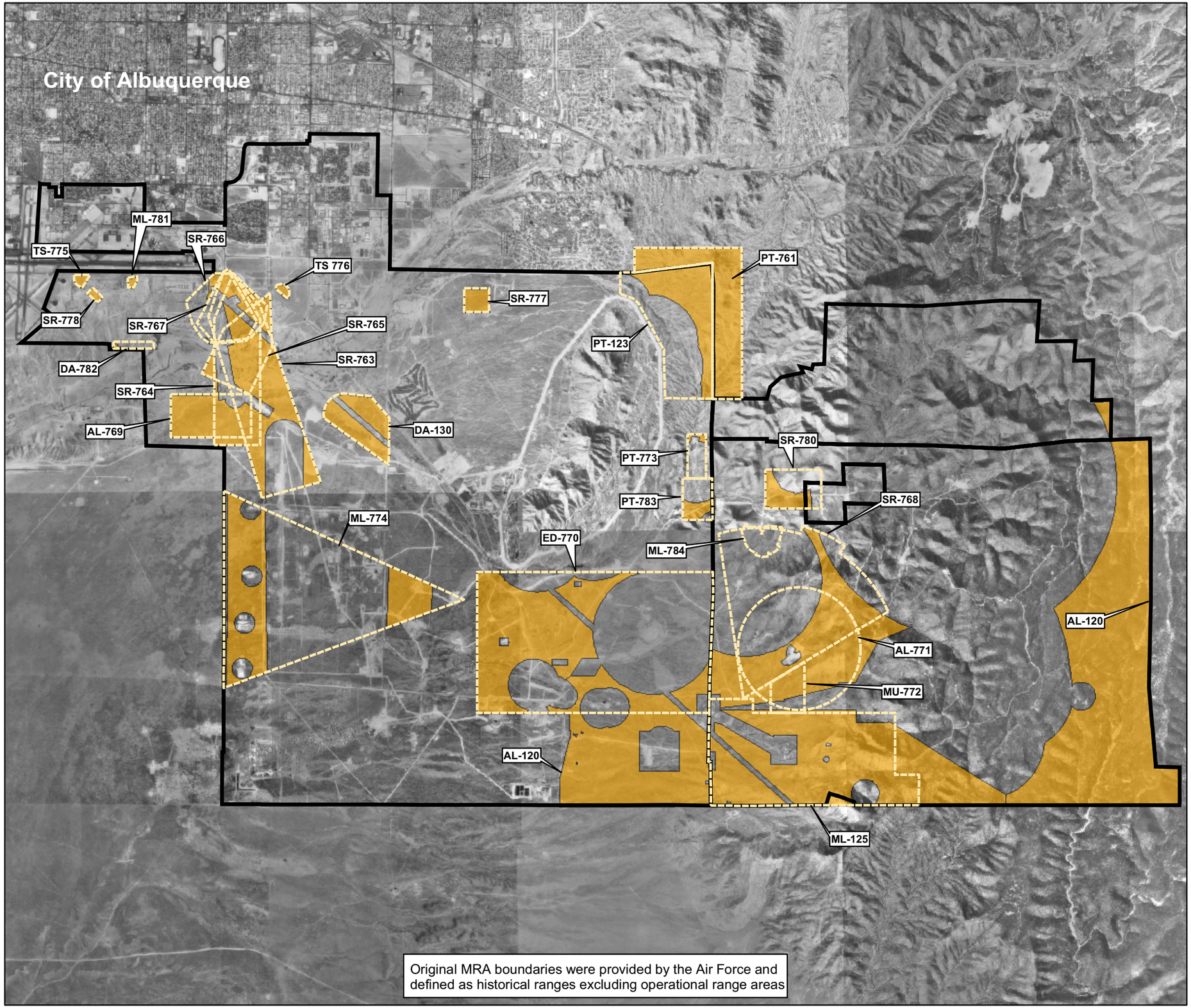

N

1.2 0.6 0 1.2 Miles

Data is projected to the State Plane Coordinate System: New Mexico Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 2-2

Original MRA Boundaries

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Historical Ranges
- Original MRAs
- KAFB Boundary

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale:	1" = 1.2 mi	Rev:	3
Checked By:	DS	Date Drawn:	11-17-2005		
Submitted By:	BN	Plot Date:	01-18-2007		

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3. PHYSICAL AND ENVIRONMENTAL SETTING

3.1 Climate

The climate of Kirtland AFB and the surrounding vicinity is classified as "arid continental". The mean annual precipitation is 8.4 inches and the mean annual snowfall is 1.25 inches. The average monthly precipitation in the Albuquerque area varies from less than 1 inch during November through March to over 1.25 inches in July and August. Winters are typically dry with monthly snowfalls seldom exceeding three-inches. Snow generally melts within 24 hours outside of the mountain areas. Typically, summer rains in the form of brief but locally heavy thunderstorms account for almost half of the annual moisture. Potential evapotranspiration (evaporation occurring when no soil-water deficit exists) for the Albuquerque area is 30.9 inches. Actual evapotranspiration has been determined to be about 95 percent of precipitation in the climatic regime, with the remaining five percent divided equally between runoff and recharge (Kirtland AFB, 2004).

3.2 Topography

Kirtland AFB lies along the eastern margin of the Albuquerque basin and on part of the central Rio Grande rift. The eastern portion of the base rises into the Manzanita Mountains, where elevations reach 7,900 feet (ft) above mean sea level (msl). Land elevations in the western portion of the base near the airport are approximately 5,300 feet above msl. Topography of most of the site is level to gently sloping, with occasional washes for seasonal drainage. However, the eastern area of the Installation contains sharp-crested hills, rocky outcrops, and canyons in and around the Manzanita Mountains (TechLaw, 2006).

3.3 Hydrology

The surface water system within the Kirtland AFB area consists primarily of ephemeral streams or arroyos, which lose water through channel losses that contribute to groundwater recharge. These drainages potentially influence the shape of the water-surface profile of the underlying aquifer. There are several known springs, all upstream of the Manzano Mountains and tributaries to Arroyo del Coyote. The major surface drainages include the Tijeras Arroyo, Arroyo del Coyote, and an unnamed drainage south of Arroyo del Coyote. Except for two very short reaches of channels, these drainages are all ephemeral within Kirtland AFB. Floods and runoff occur mostly during the summer thunderstorm season (July through September). The snow in the Manzano Mountains can produce localized runoff, which rarely reaches the lower portions of the arroyos or the Rio Grande Valley.

3.4 Soil and Vegetation Types

Surface soils consist predominantly of well-drained gravelly sands containing varying amounts of silts and clays. The following associations and their geologic attributes have been mapped within the Kirtland AFB boundaries:

- Deep soils on flood plains and dissected terraces:
  - Gila-Vinton-Brazito Association, consisting of well-drained loamy soils.
  - Bluepoint-Kokan association, consisting of sandy, gravelly soils.
- Deep soils on alluvial fans, mesas, and piedmonts:
  - Madurez-Wink Association, consisting of well-drained loamy soils.

  - Tijeras-Embudo Association, consisting of well-drained, loamy, gravelly soils.
- Shallow to deep soils on mountains and foot slopes:
  - Seis-Orthids association, consisting of loamy, stony, cobbley soils.
  - Kolob-Rock Outcrop Association, consisting of loamy, stony soils and rock.

The vegetation at Kirtland AFB consists of four main plant communities: grassland, piñon-juniper, ponderosa, and riparian/wetland/arroyo. These vegetative communities correspond closely with the accepted U.S. Forest Service plant community descriptions. Transitional areas are found between these communities and contain a mixture of representative species from the bordering areas. The piñon -juniper and grassland are the dominant vegetative communities at Kirtland AFB. The riparian/wetland/arroyo plant community is confined to isolated areas inundated by surface water most of the year and is therefore not considered a primary vegetative plant community (Kirtland AFB, 2006d).

3.5 Geology and Hydrogeology

The Kirtland AFB area is underlain by a complex geologic setting. The base is located within the Rio Grande Valley of the Mexican Highland subdivision of the Basin and Range Physiographic Province and the Albuquerque Basin. Within this area, the base occupies two physiographic subdivisions: the west front of the Sandia and Manzano Mountains, and the Sandia -Manzano Physiographic Piedmont Plain between the mountains and the inner portion of the Rio Grande Valley. The information for this subsection is taken from the 2005 update of the MAP (Kirtland AFB, 2005a), and Kirtland AFB's ERP Site Summaries, 2005 (Kirtland AFB, 2005b), which provides detailed geologic and hydrogeologic information for Kirtland AFB.

3.5.1 Geology

The geology of the Kirtland AFB area varies in accordance with the regional geology. The eastern mountainous portion of the base is composed of Precambrian metamorphic and crystalline rock (primarily granite) and Paleozoic sedimentary rock (primarily marine carbonates). The western portion of the base lies within the Albuquerque Basin. Geologic features in this area of the basin include travertine, unconsolidated and semi-consolidated piedmont deposits, as well as aeolian, lacustrine, and stream channel deposits. In general, the surficial geology is characterized by recent deposits (e.g., mixtures of sandy silt and silty sand with minor amounts of clay and gravel), Ortiz gravel (i.e., alluvial piedmont sand and gravel deposits), and the Santa Fe Group (i.e.,, a mixture of sand, silt, clay, gravel, cobbles, and boulders). Generally, the northern and western portions of Kirtland AFB are dominated by unconsolidated geologic units; and consolidated units are predominate in the eastern half of the base. Kirtland AFB lies within the eastern portion of the Albuquerque Basin, which contains the through-flowing Rio Grande. The basin is approximately 90 miles long and 30 miles wide. The deposits within the Albuquerque Basin consist of interbedded gravel, sand, silt, and clay. The thickness of basin-fill deposits in most of the basin exceeds 3,000 ft, though the thickness varies considerably because of the large amount of faulting in the basin.

Geologic materials of primary importance within the basin are the Santa Fe Group and the piedmont slope deposits. The Santa Fe Group consists of beds of unconsolidated to loosely consolidated sediments and interbedded volcanic rocks. The materials range from boulders to clay and from well-sorted stream channel deposits to poorly sorted slopewash deposits. Coalescing alluvial fans of eroded materials from the surrounding mountains were deposited unconformably over the Santa Fe Group, extending westward from the base of the Sandia and Manzano Mountains to the eastern edge of the Rio Grande floodplain. The fan sediments range from poorly sorted mud flow material to well sorted stream gravel; the beds

consist of channel fill and interchannel deposits. The fan deposits range in thickness from 0 to 200 ft and thicken toward the Sandia, Manzanita, and Manzano Mountains.

3.5.1.1 Regional Tectonic Setting

Kirtland AFB is located in the Albuquerque Basin of the Rio Grande Rift, a linear structure that extends from southern Colorado to Mexico and west Texas. The north-northwest trending basin has undergone several kilometers of east-west extension and subsidence over the past 30 to 40 million years. It is bordered by basement uplifts on the east, including the Sandia-Manzanita- Manzano-Los Piños uplifts. Several major rift-bounding faults are present on Kirtland AFB.

The base is positioned along the western edge of the Manzano uplift near a zone of pervasive faulting at the uplift margin. This fault zone is approximately 35 miles long and 2 miles wide. A number of major regional faults intersect within the area, resulting in a diverse pattern of fault trends and displacements. The Hubbell Spring fault is significant due to its apparent control over groundwater movement and exhibits outstanding fault scarps in the area. Due to the complexity of the fault systems at Kirtland AFB, the area has been segmented into four tectonic provinces.

From east to west, the provinces are:

- The uplifted margins of the Albuquerque Basin, where bedrock generally crops out and forms rugged topography. The uplifted terrain is highly segmented and includes elevated blocks of the Manzano Base (i.e., Four Hills) and the Manzanita Mountains.
- The Hubbell bench, which occupies an intermediate structural position between the Albuquerque Basin and the uplifts. Bedrock is generally buried by less than 200 ft of alluvium and is frequently encountered during well installation. A few scattered outcrops reveal that the bench has been beveled by erosion to deep stratigraphic levels.
- The Travertine basin, which developed within a zone of early Tertiary, Laramide-age shear on the western rim of the Hubbell bench.
- The eastern part of the Calabacillas sub-basin of the Albuquerque Basin, where bedrock is deeply buried below late Tertiary, Santa Fe Group alluvium and has been encountered by only a single deep well on Kirtland AFB.

3.5.1.2 Stratigraphy of the Kirtland AFB Area

The stratigraphic units that characterize the Kirtland AFB area are grouped into six major categories and described from oldest to youngest: (1) Precambrian basement complex, (2) Upper Paleozoic strata, (3) Upper Cretaceous strata, (4) Paleogene strata, (5) Neogene/ Quaternary Santa Fe Group strata (Miocene through lower Pleistocene), and (6) Quaternary post-Santa Fe Group sediments (upper Pleistocene to Recent).

3.5.1.3 Geomorphology

Geomorphic features in the Kirtland AFB region include a series of complex coalescent alluvial fans and piedmont alluvium between the eastern margin of the Rio Grande Valley and the western slopes of the Sandia, Manzanita, and Manzano Mountains.

3.5.2 Hydrogeology

The groundwater system at Kirtland AFB and in the Albuquerque area lies within the Albuquerque Basin, also referred to as the Middle Rio Grande Basin. The basin is part of the Rio Grande Rift. As the Rio Grande Rift spread apart, creating various basins, the Albuquerque Basin filled with sediments several miles thick, most of which are referred to as the Santa Fe Group. The unit consists of unconsolidated sediments that thin toward the basin boundary. The edges of the basin are marked by normal faults. Overlying the Santa Fe Group are the Pliocene Ortiz gravel and Rio Grande fluvial deposits.

Generally, the upper unit of the Santa Fe Group contains the most productive portion of the regional aquifer that supplies groundwater to the City of Albuquerque and Kirtland AFB. The unit is characterized by piedmont slope, river, and flood plain deposits. The ancestral Rio Grande formed a large aggradational plain in the central basin, depositing a mix of coarse- to fine-grained sands, silts, and clays with variable bed thickness.

Basin-fill deposits make up the aquifer in the Albuquerque Basin. Hydraulic conductivity values range from 0.25 ft per day (ft/day) to 50.0 ft/day due to large variations in the lithology of the basin-fill deposits. Clay layers have relatively low hydraulic conductivity, whereas gravel and cobble deposits have relatively high hydraulic conductivity. Deposits of interbedded gravel, sand, silt, and clay have intermediate hydraulic conductivity.

This principal aquifer underlies Kirtland AFB, with the basin fill in this area consisting of unconsolidated and semi-consolidated sands, gravels, silts, and clays of the Santa Fe Group; alluvial fan deposits associated with erosion of upland areas; and valley alluvium associated with stream development. The alluvium varies in thickness from a few feet near the mountains on the east side of the base to greater than 2,100 ft at a location 5 miles southwest of the Albuquerque International Airport. Depths to groundwater are generally less than 100 ft to the east of the Hubbell Spring fault.

Springs have been observed along the fault alignment. West of the fault, depths to groundwater abruptly increase to 400 to 550 ft. There are also multiple shallow zones of perched water that may not be continuous at approximately 250 to 300 ft below ground surface.

The shallow or perched system is defined as a saturated zone and separated from the regional aquifer by an unsaturated interval. Lithologic and water chemistry data indicate that the perched aquifer might be composed of smaller, more discontinuous sand channels, whereas the regional unit is a larger, more consistent sand layer.

Regional groundwater flow is generally from the basin margins toward the basin center. Groundwater also flows south toward the Socorro Basin and southeast near the Jemez River. However, heavy pumping by Kirtland AFB and the City of Albuquerque has formed a depression, directing water toward the northwestern portion of the base. Flow directions observed within the regional aquifer at Kirtland AFB confirm these general flow directions. Water in the regional aquifer converges in the northwestern portion of the base between LTM sites LF-008 and the Sewage Lagoons. In the southern portion, groundwater flows to the west from the Manzano uplift, and from the south into the central portion of the base.

3.5.2.1 Vadose Zone Hydrology

The vadose (or unsaturated) zone at Kirtland AFB is a significant part of the total hydrogeologic system. In this semiarid climate, the vadose zone thickness is generally quite substantial. Consequently, most

contaminants released near the ground surface must travel a long distance before reaching the groundwater system. The vadose zone east of the Tijeras/Hubbell Spring/Sandia fault complex, ranges from approximately 50 feet thick in the arroyos and valleys to several hundred ft thick near the faults. On the west side of the faults, the unsaturated zone is up to 500 ft thick**.**

3.5.2.2 Perched Zone Hydrology

Shallow saturation above the regional aquifer has been identified in the vicinity of the Tijeras Arroyo, above its confluence with Arroyo del Coyote, including the area beneath the active Kirtland AFB Landfill. This perched zone underlies a relatively large area extending from the Kirtland AFB Golf Course, northwest to the DOE/SNL Technical Area I, and west to the Sewage Lagoons.

Preliminary and update assessments were conducted by DOE/SNL in connection with the Site-wide Hydrogeologic Characterization Project in 1993 and 1994, respectively. The most recent information was elicited from a report on a model of a perched zone of saturation. The DOE/SNL groundwater model identifies the sources of recharge to the perched zone as the following: natural arroyo recharge, seepage from former sewage lagoons, golf-course irrigation, a former leaking pond at the golf course, irrigation at the parade grounds, and the acid-waste outfall. Less significant sources are leaky water mains and turf irrigation. According to the model, the perched water zone is currently shrinking in the west due to the absence of the former sewage lagoons as a water source, and is expanding in the east in response to ongoing water operations. The direction of groundwater flow in this zone appears to be to the south-southeast with a hydraulic gradient of about 0.01 percent slope.

Anomalous patterns in the regional groundwater contours indicate that the perched and regional groundwater systems merge in the Tijeras Arroyo Groundwater area. The merge occurs where the fine-grained unit loses its aquitard-prone character so that the perched groundwater can migrate downward.

3.5.2.3 Saturated Zone Hydrology—Groundwater Flow Direction

The general direction of Santa Fe Group aquifer groundwater flow in the Albuquerque Basin is from the basin margins toward the basin center. On a local scale, the general groundwater flow direction in the center of the Kirtland AFB area is toward the west, but is largely uncharacterized because of the complex fault system of the area. The gradient direction moves toward the north near the western boundary of Kirtland AFB in response to groundwater withdrawal from Kirtland AFB and nearby Albuquerque water-supply well fields.

3.5.2.4 Hydrogeologic Regions

Kirtland AFB occupies an area that includes two very different geologic environments separated by an assemblage of fault systems. These different geologic environments, as well as the area bounding the fault system, contribute different features to the local saturated zone setting. To reduce this area-wide complexity, the Kirtland AFB area consists of the following three hydrogeologic regions:

- Hydrogeologic Region 1 - A western area dominated by thick alluvial fill and evidence of additional north-south trending, west-dipping faults that have produced a series of downthrown-to-the-west bedrock steps.
- Hydrogeologic Region 2 - A middle area dominated by north-south trending, westdipping normal faults interconnected in some cases by subdued graben features and characterized by relatively shallow depth to bedrock.

- Hydrogeologic Region 3 - An eastern area of bedrock outcrops, representing uplifted terrain that exhibits fault displaced cements and fracture lineaments.

3.5.2.5 Geochemical Trends in the Regional Aquifer

Several water types are present in the Albuquerque Basin that represent different sources of recharge to the basin, including waters from the Rio Grande, the Tijeras Arroyo, Tijeras fault zone, and Eastern Mountain Front. General characteristics of these waters include recharge from the Eastern Mountain Front, which occurs along the entire mountain front of the basin. This water type is characterized by relatively low specific conductance and chloride and is a calcium-sodium-bicarbonate (Ca-Na-HCO3) type. Groundwater from the crystalline rocks of the Tijeras fault zone has mixed with water from the Eastern Mountain Front, resulting in groundwater with high conductance, chloride, and bicarbonate. Along the Tijeras Arroyo, groundwater is characterized by high conductance, sulfate, and nitrate and is a calcium-bicarbonate type. Waters influenced by recharge from the Rio Grande are generally higher in silica and potassium, with calcium elevated related to sodium.

The evaluation of regional groundwater at Kirtland AFB demonstrates that two main water types are present, indicating different water sources. The major distinction observed at the sites is that groundwater in the southeastern portion of the base, including Manzano Landfill (LF-020) and Lake Christian (OT-046), has a stronger sulfate and higher chloride signature and is present at elevations 300 to 600 feet higher than the other regional groundwater at the base. Groundwater in the central portion of the base, including Landfill No. 2 (LF-002), Landfills 4, 5, and 6 (LF-008), the Tijeras Arroyo, SWMU 8-28 (ST-250), and McCormick Ranch/Range (OT-028), has a consistent water type and groundwater flow direction, indicating that the aquifer is continuous from the southern and eastern areas into the central portion of Kirtland AFB. The groundwater in this area is generally dominated by calcium and bicarbonate. Results for samples from the Golf Course Main Pond wells (KAFB-0608, KAFB-0609, and KAFB-0610) appear to indicate that transitional groundwater is present, with sulfate concentrations that are intermediate between groundwater in the uplifted area and groundwater typical of the central portion of the base. The well at Radioactive Burial Site 11 (RW-06), KAFB-6301, has a stronger bicarbonate signature than other wells in this transitional region. Groundwater in the northwestern portion of the base (Landfill No. 1 [LF-001], Fire Training Area [FT-013], and Building 1033 [ST-341]) is similar to groundwater in the central portion, but has a slightly higher sodium/calcium ratio.

Groundwater in the northwestern portion of the base generally flows to the north and east, converging with the groundwater from the south and west in the north-central portion of the base. The chemical composition of groundwater in monitoring well KAFB-8351 at SWMU 8-35 (ST-214) does not fit into the chemical and geographic pattern observed in the other wells, and may represent a different water source.

Concentrations of iron, selenium, dissolved solids, and nitrate as nitrogen have been elevated in some wells at Kirtland AFB over the last few sampling events. Many of these detections can be explained in the context of site-wide and basin-wide water quality trends (iron, selenium, and nitrate as nitrogen). The water quality in the Albuquerque Basin has been degraded from the combined effects of decreasing water levels and increasing development. Low water conditions associated with less recharge and slower circulation in aquifer formations have been shown to result in groundwater with higher concentrations of dissolved solids. Elevated nitrate concentrations have been identified in the basin, which are the result of an increasing number of septic systems.

The quality of groundwater in the Albuquerque Basin is influenced by the effects of excess irrigation waters mixing with groundwater in the aquifer, in some cases resulting in higher dissolved solids

concentrations. Sources of lower quality water in the basin include septic systems, residual minerals from evapotranspiration, urban runoff, and application of agricultural chemicals. Nitrates are of particular concern in the Albuquerque area as evidenced by a large zone of nitrate contamination along the Rio Grande flood plain near Albuquerque; nitrate concentrations have doubled and tripled between 1977 and 1990 from use of septic tanks. In some areas, the high nitrate levels have resulted in zones of low oxygen in the groundwater. Nitrates are consistently detected in groundwater samples collected from monitoring wells on Kirtland AFB and will continue to be monitored as part of current projects. The nitrate contamination on the base could potentially be flowing into the groundwater at the depression area in the northwestern portion of the base. Heavy pumping of the groundwater by Kirtland AFB and the City of Albuquerque has caused this depression. Exceedances of drinking water standards have also been identified for dissolved solids, sulfate, chloride, iron, and manganese in eastern Bernalillo County. Concentrations of these constituents increased significantly during the 1990s as water levels in the area dropped. A major source of dissolved solids in the basin is reported to be calcite, gypsum, and halite in the basin-fill sediments. A study of water in the Tijeras Arroyo indicated that dissolved solids often exceeded 500 milligrams per liter.

A description of aquifers found in sediments that are generally resistant to weathering, describes waters in the Santa Fe Group of the Albuquerque Basin. Some of the waters from this formation have very low solids content resulting from interaction with silica-rich igneous rocks. However, the major ion concentrations found in many of the Kirtland AFB wells, particularly those completed in the perched aquifer, may represent waters that come from an aquifer with sluggish circulation due to the decreasing water volumes, as evidenced by the lowering of water levels in these units. In these waters, flushing of solutes is retarded, resulting in higher concentrations of major ions and possibly trace metals.

Elevated iron concentrations have been reported in groundwater from the Santa Fe Group in the Albuquerque area. Based on sequential extraction analyses, it is reported that iron arises from geochemical exchange with the aquifer rock materials. Sediments from three wells completed in the Santa Fe Group were exposed to various reagents to mimic weathering in order to estimate water-soluble, ligand- or anion-exchangeable fractions, and those less-mobile fractions from metal oxides, sulfide, organic complexes, and silicates. The iron was primarily found in metal oxides and silicates. In contrast, iron from the lower Kachina Formation was primarily found in sulfide minerals.

Elevated concentrations of selenium have been detected in the groundwater underlying Kirtland AFB. Selenium has been studied extensively in the Central Valley of California and other arid environments similar to the Albuquerque Basin where high volumes of irrigation water are used. Selenium has been shown to mobilize from evaporite minerals, resulting in high concentrations in irrigation return flows. Selenium is not attenuated by the physical, chemical, and biological properties of the soil like other minerals in agricultural settings.

3.6 Applicable or Relevant and Appropriate Requirements

While the environmental restoration work at Kirtland AFB is under the jurisdiction of both the NMED and EPA Region 6, the CSE Phase I is governed by CERCLA as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986 and regulations promulgated there under (Code of Federal Regulations, Title 40, Part 300 Section 5 [40 CFR § 300.5]). Therefore, Federal regulations are referenced. The CSE concept was developed from existing data acquisition methods and data analysis, tracking, and reporting tools to serve as the initial PA/SI phase for sites covered under the Air Force MMRP.

CERCLA regulations require that the identification of Applicable or Relevant and Appropriate Requirements (ARARs) be initiated during the scoping phase of remedial investigations, feasibility studies, and the selection

of remedies. 'Applicable requirements' are cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal or State regulations that specifically apply to a hazardous substance, pollutant, contaminant, action, location, or other circumstances at a CERCLA site. 'Relevant and Appropriate requirements' are cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal or State regulations that address conditions that are not applicable, but are similar to those encountered at a CERCLA site.

When sampling is conducted as a part of the CSE process the following Federal regulations pertain:

- CFR, Title 40 Part 300 (40 CFR 300). Comprehensive Environmental Response, Compensation, and Liability Act;
- CFR, Title 29 Part 1910 (29 CFR 1910). Occupational Safety and Health Standards, General Industry;
- CFR, Title 29 Part 1926 (29 CFR 1926). Safety and Health Regulations, Construction Industry;
- CFR, Title 40 Parts 260-299 (40 CFR 260-276). Hazardous Waste Management; and
- CFR, Title 49, Parts 171-173 and 177 (49 CFR 171-173 and 177). U.S. Department of Transportation Hazardous Materials Regulations.

Identification and evaluation of additional ARARs will be an iterative process, which will be performed throughout the life of the project, and particularly when evaluating and recommending an appropriate removal/remedial response. In addition to ARARs, guidance associated with proposed future activities will also be considered. Some applicable Federal and USACE regulations and guidance governing safety, UXO site investigation, and removal activities include:

- Air Force Manual, *Explosives Safety Standard,* 91-201 (7 March 2000 or most recent revision);
- USACE. *Safety and Health Requirements Manual,* Engineer Manual 385-1-1 (03 November 2003);
- USACE. *Safety and Occupational Health Document Requirements for Hazardous, Toxic and Radioactive Waste (HTRW) and OEW Activities,* Engineer Regulation 385-1-92 (01 July 2003);
- 27 CFR 55, *Explosive Materials Storage;*
- DoD. *Contractors' Safety Manual for Ammunition and Explosives,* DoD 4145.26-M;
- DoD. Defense Reutilization and Marketing Manual, DoD 4160.21-M;
- DoD, *Ammunition and Explosives Safety Standards,* DoD 6055.9-STD (October 2004 or most recent revision);
- *Ammunition General,* Technical Memorandum (TM) 9-1300-200; and
- *Military Explosives,* TM 9-1300-214.

The State of New Mexico has adopted 40 CFR Part 260 with very few exceptions, to include the regulatory limits on MC. MC limits will be based upon Federal EPA Region 6 unless higher standards are promulgated by the State of New Mexico (NMED, 2000). If regulatory limits are not established by the EPA Region 6, than there are provisions for the State of New Mexico to develop soil screening levels (NMED, 2006). Additional Federal and State Regulations may be applicable to potential follow on environmental restoration activities (Kirtland AFB, 2005a):

- 40 CFR Parts 190 - 256 EPA regulations for solid waste;

- 40 CFR Part 761 EPA regulations for management of polychlorinated biphenyls;
- 40 CFR Part 61 and 40 CFR 763 EPA regulations for management of asbestos;
- 10 CFR 19, 20, 21, 30, 40, 70, and 71 for management of radioactive materials;
- 49 CFR Parts 100-178 Department of Transportation rules for hazardous materials transport;
- 20 New Mexico Administrative Code (NMAC) Chapter 9, New Mexico Solid Waste Management Regulations;
- 20 NMAC Chapter 4, New Mexico Hazardous Waste Management Regulations;
- 20 NMAC Chapter 9, New Mexico Special Waste Requirements Regulations;
- 20 NMAC Chapter 2, New Mexico Air Quality Regulations;
- 20 NMAC Chapter 6, New Mexico Water Quality Control Commission Regulations;
- 20 NMAC Chapter 3, New Mexico Radiation Protection Regulations;
- 20 NMAC Chapter 11, Albuquerque/Bernalillo County Air quality Control Board;
- NMED Soil Screening Levels, June 2006, Revision 4.

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4. SUMMARY OF DATA COLLECTION ACTIVITIES

4.1 Historical Records Review

Prior to the CSE Phase I, USAE's subcontractor, TechLaw, had contacted and visited both off-site and on-site historical record data repositories in search of munitions-related records associated with Kirtland AFB. The data repositories visited included national historical archives, regional archives, libraries, local historical societies, and museums. In addition, interviews of knowledgeable persons were conducted. Data acquisition from these various sources is discussed in the following sections.

4.1.1 On-site Data Repositories

In support of the ongoing investigation of CSE Phase I, document reviews and interviews were conducted at the environmental restoration branch, real property branch, cultural resources, and explosives and ordnance disposal (EOD) section at Kirtland AFB. Physical and electronic records were reviewed and copied when appropriate. Relevant documents were identified using standard archival research techniques to identify their source and location.

4.1.2 Off-site Data Sources

The data collection team reviewed historical records located at local and regional data repositories including Air Force historical agencies; county and public land agencies; universities; national and regional archives; and USACE offices, as indicated in the subsections below. See Appendix C for a complete listing of all references used in this report.

- **Air Force Historical Research Agency -** The Air Force Historical Research Agency (AFHRA) is the repository for Air Force historical documents. During the HRR, the AFHRA was visited and electronic and hard copy finding aids were accessed. Documents related to Kirtland AFB were copied. Documents collected include aerial photographs, reports, and history of Kirtland AFB.
- **Air Force Safety Center -** The Air Force Safety Center (AFSC) maintains a database named the Information Preservation Society (IPS). The AFSC was contacted and visited on 2 November 2005 by Jerome Stolinski, USACE Project Manager, in regard to obtaining documentation maintained in the IPS. The AFSC representatives explained that all funding for the IPS had been expended and that unless funding were provided by either the USACE or other sources, the IPS would not be available for research. As of the date of this progress report, further funding was not available and the IPS was not accessed.
- **Bernalillo County Assessor's Office –** The HRR Team conducted research utilizing the Bernalillo County Assessor's website, http://www.bernco.gov/live/, to obtain current ownership information.
- **Internet -** The HRR Team conducted research on the Internet for Kirtland AFB. No significant findings were located.
- **Johns Hopkins University Applied Physics Laboratory** The HRR Team contacted this organization concerning their holdings since Johns Hopkins University Applied Physics Laboratory oversaw the proximity fuze work conducted by the University of New Mexico (UNM) at the NMPG/NMER. With the assistance of the staff (including Judith Theodori, Bertha Pledger, and Laura Henneesee), the HRR Team reviewed the contents of Cabinet P in the back

room of 12-407 (their "Archives II"). Cabinet P contains four drawers of WWII histories, reports, and correspondence from the proximity fuze efforts.

- **National Archives and Records Administration, College Park, Maryland -** The Record Groups (RGs) reviewed from the National Archives and Records Administration (NARA) included a list of records and guidance provided by both the USACE Engineer Pamphlet 870-1-64 *Environmental Cleanup at Former and Current Military Sites: A Guide to Military Research* (USACE, 2001) and the Interstate Technology and Regulatory Council (ITRC) *Technical/ Regulatory Guideline, Munitions Response: Historical Records Review* (ITRC, 2003). Researchers reviewed NARA's on-line resources to select RGs that contain records related to the site. After reviewing the on-line sources, the researchers spoke with the NARA's Archivists to further refine the list of RGs. Finally, individual finding aids at each archive were reviewed and boxes of documents were selected to review.
- **National Archives and Records Administration, Rocky Mountain Region, Denver, CO -** The RGs reviewed from NARA Rocky Mountain Region included the same list of records provided in guidance documents discussed above and followed the same procedure in reviewing the records. Researchers reviewed NARA's on-line resources to select RGs that contain records related to the site. The NARA Rocky Mountain Region is the designated document repository for Federal facilities, such as Kirtland AFB, in New Mexico.
- **National Personnel Records Center -** Documents at the National Personnel Records Center were reviewed utilizing finding aids developed by the USACE St. Louis District.
- **Naval Surface Warfare Center -** The HRR Team contacted the technical library in regards to this research and attempting to locate the technical reports generated as a result of the BurOrd contracts with UNM and the New Mexico School of Mines (now the New Mexico Institute of Mining and Technology).
- **New Mexico Institute of Mining and Technology -** The HRR Team contacted and visited the New Mexico Institute of Mining and Technology, Joseph R. Skeen Library, in Socorro, NM.
- **New Mexico Commissioner of Public Lands, Public Records Division -** The HRR Team contacted the New Mexico Commissioner of Public Lands, Public Records Division, to obtain copies of tract register books or any other documentation that record leases that were granted by the State of New Mexico for Sections within Kirtland AFB.
- **University of Colorado -** The HRR Team reviewed and collected Public Land Orders affecting Kirtland AFB at the University of Colorado library.
- **University of New Mexico** The HRR Team contacted and visited the UNM Zimmerman Library, Center for Southwest Research.
- **URS Corporation –** The HRR Team obtained and copied records obtained by URS. URS was the contractor responsible for the initial identification of ranges at Kirtland AFB.
- **USACE, Albuquerque District -** In support of the ongoing investigation of the CSE Phase I, The HRR Team reviewed USACE Albuquerque District real estate documents and maps. In addition to files at the USACE office, the HRR Team reviewed documents in 18 boxes in storage. The HRR Team also reviewed documents in five file drawers and selected documents relevant to the CSE Phase I.
- **U.S. Department of Agriculture, Forest Service -** The HRR Team contacted and visited the Sandia Ranger office (Cibola National Forest). No new documents were found.

Archive Search Summaries were prepared by the HRR Team, which contain Document Inventories that record the Archival Record Group, Document Date, Document Type, Author/Author Organization, Recipient, Recipient Organization, Document Title, and Contents. In addition, Sources Contacted Lists were prepared that include the archives visited, the point of contact at the archives, and information about the records groups or classification reviewed. The documents and electronic copies were numbered and in the case of paper copies, were electronically scanned. The supporting documentation is available in Adobe Portable Document Format (PDF).

4.1.3 Historical Data Assessment

To confirm the location of the MRAs currently in the Air Force MMRP Site Inventory and identify additional areas that may have been impacted by past military munitions activities at Kirtland AFB, the USAE Team incorporated historical range data from the HRR into the Kirtland CSE GIS Project. The USAE GIS Manager compared the footprint of historical range areas, the current surface danger zones (e.g., safety fans for operational ranges and quantity-distance for potential explosion sites), and the original MRA boundaries identified in the Air Force MMRP Site Inventory. Figure 4-1 depicts the historical range areas and current surface danger zones (also known as operational range areas) at Kirtland AFB, overlaid by the original MRAs. Figure 4-2 depicts the summary of the original and revised MRAs.

4.1.4 Modifications to Historical Range Boundaries and New MRAs

As shown in Figure 4-2, historical ranges and the MRAs derived from those ranges were modified to more accurately reflect the locations of historical activities and eliminate overlap with current operational ranges or sites not covered by the Air Force MMRP. Additionally, new MRAs were identified as a result of those modifications. These modifications are summarized in the following sections on a site-by-site basis. Relevant MEC-related history on these ranges and MRAs is provided in Section 5.2 of this report. Note: Historical ranges are referenced by the range names (e.g., Proximity Fuze Range) and the MRAs derived from those ranges are referenced by their MRA IDs (e.g., AL120) to minimize confusion between the historical range and the MRA derived from those historical ranges.

4.1.4.1 AL120 Proximity Fuze Range

The Proximity Fuze Range, as drawn originally in the Air Force MMRP Site Inventory, encompasses all other-than-operational range areas within a large firing fan extending east from the intersection of Lovelace and Target Roads, located in the southeast region of Kirtland AFB. This original Proximity Fuze Range boundary completely envelops the Old Cable Site, the H-25 Site, the Field Firing Range, and intersects portions of the Close Combat and Infiltration Course and the Experimental Range (TechLaw, 2006).

The HRR Team identified nine additional firing points to the west of the original range boundary that were associated with the NMPG/NMER development of the VT fuze. These new historical ranges are depicted in Figure 4-1 and include:

- NMPG Firing Point 1: Section T
- NMPG Firing Point 2: Section A
- NMPG Firing Point 3: Section T
- NMPG Firing Point 4: Section A
- NMPG Firing Point 5: Section T

- NMPG Firing Point 6: Section T, Main Firing Line
- NMPG Firing Point 7: Section T
- NMPG Firing Point 8: Section T
- NMPG Firing Point 9: Section T.

Relevant MEC-related history on these new firing points is provided in Section 5.2.1 of this report. Firings from these additional western firing points were directed to the east or vertically. Inclusion of these firing points into the Proximity Fuze Range extends the range boundary to the west and increases the size of the safety fan to the north of the original fan. As a result, AL120 (the MRA derived from the Proximity Fuze Range) also expands to the north and west. Figure 4-3 depicts the original and revised boundaries of the Proximity Fuze Range and AL120.

The revised AL120 comprises five discrete non-operational range areas. For the purpose of discussion in this report, these non-operational range areas will be referred to as the McCormick Ranch Impact Area (westernmost portion of AL120), the Isleta Drop Zone (central portion of AL120 west of Lovelace Road), the Workman Site (central portion of AL120 east of Lovelace Road), the NMPG Buffer Zone North (eastern portion of AL120 within DOE Withdrawn Areas), and the NMPG Buffer Zone South (eastern portion of AL120 within Kirtland AFB Withdrawn Areas).

4.1.4.2 AL769 Ordnance Drop Zone

The boundary of the Ordnance Drop Zone was adjusted slightly to agree with the source map. AL769 was modified to eliminate overlap with the Sandia Base Small Arms Range West (one of three MRAs derived from the overlapping Sandia Base Small Arms Ranges). Figure 4-4 depicts the revised boundary of the Ordnance Drop Zone and AL769.

4.1.4.3 AL771 Old Cable Site

No changes were made to the boundary or location of the Old Cable Site. AL771 was expanded to account for changes in operational range boundaries and to include two smaller non-contiguous portions of AL120 to the west and southeast. Figure 4-5 depicts the unchanged boundary of the Old Cable Site and the revised boundary of AL771.

4.1.4.4 DA130 Arroyo del Coyote Demolition Area

The boundary of the Arroyo del Coyote Demolition Area was expanded based on historical range maps. As a result, the boundary of DA130 was also expanded. Figure 4-6 depicts the revised boundary of the Arroyo del Coyote Demolition Area and DA130.

4.1.4.5 DA782 Explosive Disposal Area

The boundary and location of the Explosive Disposal Area were modified to agree with the original source map. As a result, the boundary and location of DA782 was also modified. Figure 4-7 depicts the revised boundary and location of the Explosive Disposal Area and DA782.

4.1.4.6 ED770 Experimental Range

No changes were made to the boundary or location of the Experimental Range. ED770 was reduced to account for changes in operational range boundaries and to include a newly identified, non-operational

range area to the west. Figure 4-8 depicts the unchanged boundary of the Experimental Range and the revised boundary of ED770.

4.1.4.7 ML125 Field Firing Ranges

The boundary of the Field Firing Range was modified based on historical range maps. ML125 was expanded to account for changes in operational range boundaries and to include non-contiguous portions of AL120 to the east. Figure 4-9 depicts the revised boundary of the Field Firing Range and ML125.

4.1.4.8 ML774 Gun Site Fan

No changes were made to the boundary or location of the Gun Site Fan. The historical data found during the HRR indicated potential firing points in this area that appear to be the responsibility of DOE/SNL, but no evidence was found to confirm the location of those firing points. The direction of fire would have been to the southwest. One map suggested that this range was used for test firing of 155mm projectiles. Two historical DOE/SNL firing points exist within the Gun Site Fan and DOE/SNL firing activities may have been erroneously associated with the Gun Site Fan itself. No westward firing was associated with the DOE/SNL firing points that were identified within the Gun Site Fan (TechLaw, 2006).

ML774 was modified to account for changes in operational range boundaries. The eastern portion of this MRA is within the surface danger zones of an operational range/storage area and does not meet the definition of a defense site as codified in 10 USC 2710. Figure 4-10 depicts the unchanged boundary of the Gun Site Fan and the revised boundary of this ML774.

4.1.4.9 ML781 Firing In-Abutment

The boundary and location of the Firing In-Abutment were shifted west and reduced based on historical data obtained during the HRR. ML781 was reduced to account for changes in operational range boundaries and the revised boundary and location of the Firing In-Abutment. Figure 4-11 depicts the revised boundary and location of the Firing In-Abutment and ML781.

4.1.4.10 ML784 40mm Test and Training Range

No changes were made to the boundary or location of the 40mm Test and Training Range. ML784 is not eligible for munitions response under the Air Force MMRP because it does not meet the definition of a defense site as codified in 10 USC 2710, since it is completely within the operational range area (explosive safety limit) of the Electro-Explosive Facility. There is no MRA associated with the 40mm Test and Training Range. Figure 4-12 depicts the location of the 40mm Test and Training Range.

4.1.4.11 MU772 H-25 Site

No changes were made to the boundary or location of the H-25 Site or MU772 (Figure 4-13).

4.1.4.12 PT123 Tijeras Small Arms Range

The boundary and location of the Tijeras Small Arms Range was expanded slightly based on historical data. As a result, PT123 was also expanded slightly to the south. Figure 4-14 depicts the revised location and boundary of the Tijeras Small Arms Range and PT123.

4.1.4.13 PT761 Tijeras Small Arms and Training Range

No changes were made to the boundary and location of the Tijeras Small Arms and Training Range or PT761 (Figure 4-15).

4.1.4.14 PT773 Coyote Canyon Tech Site

No changes were made to the boundary and location of the Coyote Canyon Tech Site. The northwest corner of PT773 was reduced to account for changes in operational range boundaries. Figure 4-16 depicts the revised portion of the Coyote Canyon Tech Site and PT773.

4.1.4.15 PT783 Bazooka Training Range

No changes were made to the boundary or location of the Bazooka Training Range. PT783 was expanded to include additional non-operational range areas not previously included in the Air Force MMRP Site Inventory. Figure 4-17 depicts the unchanged historical range boundary and the revised boundary of PT783.

4.1.4.16 SR763 Rifle Range

The boundary and location of this Rifle Range were rotated slightly to the southeast to agree with the original source map and aerial photography. SR763 was incorporated into the Sandia Small Arms Ranges East and the Sandia Base Small Arms Range West. Figure 4-18 depicts the revised boundary and location of this Rifle Range and the Sandia Base Small Arms Ranges.

4.1.4.17 SR764 Rifle Range

The boundary and location of this Rifle Range were moved about one-half of a mile to the north to agree with the original source map and aerial photography. The boundary of this range was also expanded. SR764 was incorporated into the three MRAs associated with the Sandia Base Small Arms Ranges. Figure 4-19 depicts the revised boundary and location of this Rifle Range and the Sandia Base Small Arms Ranges.

4.1.4.18 SR765 WWII Pistol Range

The boundary and location of the WWII Pistol Range were adjusted slightly to agree with the original source map and aerial photography. The boundary of this range was also expanded. SR765 was incorporated into the Sandia Small Arms Ranges East and the Sandia Base Small Arms Range West. Figure 4-20 depicts the revised boundary and location of the WWII Pistol Range and the Sandia Base Small Arms Ranges.

4.1.4.19 SR766 Sub-Machine Gun Range

The boundary and location of the Sub-Machine Gun Range were moved about one-half of a mile to the north to agree with the original source map and aerial photography. The boundary of this range was also expanded. SR766 was incorporated into the Sandia Base Small Arms Range North. Figure 4-21 depicts the revised location and boundary of the Sub-Machine Gun Range and the Sandia Base Small Arms Ranges.

4.1.4.20 SR767 Rifle Range

The boundary and location of this Rifle Range were moved about one-half of a mile to the north to agree with the original source map and aerial photography. The boundary of this range was also expanded. SR767 was incorporated into the Sandia Base Small Arms Range North. Figure 4-22 depicts the revised location and boundary of this Rifle Range and the Sandia Base Small Arms Ranges.

4.1.4.21 SR768 Close Combat Infiltration Course

No changes were made to the boundary or location of the Close Combat Infiltration Course. SR768 was revised to eliminate overlap with AL771 and incorporate non-operational range areas to the north. Figure 4-23 depicts the unchanged location and boundary of the Close Combat Infiltration Course and the revised location boundary of SR768.

4.1.4.22 SR777 Rifle Range

No changes were made to the boundary or location of this Rifle Range and SR777 (Figure 4-24).

4.1.4.23 SR778 Airfield Pistol Range

The boundary and location of the Airfield Pistol Range were moved and expanded to agree with the original source map and aerial photography. As a result, SR778 is also moved and expanded. Figure 4-25 depicts the revised location and boundary of the Airfield Pistol Range and SR778.

4.1.4.24 SR780 Impact Area

The location of the Impact Area was moved to agree with the original source map and aerial photography. The revised location of the Impact Area is within the operational range area (explosive safety limit) of the DOE/SNL Bum Site. Because of this location within the Burn Site, the Impact Area is no longer eligible for munitions response under the Air Force MMRP because it does not meet the definition of a defense site as codified in 10 USC 2710. As a result, the other-than-operational range areas formerly designated SR780 have been combined into SR768. There is no MRA associated with the Impact Area. Figure 4-26 depicts the original and revised locations of the Impact Area.

4.1.4.25 TS775 Airfield Skeet Range

The location of the Airfield Skeet Range was moved slightly and expanded to agree with the original source map and aerial photography. As a result, TS775 was also moved and expanded. Figure 4-27 depicts the revised location and boundary of the Airfield Skeet Range and TS775.

4.1.4.26 TS776 Skeet Range

The location of this Skeet Range was moved slightly and expanded to agree with the original source map and aerial photography. As a result, TS776 was also moved and expanded. Figure 4-28 depicts the revised location and boundary of this Skeet Range and TS776.

4.1.4.27 Bomb Target

The Bomb Target is a new range that was identified from aerial photographs and confirmed by visual survey. The Bomb Target is not eligible for munitions response under the Air Force MMRP because it does not meet the definition of a defense site as codified in 10 USC 2710 since it is within overlapping

operational limits (explosive safety limits) of two munitions storage areas. No modification was made to the location or boundary of this site. Figure 4-29 depicts the location and boundary of this range.

4.1.4.28 Sandia Base Howitzer Range

The Sandia Base Howitzer Range is a new range identified during the HRR as a 75mm Howitzer range. This range encompassed a large portion of the overlapping range fans of the Sandia Base small arms ranges. The newly identified MRA associated with this range is given the same name. Figure 4-30 depicts the location and boundary of this range and its associated MRA.

4.1.4.29 Sandia Base Howitzer Range Buffer

The Sandia Base Howitzer Range Buffer is the buffer zone for the new Sandia Base Howitzer Range. The newly identified MRA associated with the Sandia Base Howitzer Range Buffer is given the same name. Figure 4-31 depicts the location and boundary of this new MRA.

4.1.5 Summary of MRA Acreage Changes

Revisions to the boundaries and locations of historical ranges and removal of MRA areas overlapping current operational ranges have resulted in changes to the size of several MRAs. Table 4-1 summarizes the original acreage reported for the MRAs prior to the CSE Phase I Investigation and the updated acreage based on the historical data review and revised range boundaries (as shown in Figures 4-1 through 4-31). The newly identified Bomb Target is entirely within operational areas; therefore, no original or revised acreages are reported. The Sandia Base Howitzer Range and Sandia Base Howitzer Range Buffer are also newly identified MRAs with no original acreages reported.

Table 4-1. Summary of MRA Acreage Changes

MRA ID	MRA Name	Original Acreage Prior to CSE Phase I Investigation	Revised Acreage Based on Historical Data Assessment
AL120	Proximity Fuze Range	4,086	6,058
AL769	Ordnance Drop Zone	337	524
AL771	Old Cable Site	172	863
DA130	Arroyo del Coyote Demolition Area	256	386
DA782	Explosive Disposal Area	26	6
ED770	Experimental Range	1,848	1,480
ML125	Field Firing Range	1,619	1,993
ML774	Gun Site Fan	643	634
ML781	Firing In-Abutment	6	1
ML784	40mm Test and Training Range	150	150
MU772	H-25 Site	46	133
PT123	Tijeras Small Arms Range	812	434
PT761	Tijeras Small Arms and Training Range	34	575
PT773	Coyote Canyon Tech Site	131	77

MRA ID	MRA Name	Original Acreage Prior to CSE Phase I Investigation	Revised Acreage Based on Historical Data Assessment
PT783	Bazooka Training Range	145	354
SR763	Rifle Range	500	232
SR764	Rifle Range	103	116
SR765	WWII Pistol Range	242	3
SR766	Sub-Machine Gun	149	59
SR767	Rifle Range	189	4
SR768	Close Combat Infiltration Course	22	536
SR777	Rifle Range	51	57
SR778	Airfield Pistol Range	10	86
SR780	Impact Area	88	88
TS775	Airfield Skeet Range	12	25
TS776	Skeet Range	11	29
No ID	Bomb Target	*	*
No ID	Sandia Base Howitzer Range	*	743
No ID	Sandia Base Howitzer Range Buffer	*	710

* No acreage reported for this MRA.

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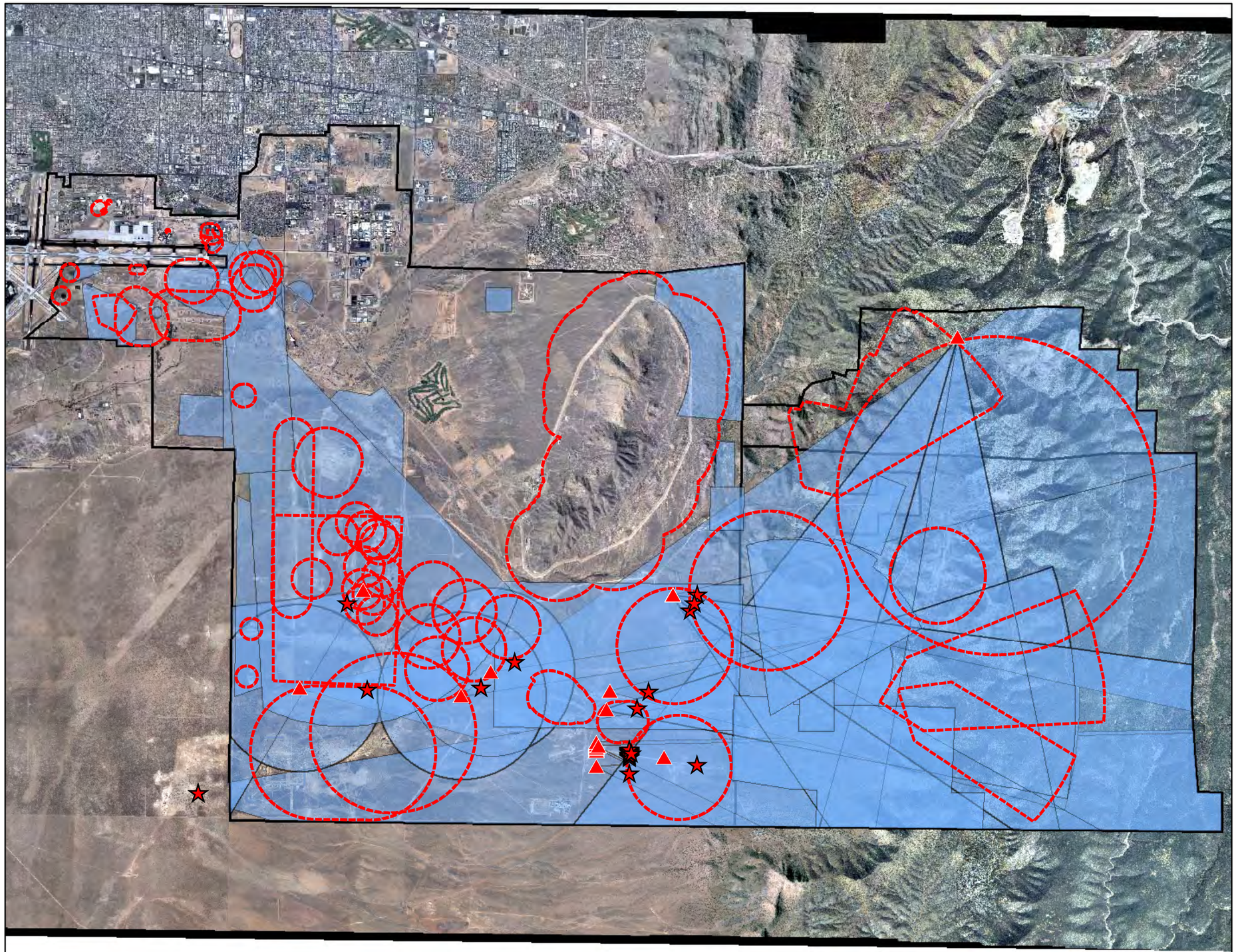

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1.2 0.6 0 1.2

Miles

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 4-1

Historic Range Areas With Current Operational Areas (Surface Danger Zones)

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Range Targets
- Firing Points
- Operational Areas
- Historic Range Fans
- KAFB Boundary

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District	
Drawn By: JAL	Scale: 1" = 1.2 miles	Rev: 5
Checked By:	Date Drawn: 2-09-2006	
Submitted By: DS	Revision Date: 01-18-2007	

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4-1 Historic Ranges w SZ.mxd

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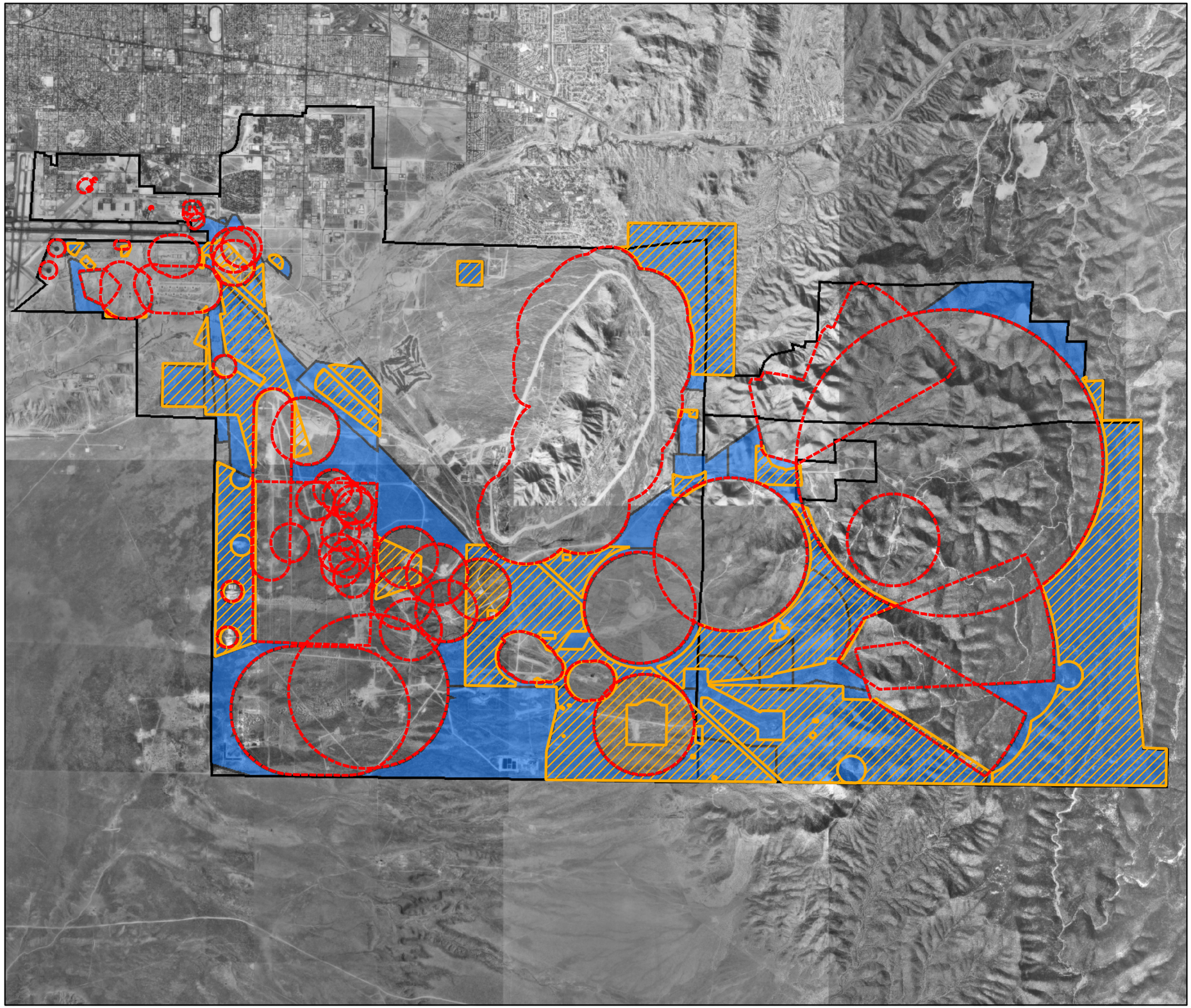

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1.2 0.6 0 1.2 Miles

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 4-2

Summary of Original and Revised MRAs

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Operational Areas
- Original Munitions Response Areas
- Revised Munitions Response Areas
- KAFB Boundary

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1" = 1.2 miles	Rev: 3
Checked By:		Date Drawn: 2-09-2006	
Submitted By:	DS	Revision Date: 2-2-2007	

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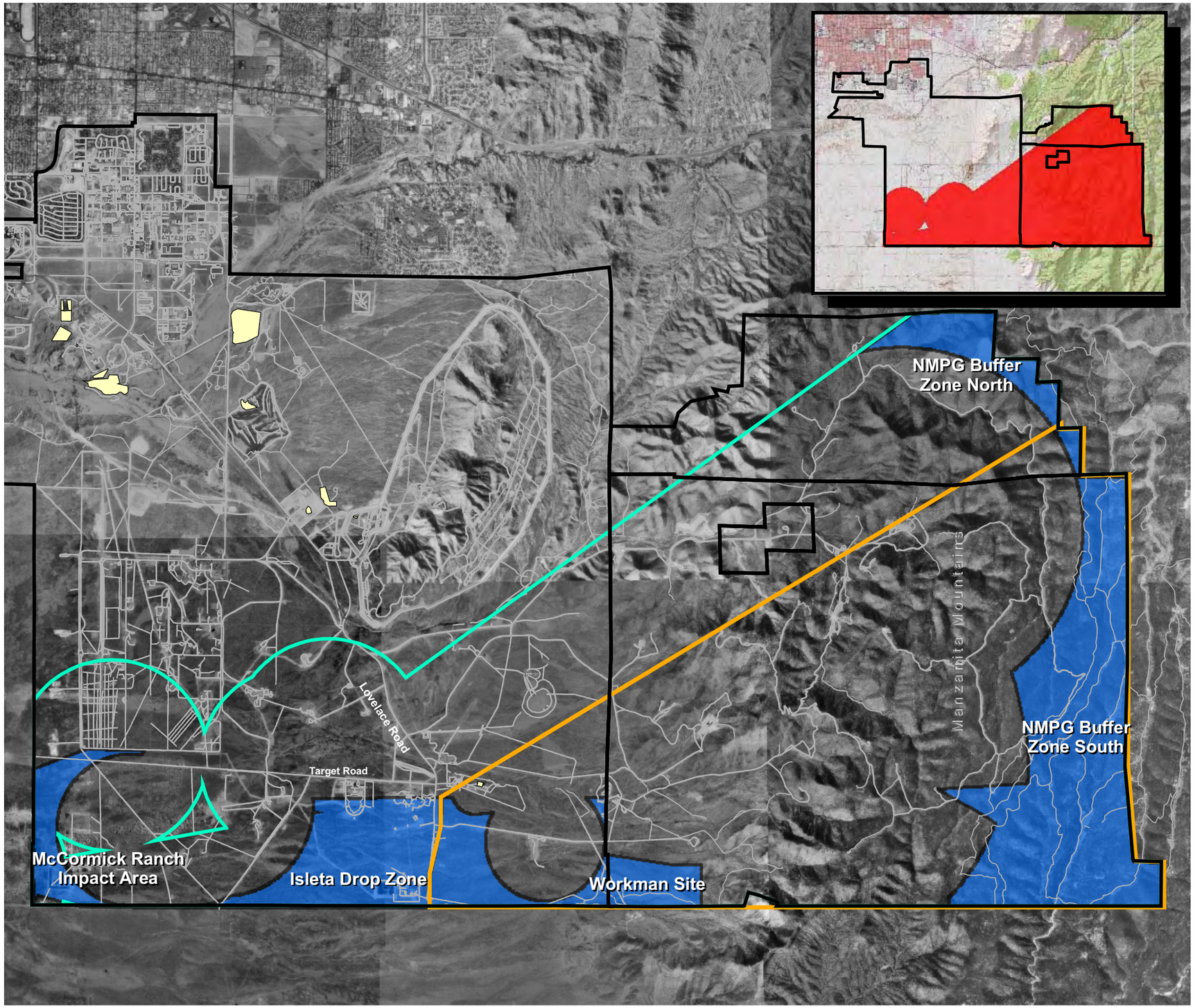

N

1.1 0.55 0 1.1 Miles

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-3

AL120 Proximity Fuze Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Historical Range
- Revised Historical Range
- ERP/ECP Sites
- Revised MRA/MRS Boundaries
- KAFB Boundary

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District	
Drawn By: JAL	Scale: 1 inch equals 1.1 mile	Rev: 5
Checked By: DS	Date Drawn: 11-17-2005	
Submitted By: BN	Revision Date: 02-06-2007	

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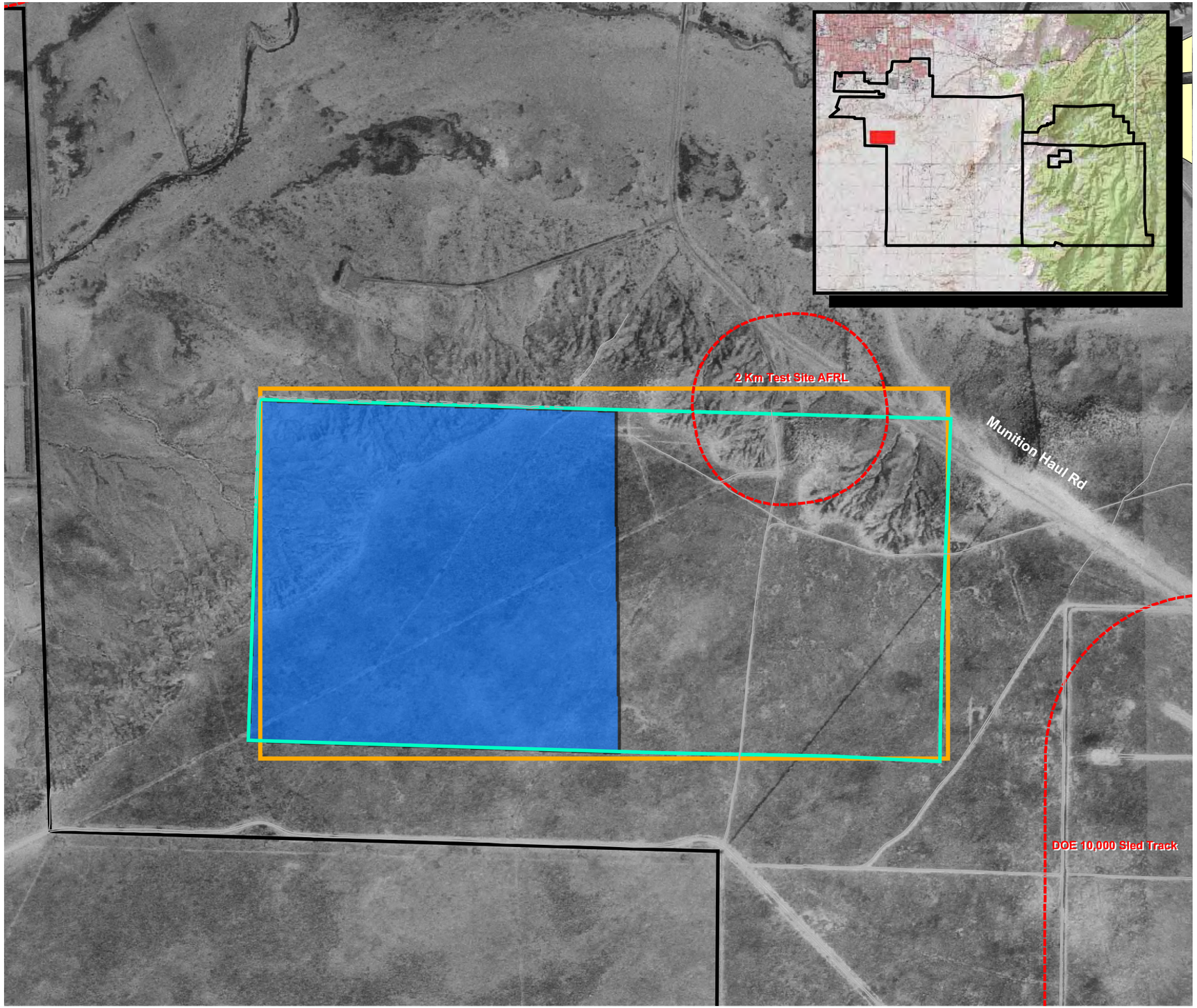

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800 400 0 800

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-4

AL769 Ordnance Drop Zone

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Historical Range
- Revised Historical Range
- ERP/ECP Sites
- Revised MRA Boundaries
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 800 feet	Rev: 4
Checked By:	DS	Date Drawn: 11-17-2005	
Submitted By:	BN	Revision Date: 01-18-2007	

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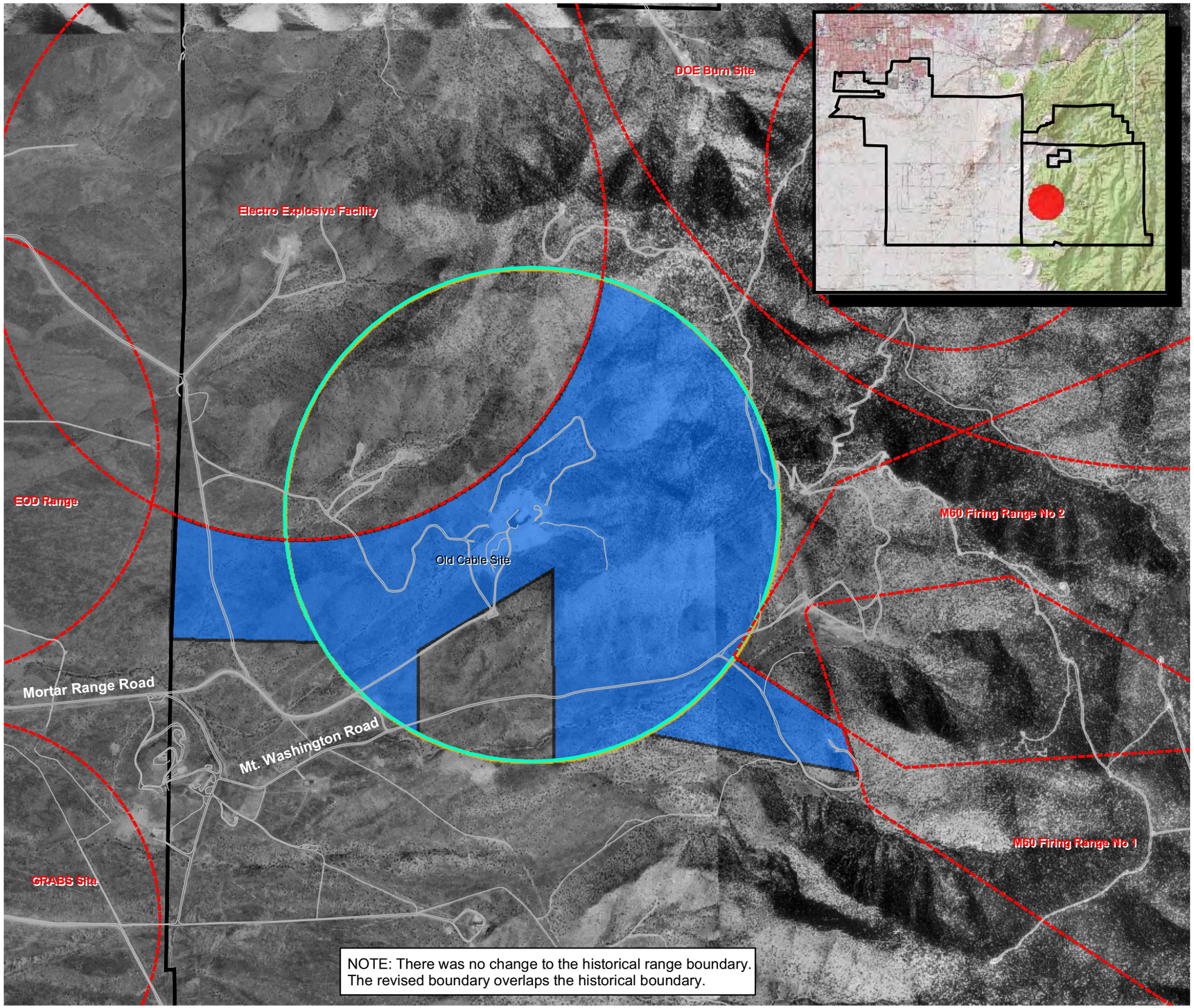

NOTE: There was no change to the historical range boundary.
The revised boundary overlaps the historical boundary.

N

1,700 850 0 1,700

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-5

AL771
Old Cable Site

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Historical Range
- Revised Historical Range
- ERP/ ECP Sites
- Revised MRA/MRS Boundaries
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 1,700 feet	Rev: 4
Checked By:	DS	Date Drawn: 11-17-2005	
Submitted By:	BN	Revision Date: 01-18-2007	

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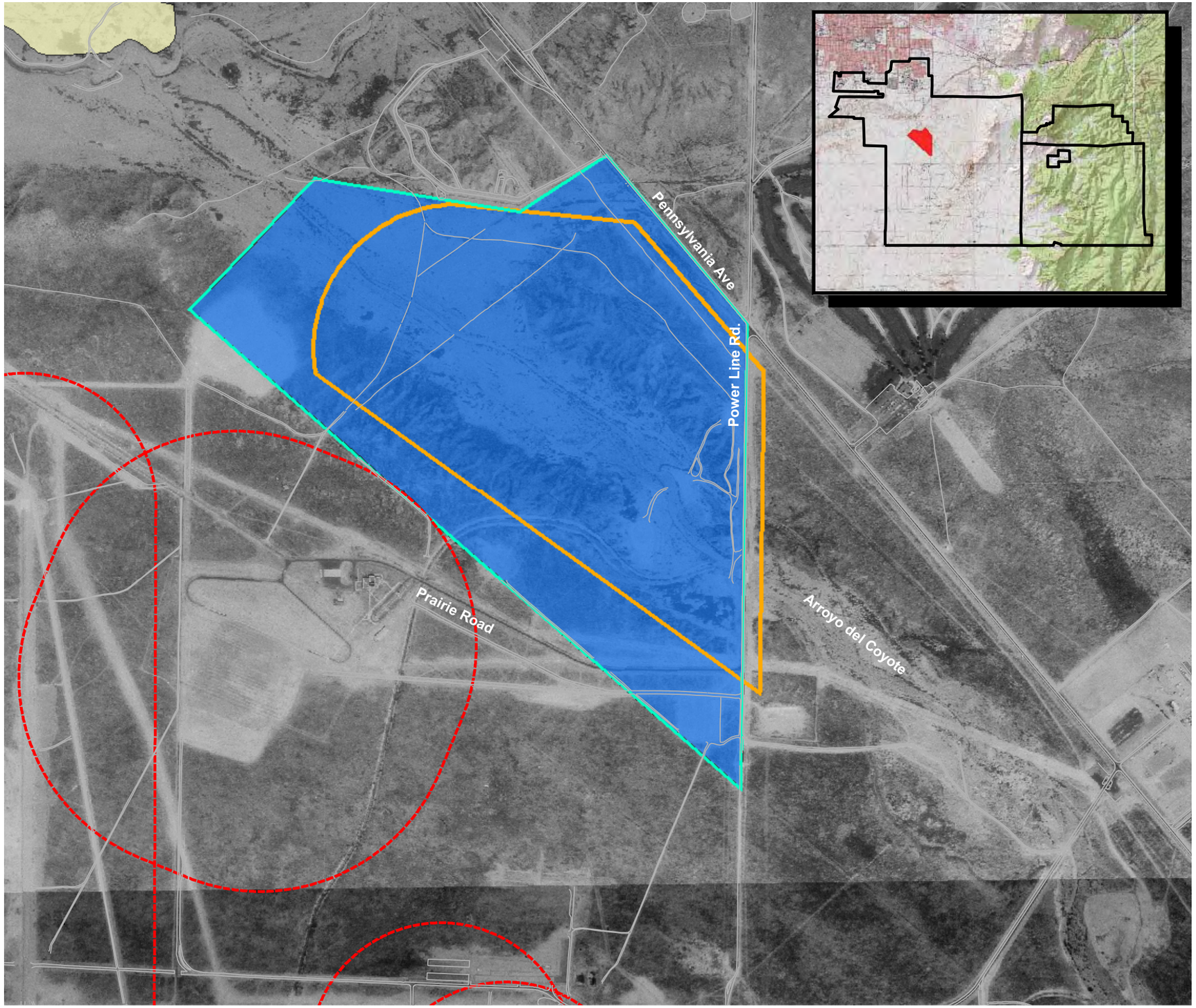

N

1,000 500 0 1,000

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-6

DA130 Arroyo del Coyote Demolition Area

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Historical Range
- Revised Historical Range
- ERP/ ECP Sites
- Revised Munitions Response Areas
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 1,000 feet	Rev: 4
Checked By:	DS	Date Drawn: 11-17-2005	
Submitted By:	BN	Revision Date: 01-18-2007	

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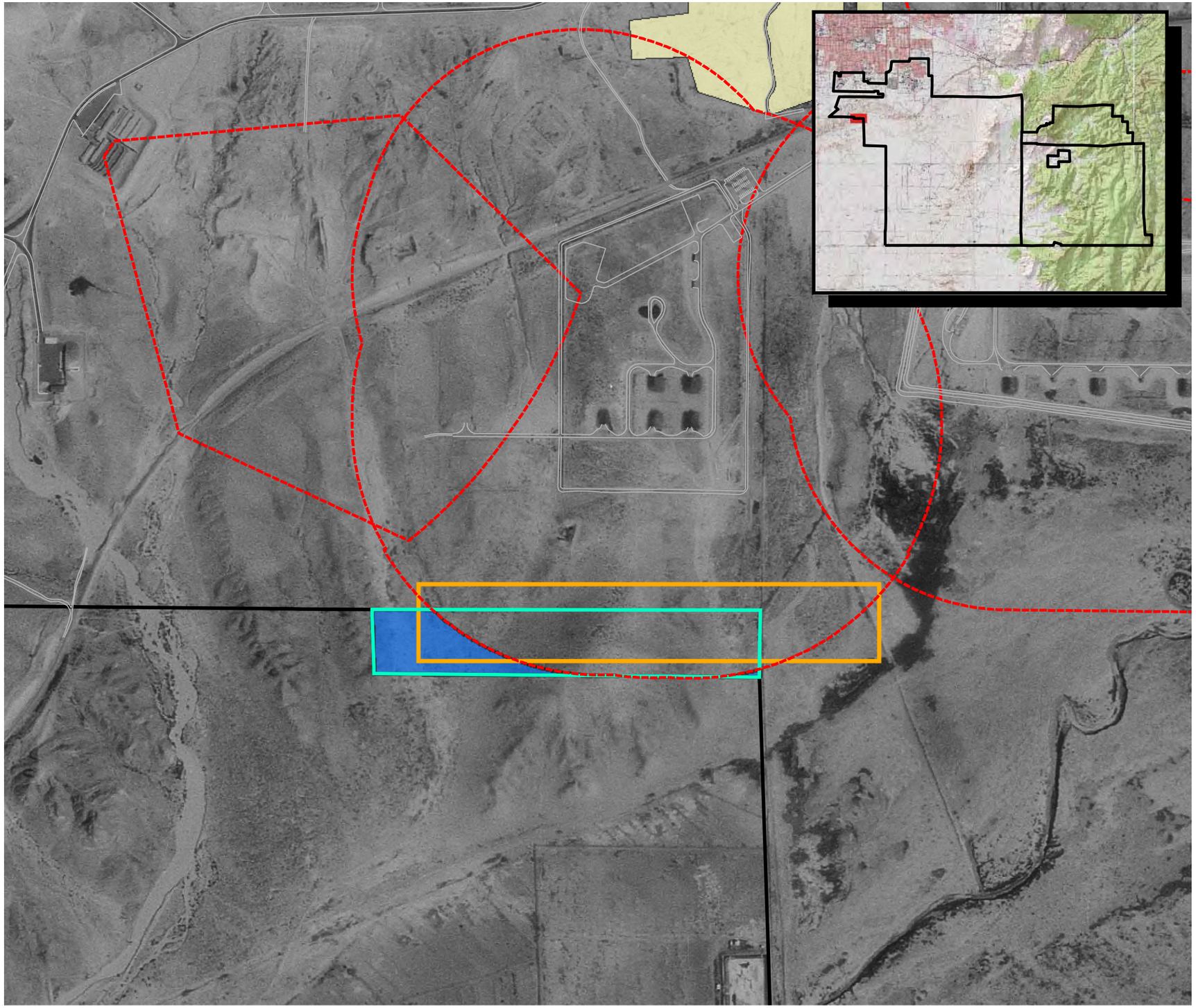

N

600 300 0 600

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-7

DA782 Explosive Disposal Area

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Historical Range
- Revised Historical Range
- ERP/ ECP Sites
- Revised Munitions Response Areas
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 600 feet	Rev: 4
Checked By:	DS	Date Drawn: 11-17-2005	
Submitted By:	BN	Revision Date: 01-18-2007	

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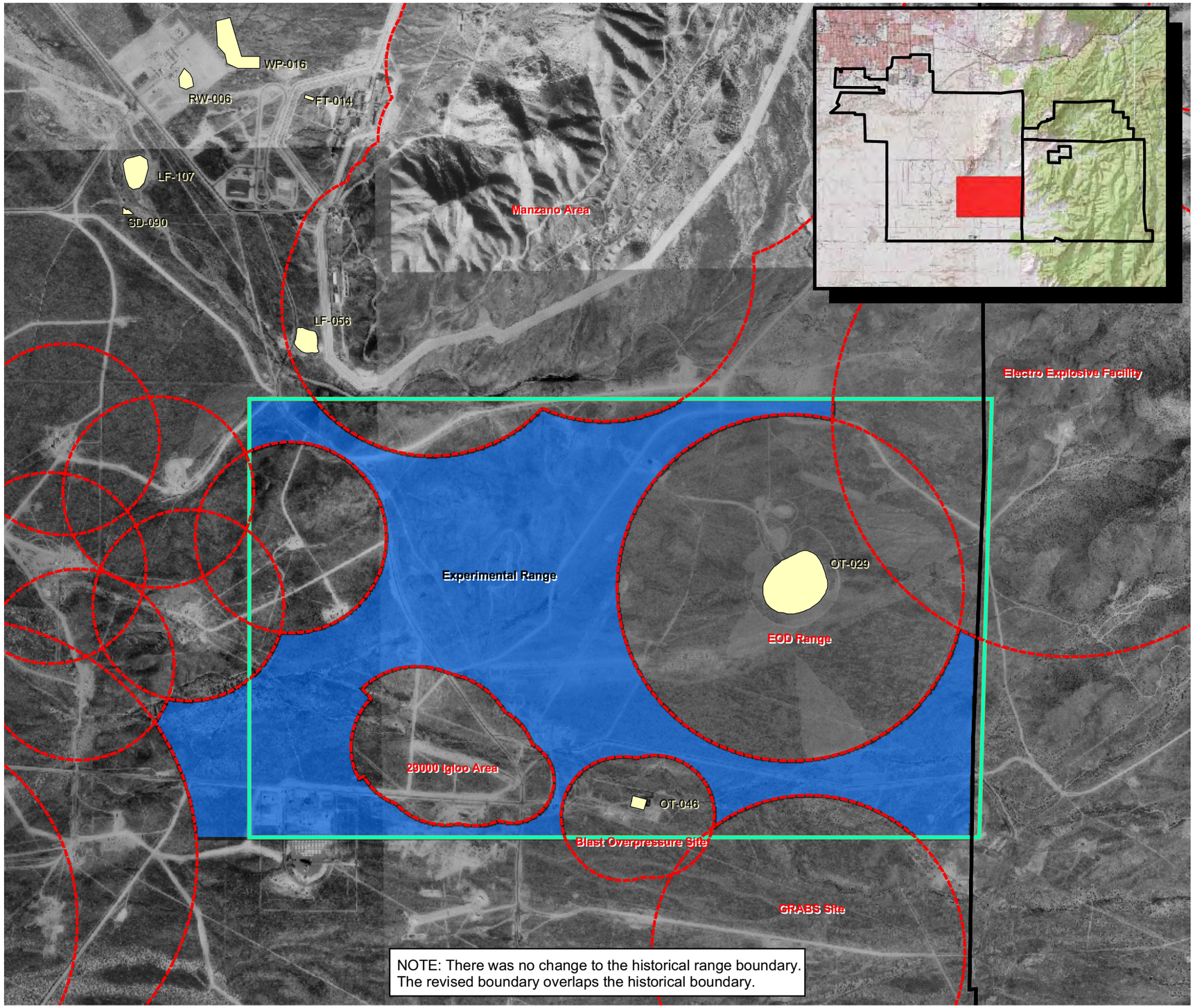

NOTE: There was no change to the historical range boundary. The revised boundary overlaps the historical boundary.

N

2,200 1,100 0 2,200

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-8

ED770 Experimental Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Historical Range
- Revised Historical Range
- ERP/ ECP Sites
- Revised Munitions Response Areas
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 2,200 feet	Rev: 4
Checked By:	DS	Date Drawn: 11-17-2005	
Submitted By:	BN	Revision Date: 01-18-2007	

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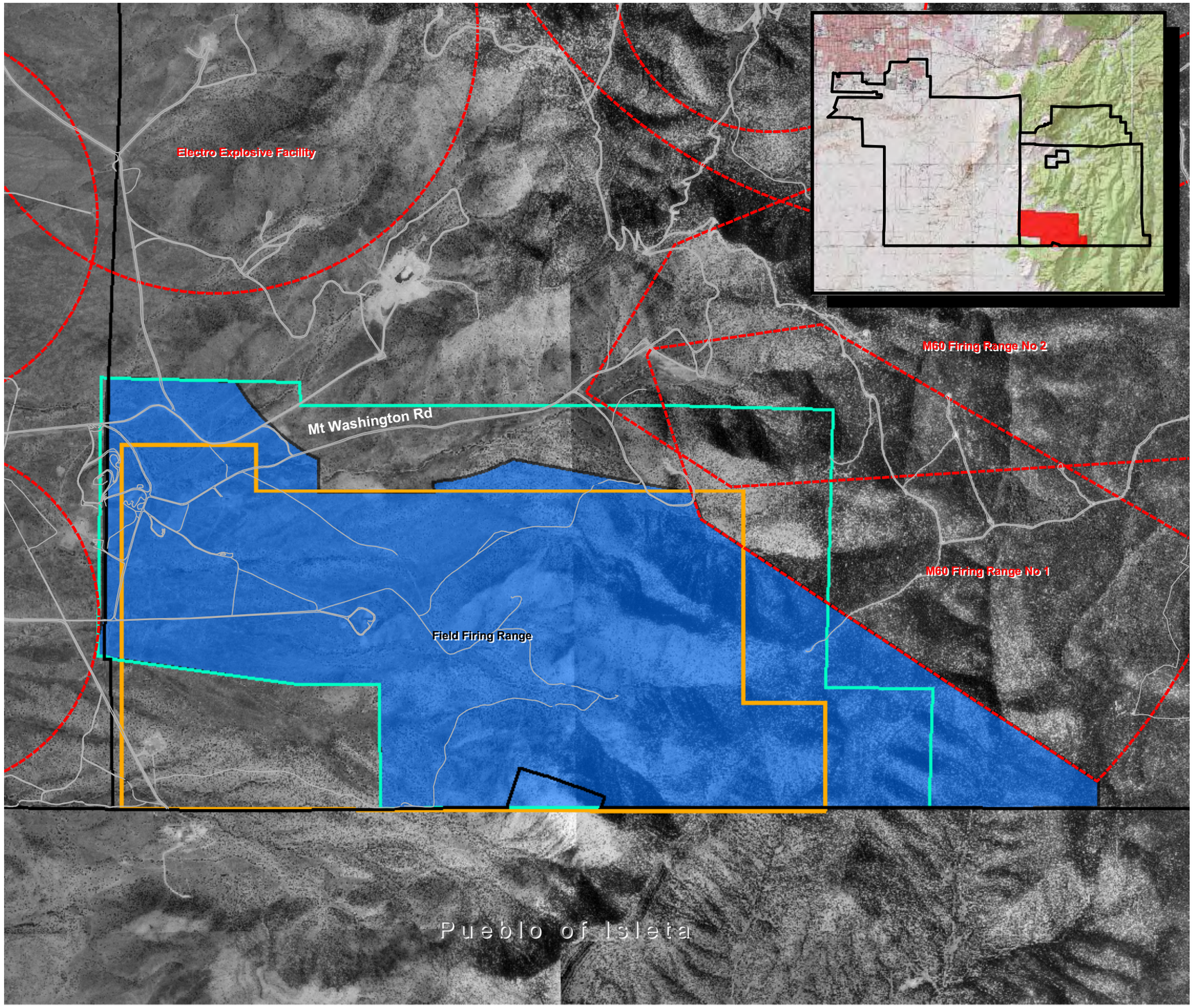

N

2,000 1,000 0 2,000

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-9

ML125 Field Firing Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Historical Range
- Revised Historical Range
- ERP ECP Polygons
- Revised Munitions Response Areas
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 2,000 feet	Rev: 4
Checked By:	DS	Date Drawn: 11-17-2005	
Submitted By:	BN	Revision Date: 01-18-2007	

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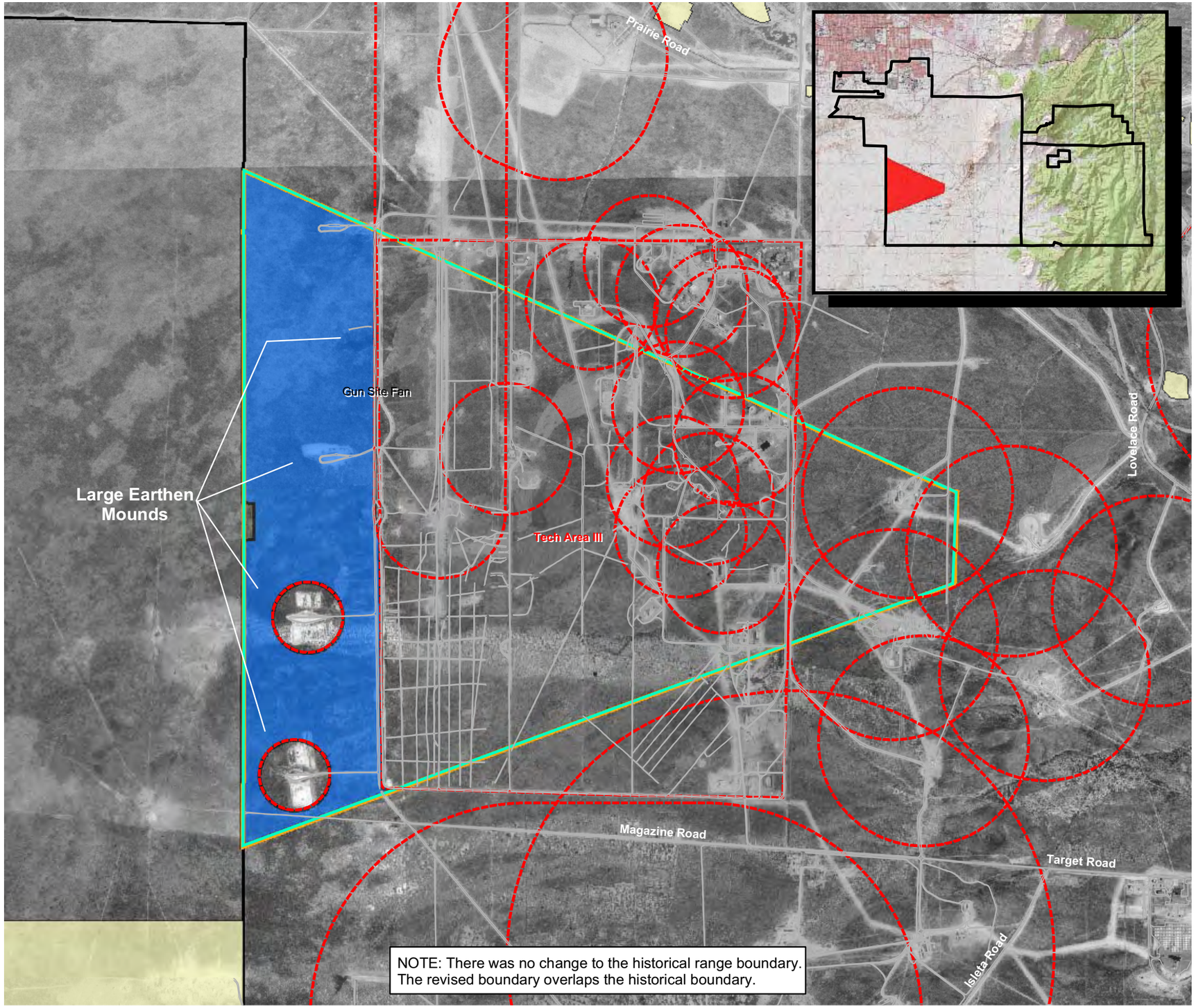

NOTE: There was no change to the historical range boundary. The revised boundary overlaps the historical boundary.

N

2,000 1,000 0 2,000

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-10

ML774 Gun Site Fan

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Historical Range
- Revised Historical Range
- ERP/ ECP Sites
- Revised Munitions Response Areas
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 2,000 feet	Rev: 4
Checked By:	DS	Date Drawn: 11-17-2005	
Submitted By:	BN	Revision Date: 01-18-2007	

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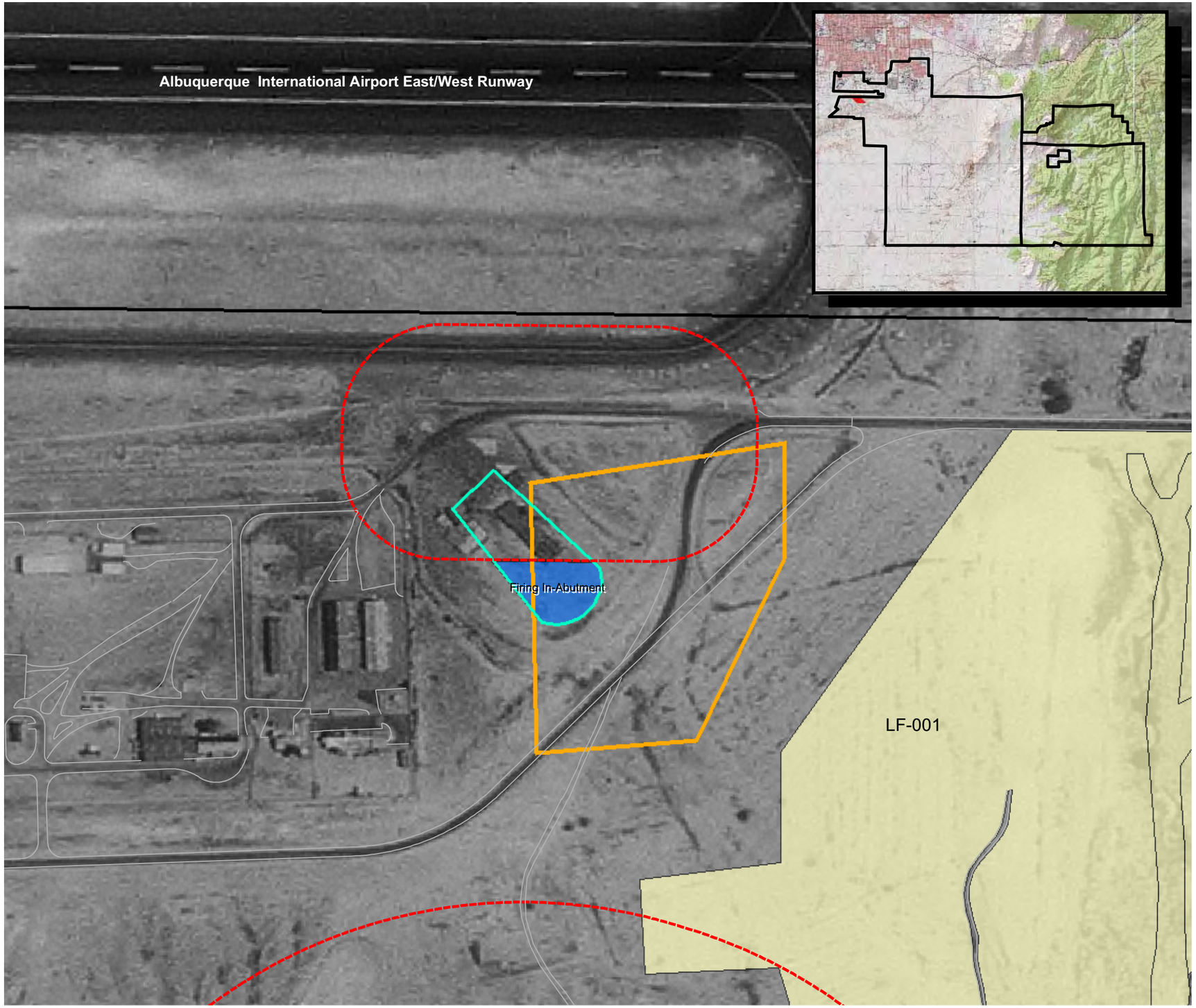

N

250 125 0 250

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-11

ML781
Firing In-Abutment

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Historical Range
- Revised Historical Range
- ERP/ ECP Sites
- Revised Munitions Response Areas
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 250 feet	Rev: 4
Checked By:	DS	Date Drawn: 11-17-2005	
Submitted By:	BN	Revision Date: 01-18-2007	

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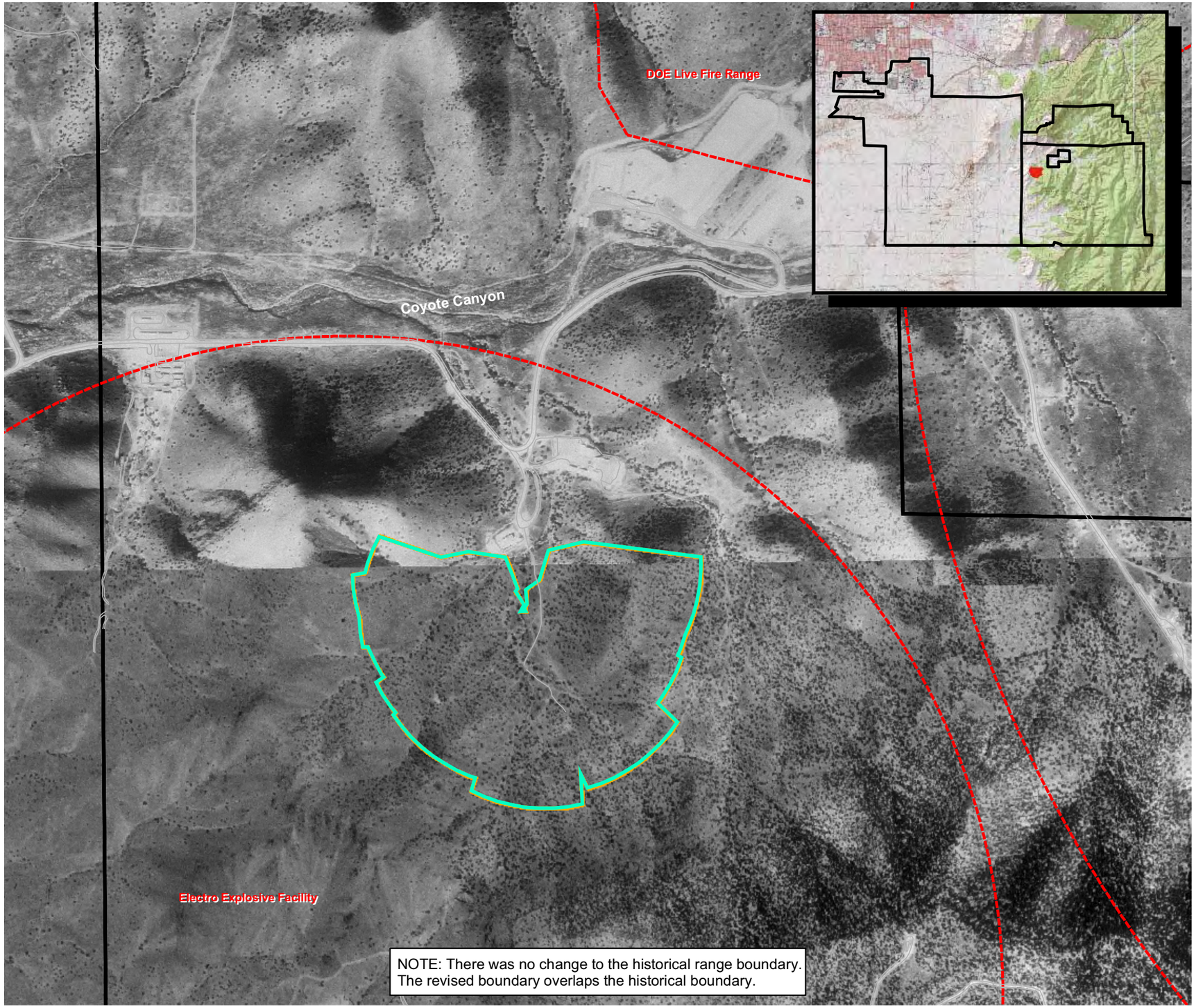

NOTE: There was no change to the historical range boundary.
The revised boundary overlaps the historical boundary.

N

800 400 0 800
Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-12

ML784 40mm Test and Training Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Historical Range
- Revised Historical Range
- ERP/ ECP Sites
- Revised Munitions Response Areas
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 800 feet	Rev: 4
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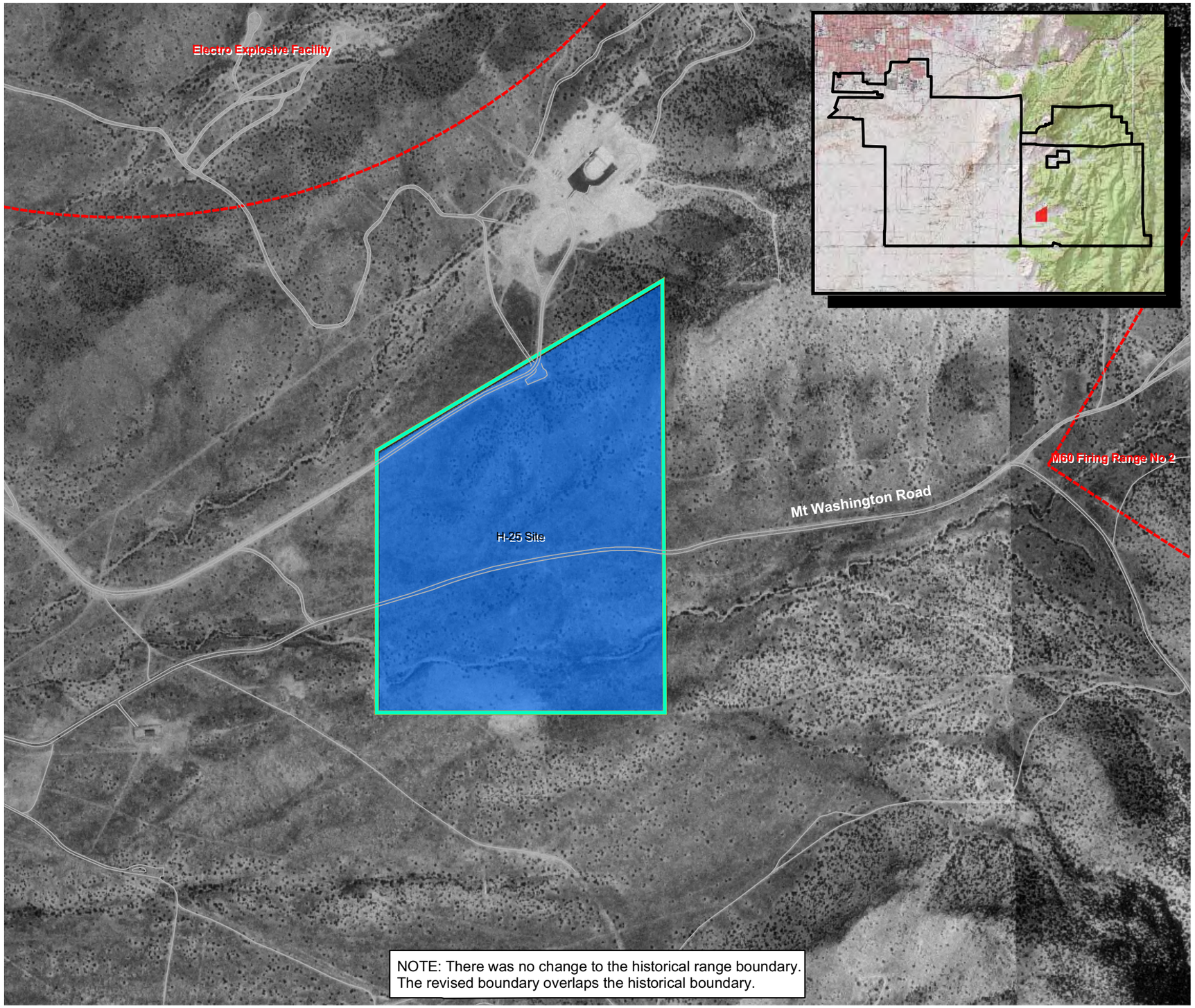

NOTE: There was no change to the historical range boundary.
The revised boundary overlaps the historical boundary.

N

800 400 0 800
Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-13

MU772
H-25 Site

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Revised Historic Range
- Historic Range
- Revised Munitions Response Areas
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 800 feet	Rev: 3
Checked By:	DS	Date Drawn: 11-17-2005	
Submitted By:	BN	Revision Date: 01-18-2007	

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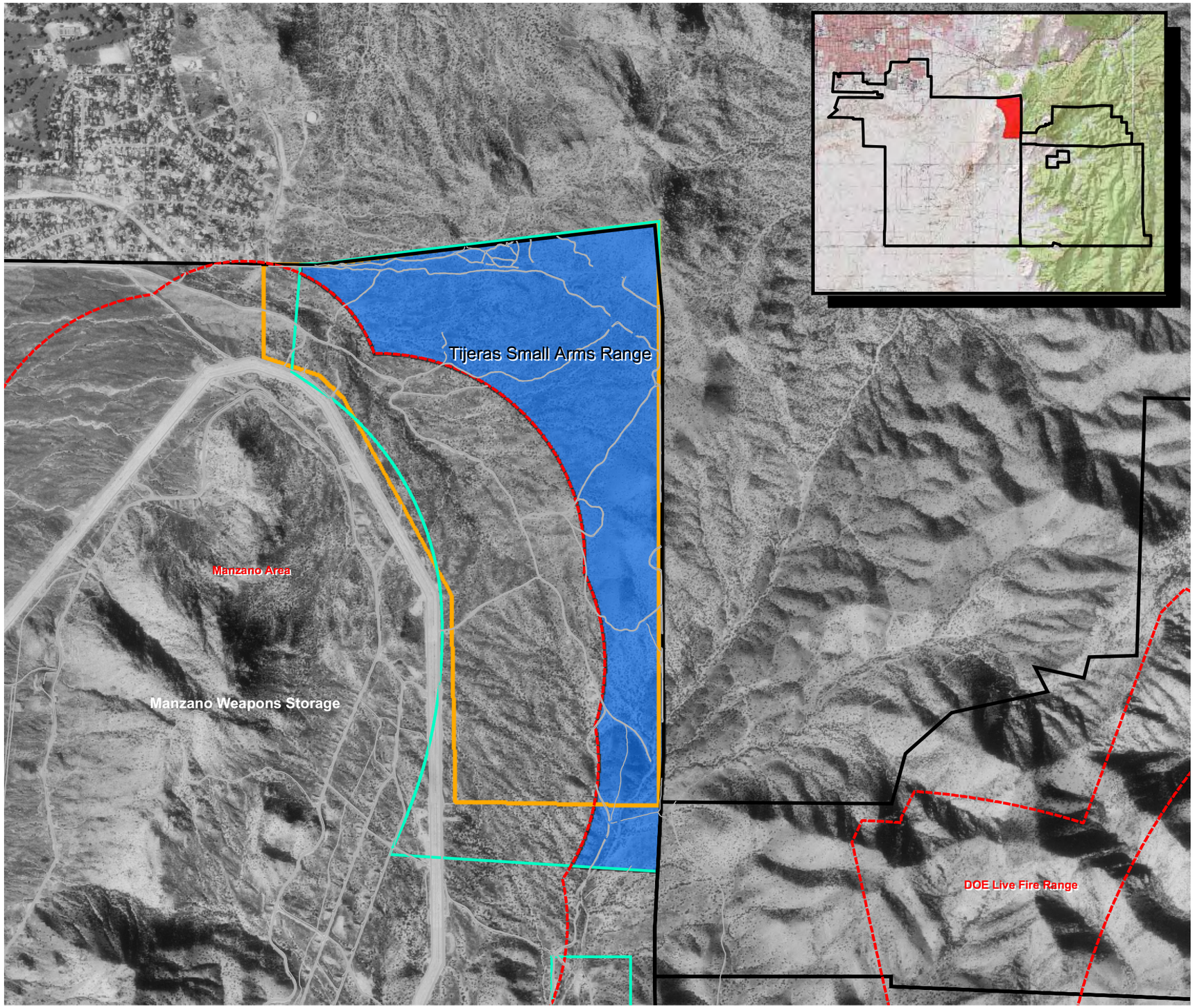

N

1,600 800 0 1,600

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-14

PT123
Tijeras Small Arms Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Historical Range
- Revised Historical Range
- ERP/ ECP Sites
- Revised Munitions Response Areas
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 1,600 feet	Rev: 4
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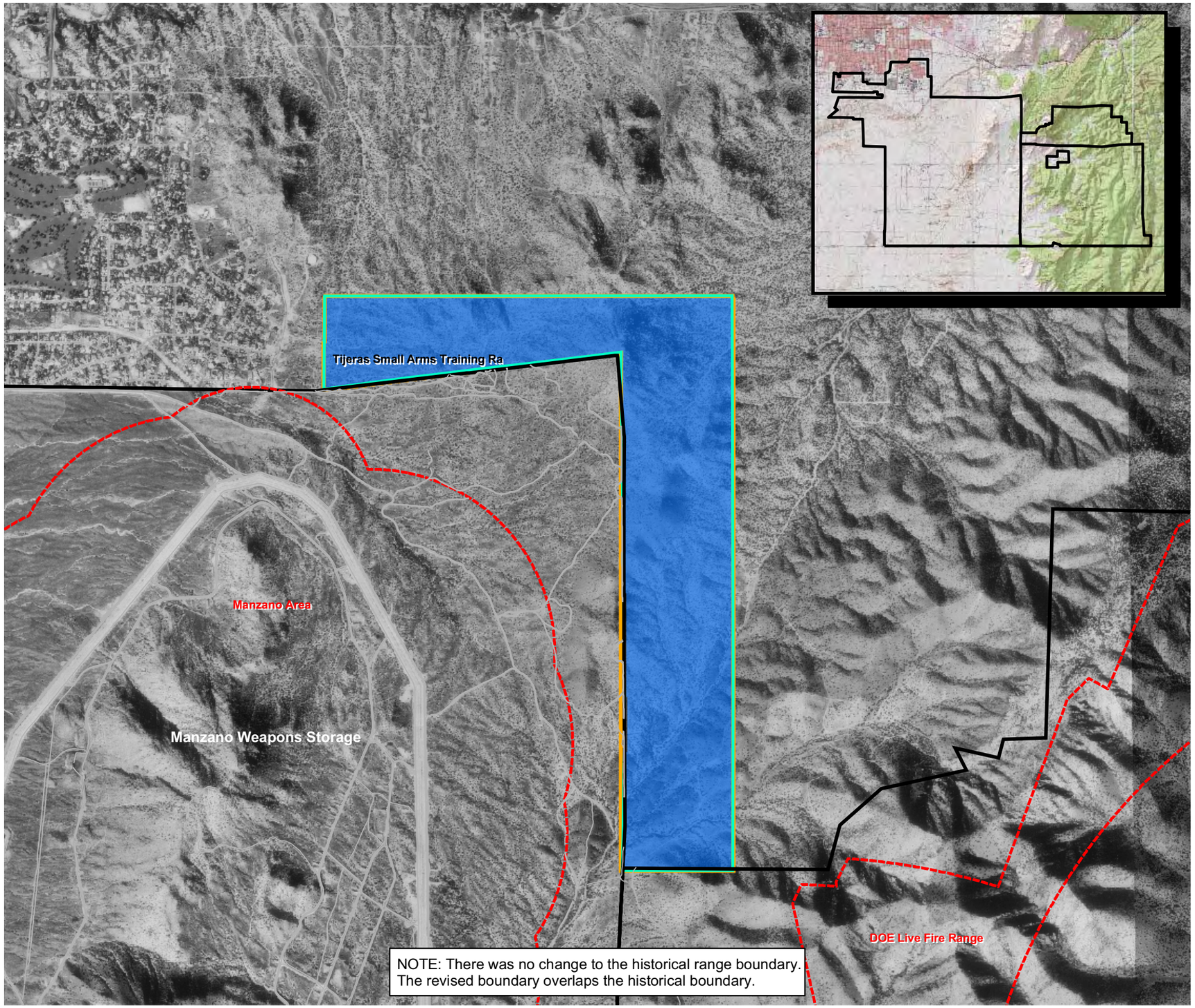

NOTE: There was no change to the historical range boundary. The revised boundary overlaps the historical boundary.

N

1,800 900 0 1,800

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-15

PT761 Tijeras Small Arms Training Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Historical Range
- Revised Historical Range
- ERP/ ECP Sites
- Revised Munitions Response Areas
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 1,800 feet	Rev: 4
Checked By:	DS	Date Drawn: 11-17-2005	
Submitted By:	BN	Revision Date: 01-18-2007	

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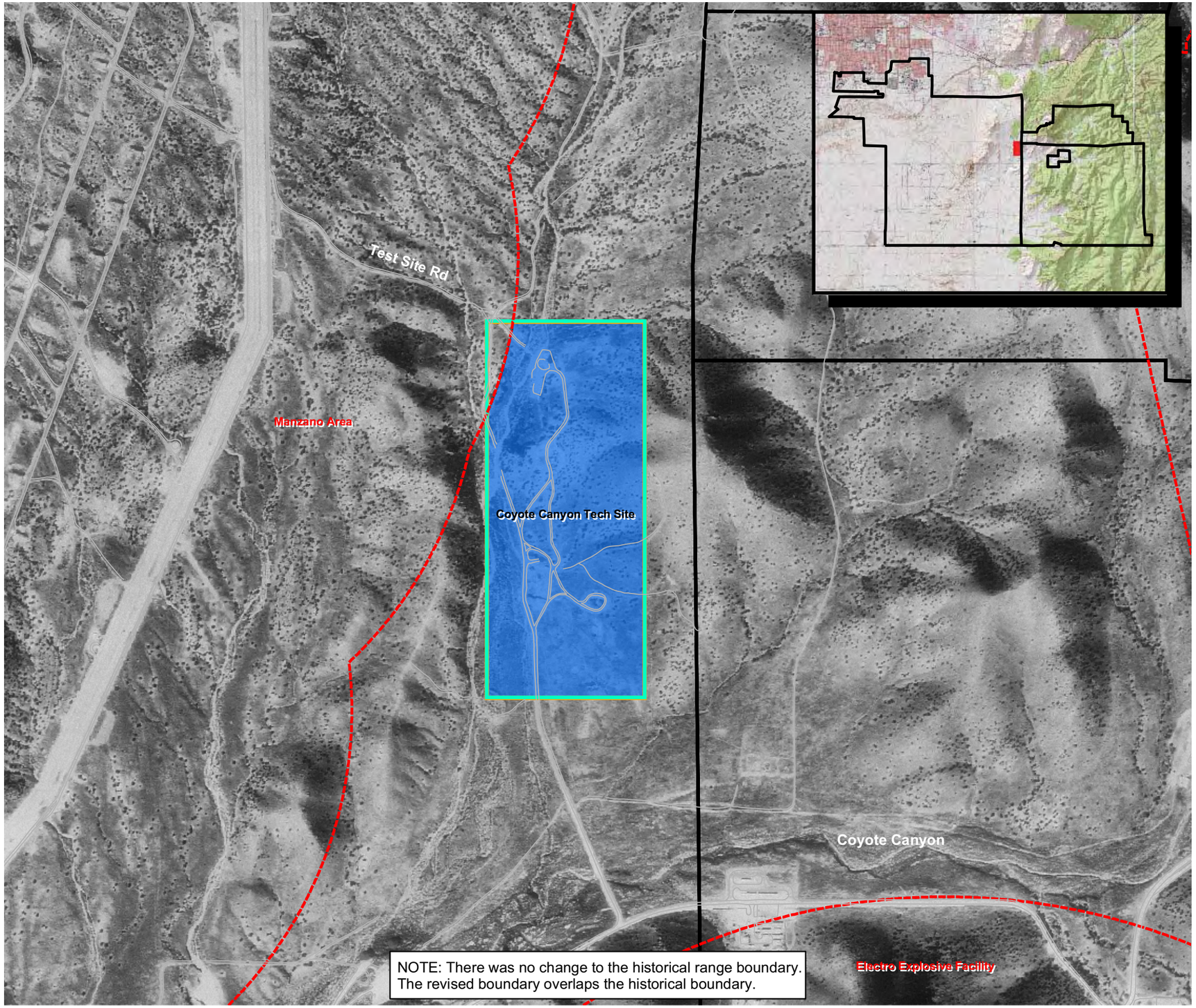

NOTE: There was no change to the historical range boundary. The revised boundary overlaps the historical boundary.

N

800 400 0 800

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-16

PT773 Coyote Canyon Tech Site

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Historical Range
- Revised Historical Range
- ERP/ ECP Sites
- Revised Munitions Response Areas
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 800 feet	Rev: 3
Checked By:	DS	Date Drawn: 11-17-2005	
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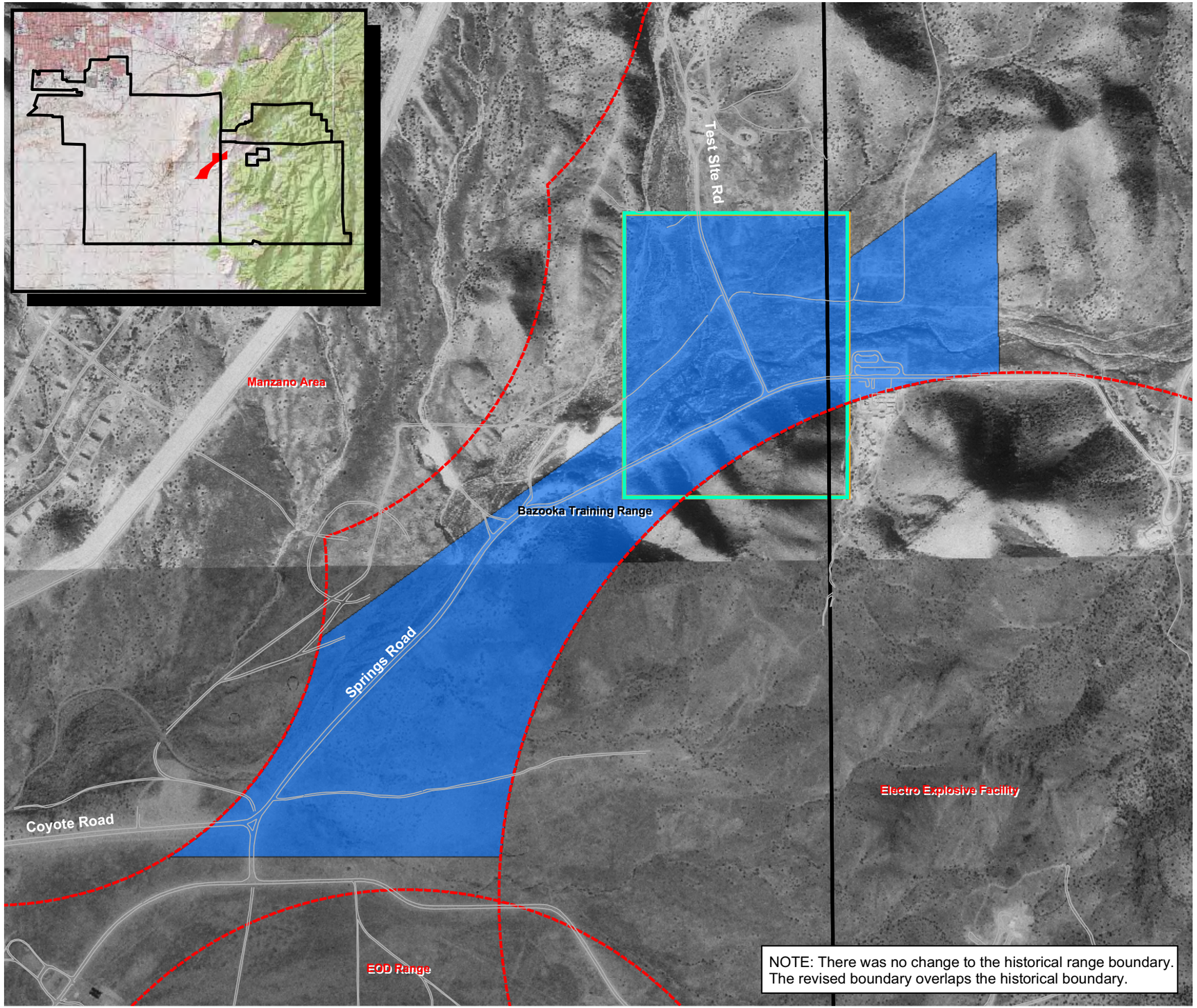

NOTE: There was no change to the historical range boundary. The revised boundary overlaps the historical boundary.

N

1,000 500 0 1,000

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-17

PT783 Bazooka Training Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Historical Range
- Revised Historical Range
- ERP/ ECP Sites
- Revised Munitions Response Areas
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 1,000 feet	Rev: 4
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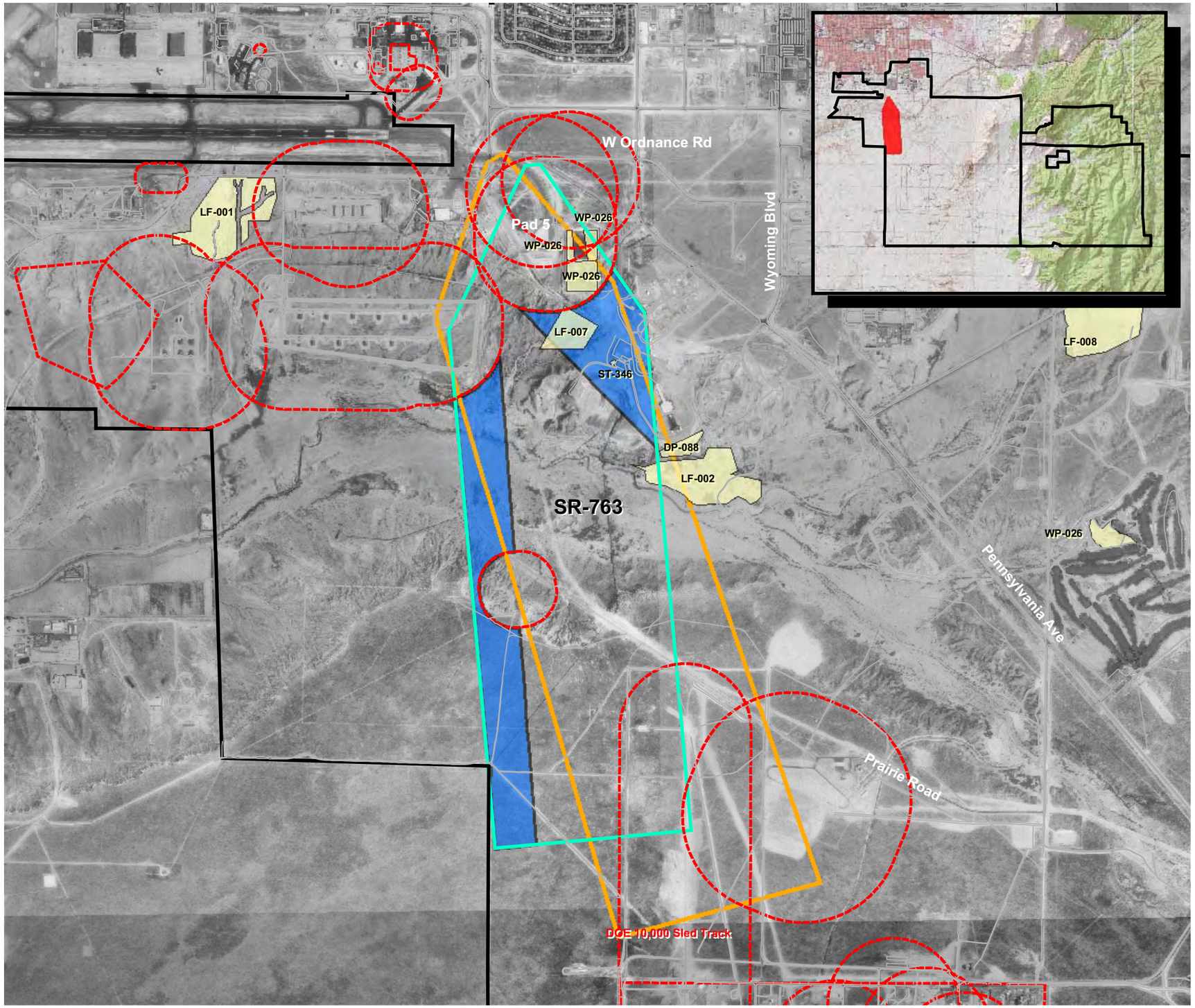

N

2,000 1,000 0 2,000

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-18

SR763 Rifle Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Historical Range
- Revised Historical Range
- ERP/ ECP Sites
- Revised Munitions Response Areas
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 2,000 feet	Rev: 5
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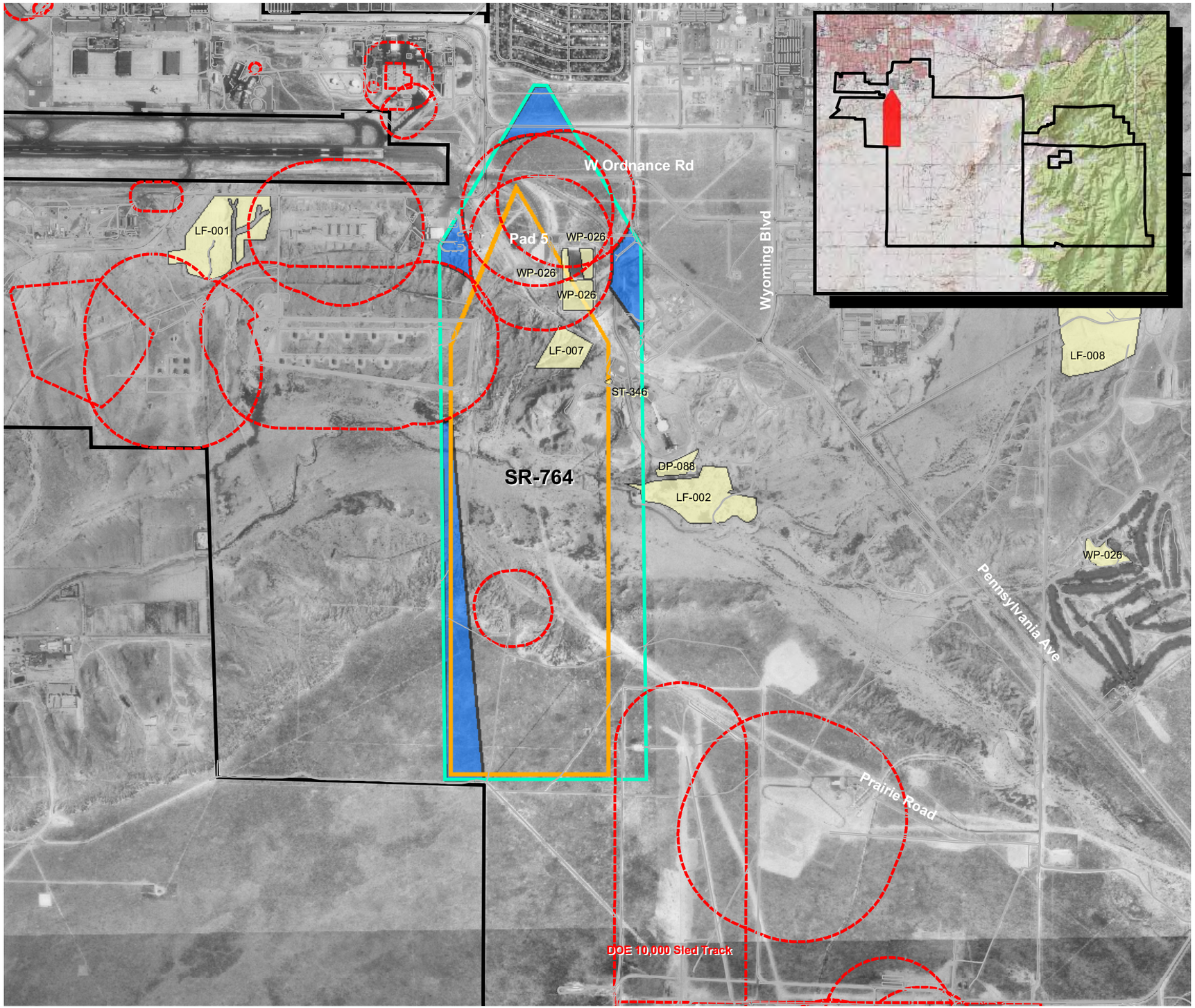

N

2,000 1,000 0 2,000

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-19

SR764 Rifle Range

(Sandia Base Small Arms Ranges)

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Historical Range
- Revised Historical Range
- ERP/ ECP Sites
- Revised Munitions Response Areas
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 2,000 feet	Rev: 5
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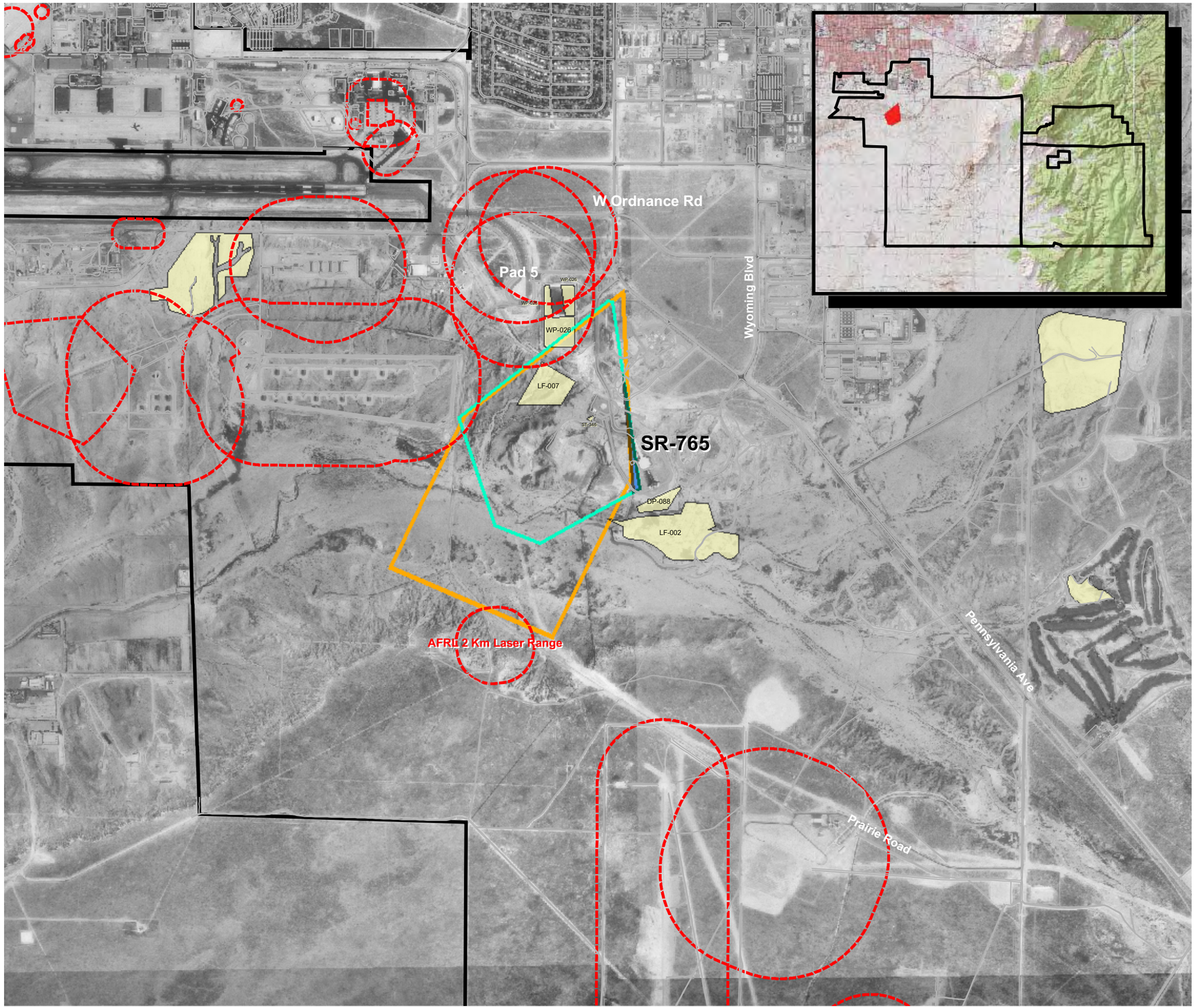

N

2,000 1,000 0 2,000

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-20

SR765
WWII Pistol Range

(Sandia Base Small Arms Ranges)

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Historical Range
- Revised Historical Range
- ERP/ ECP Sites
- Revised Munitions Response Areas
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 2,000 feet	Rev: 5
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Submitted By:	BN	Revision Date: 01-18-2007	

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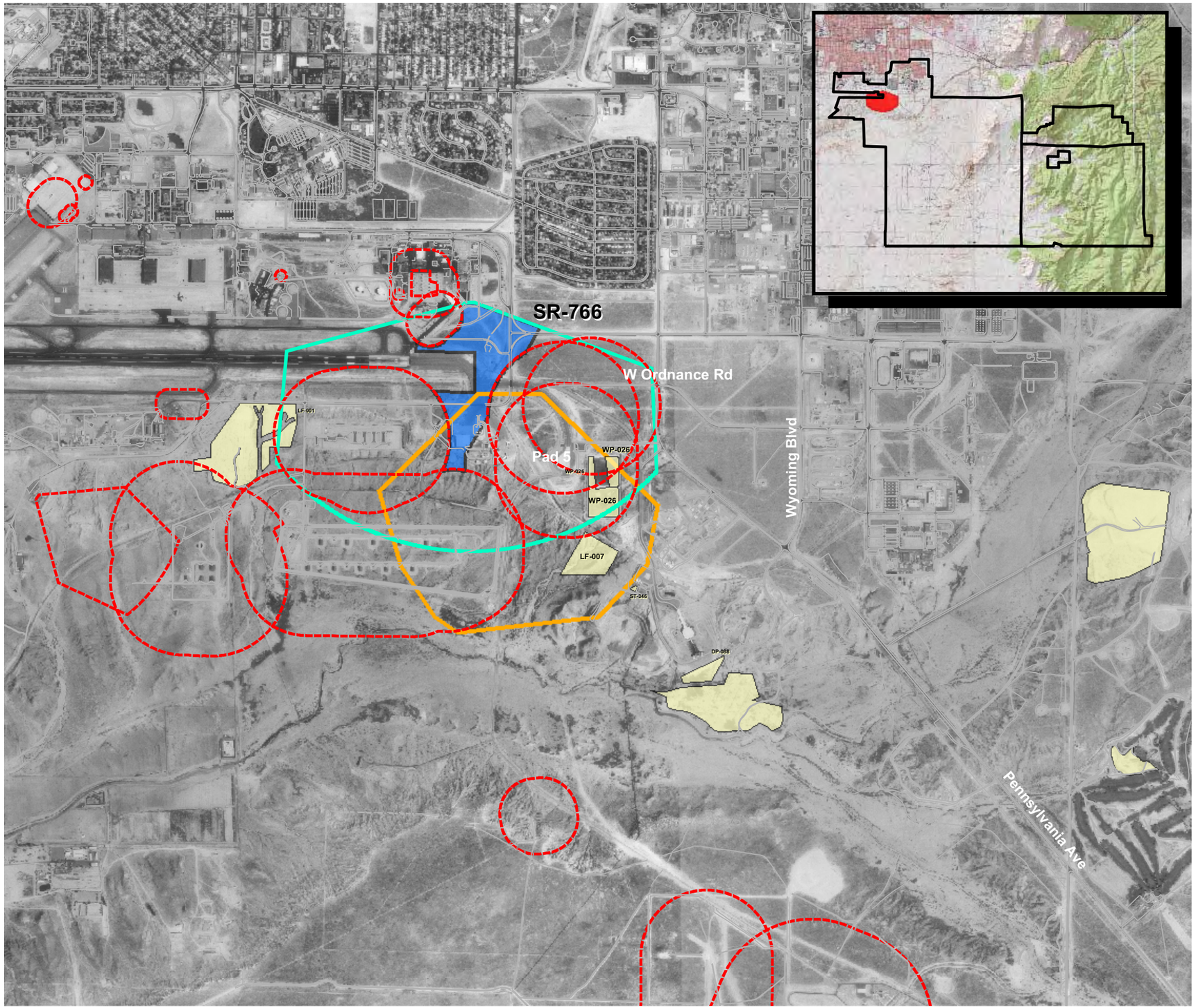

N

2,000 1,000 0 2,000

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-21

SR766 Sub-Machine Gun

(Sandia Base Small Arms Ranges)

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Historical Range
- Revised Historical Range
- ERP ECP Polygons
- Revised Munitions Response Areas
- Operational Areas

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 2,000 feet	Rev: 4
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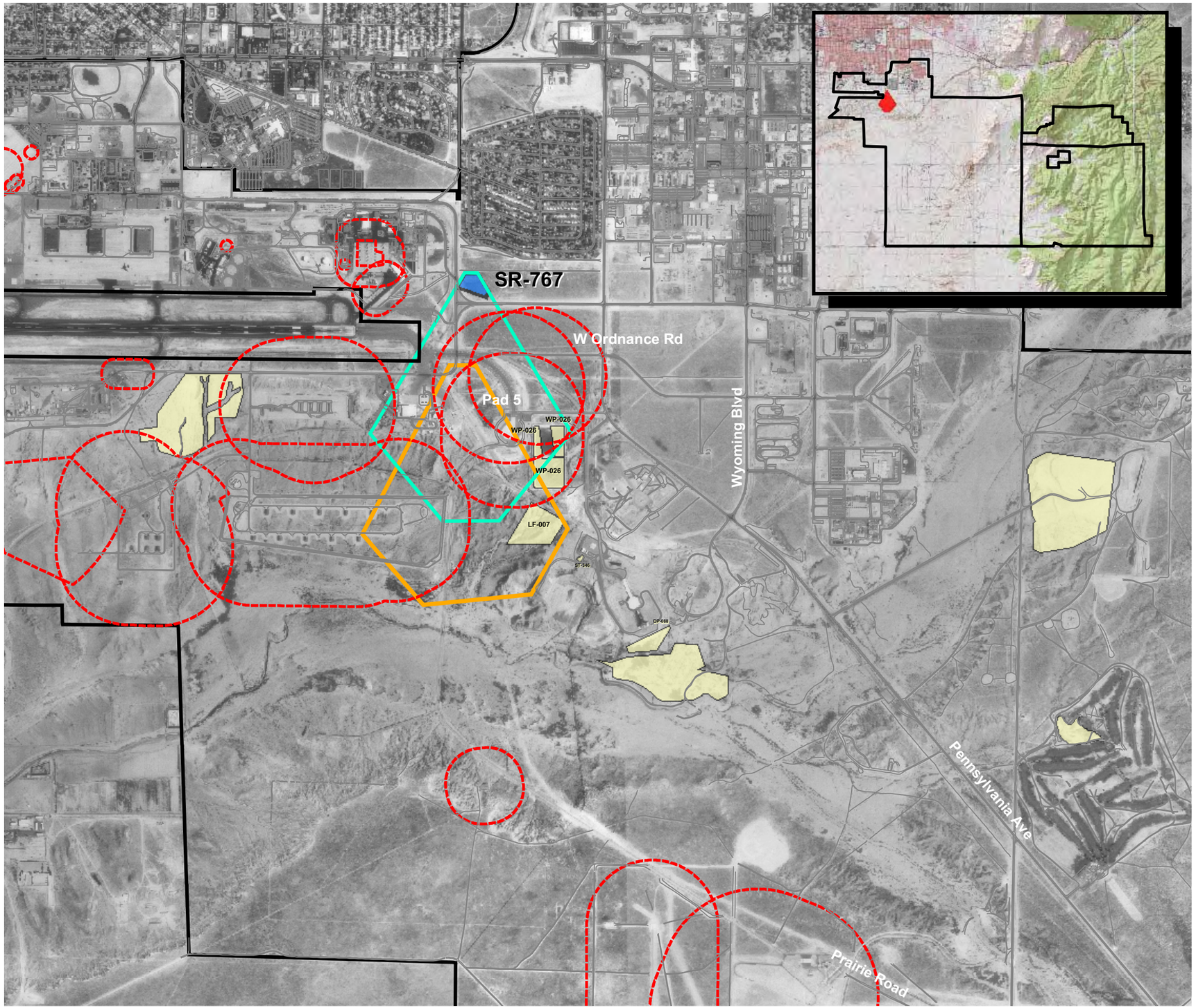

N

2,000 1,000 0 2,000

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-22

SR767 Rifle Range

(Sandia Base Small Arms Ranges)

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Historical Range
- Revised Historical Range
- ERP/ ECP Sites
- Revised Munitions Response Areas
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 2,000 feet	Rev: 5
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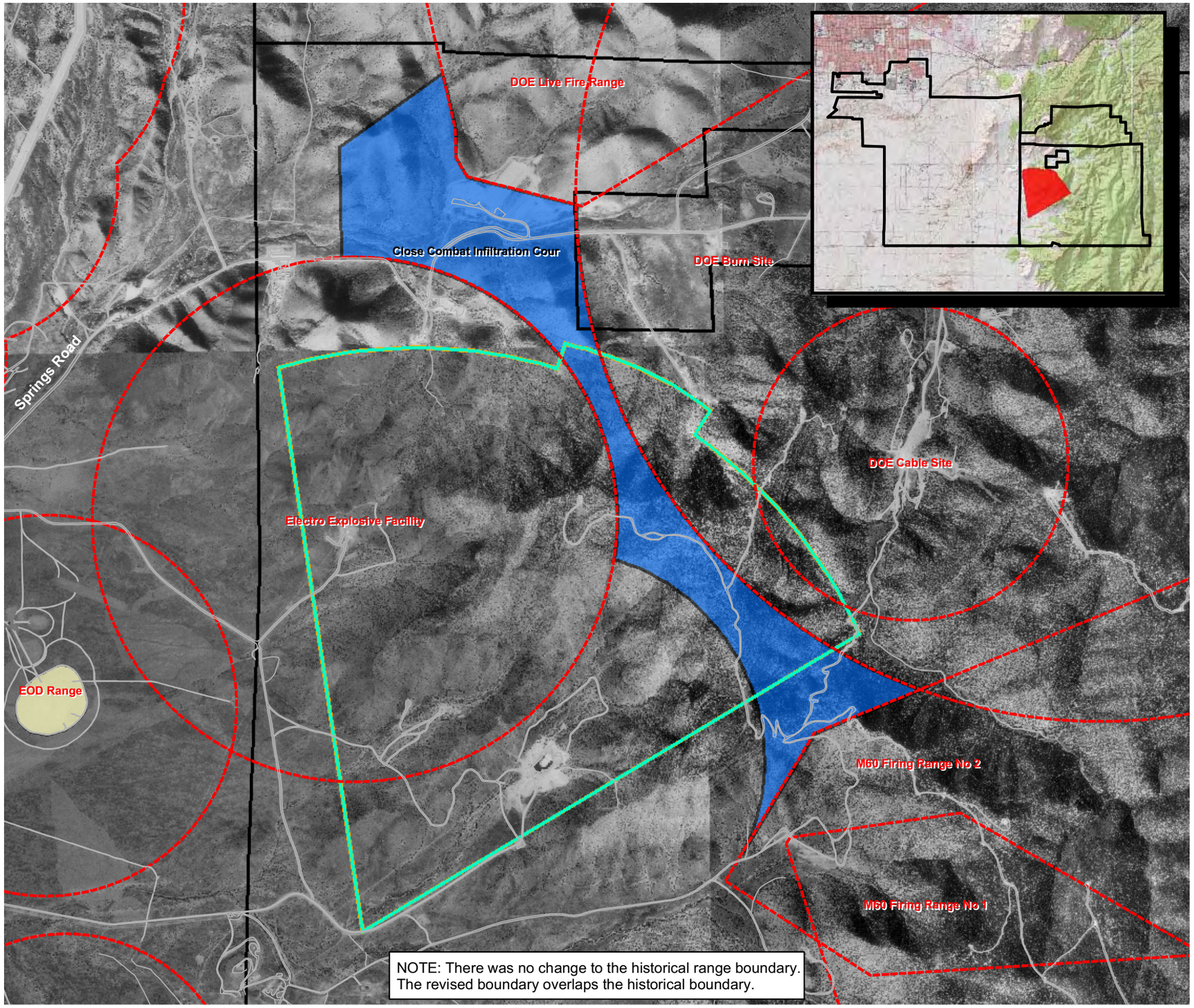

NOTE: There was no change to the historical range boundary. The revised boundary overlaps the historical boundary.

N

2,000 1,000 0 2,000

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-23

SR768 Close Combat Infiltration Course

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Historical Range
- Revised Historical Range
- ERP/ ECP Sites
- Revised Munitions Response Areas
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District
Drawn By: JAL	Scale: 1 inch equals 2,000 feet — Rev: 4
Checked By: DS	Date Drawn: 11-17-2005
Submitted By: BN	Revision Date: 01-18-2007

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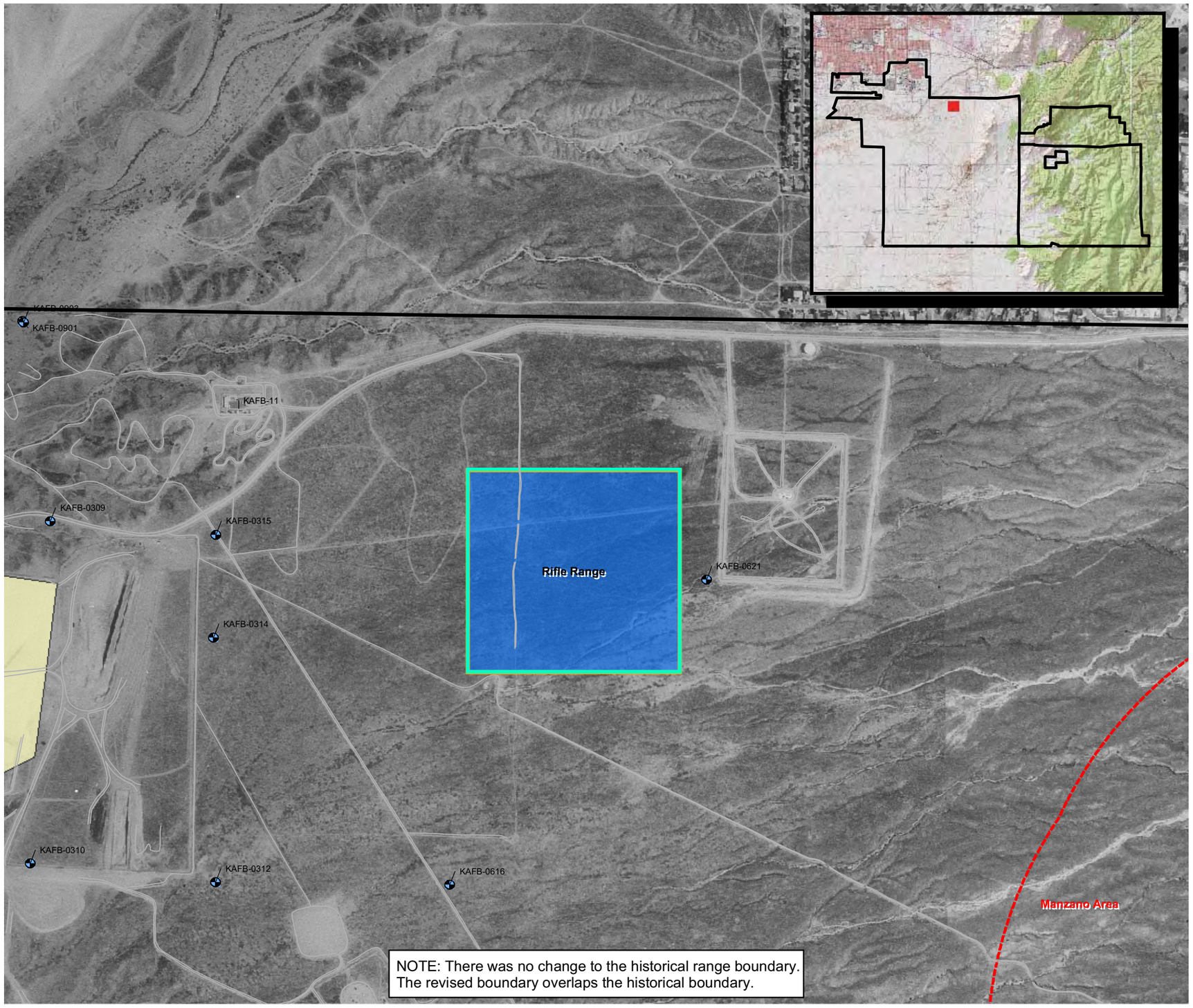

NOTE: There was no change to the historical range boundary.
The revised boundary overlaps the historical boundary.

N

800 400 0 800

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-24

SR777 Rifle Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Active Monitoring Well
- Roads
- Historical Range
- Revised Historical Range
- ERP/ ECP Sites
- Revised Munitions Response Areas
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 800 feet	Rev: 4
Checked By:	DS	Date Drawn: 11-17-2005	
Submitted By:	BN	Revision Date: 01-18-2007	

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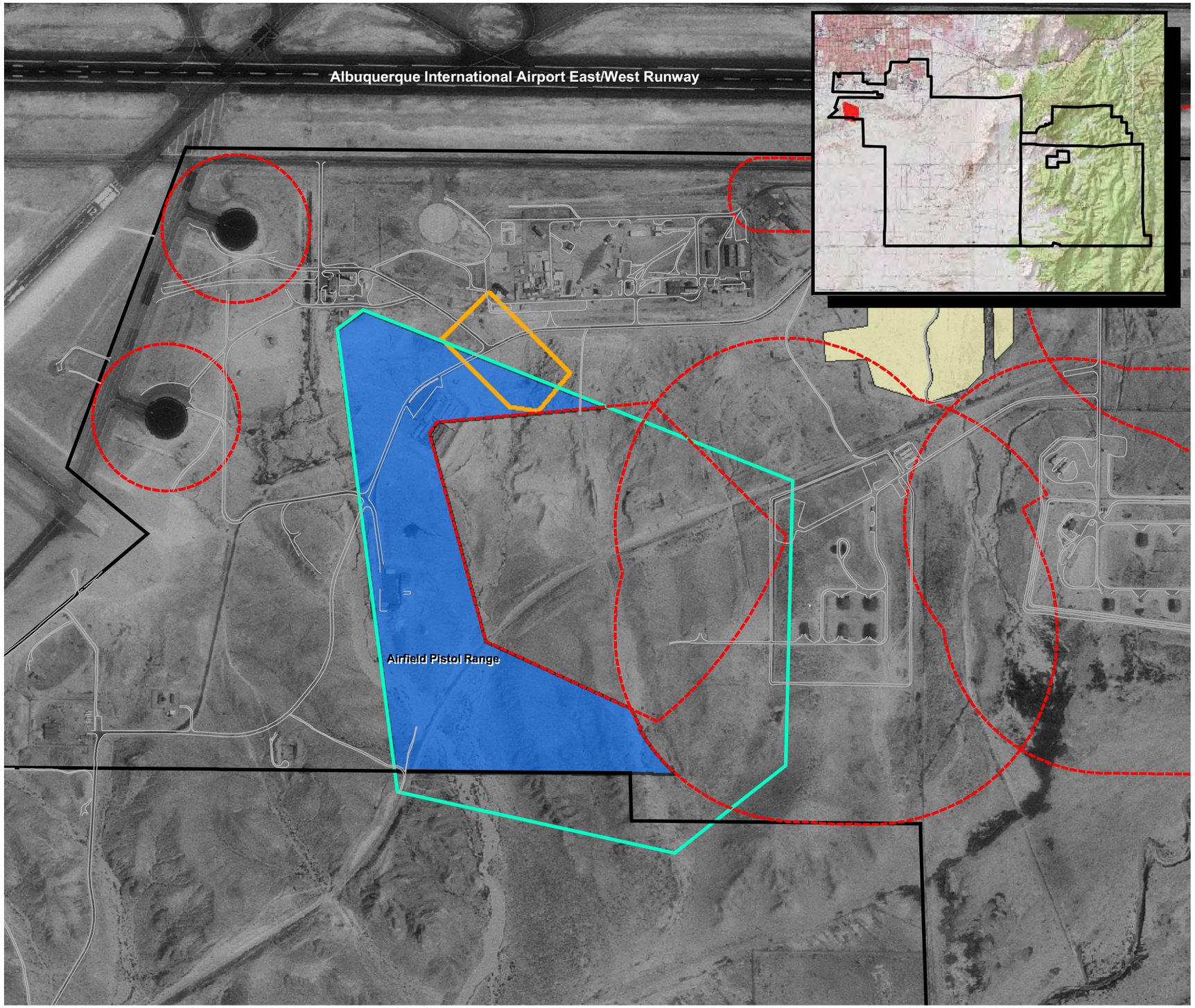

N

800 400 0 800

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-25

SR778
Airfield Pistol Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Historical Range
- Revised Historic Range
- ERP/ ECP Sites
- Revised Munitions Response Areas
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 800 feet	Rev: 4
Checked By:	DS	Date Drawn: 11-17-2005	
Submitted By:	BN	Revision Date: 01-18-2007	

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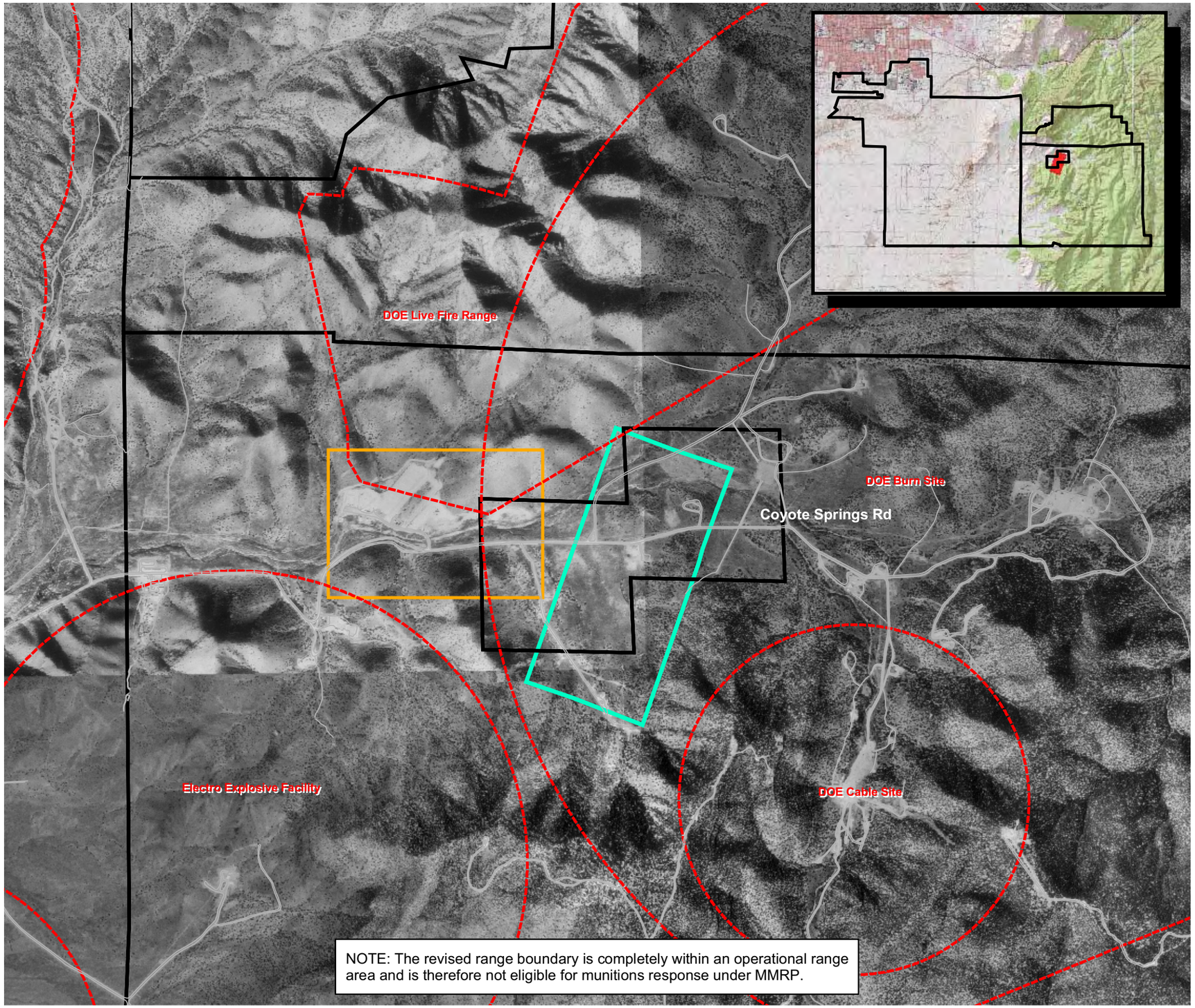

NOTE: The revised range boundary is completely within an operational range area and is therefore not eligible for munitions response under MMRP.

N

1,800 900 0 1,800

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-26

SR780 Impact Area

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Historical Range
- Revised Historical Range
- ERP/ ECP Sites
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.		US Army Corps Of Engineers Omaha District	
Drawn By:	JAL	Scale: 1 inch equals 1,800 feet	Rev: 4
Checked By:	DS	Date Drawn: 11-17-2005	
Submitted By:	BN	Revision Date: 01-18-2007	

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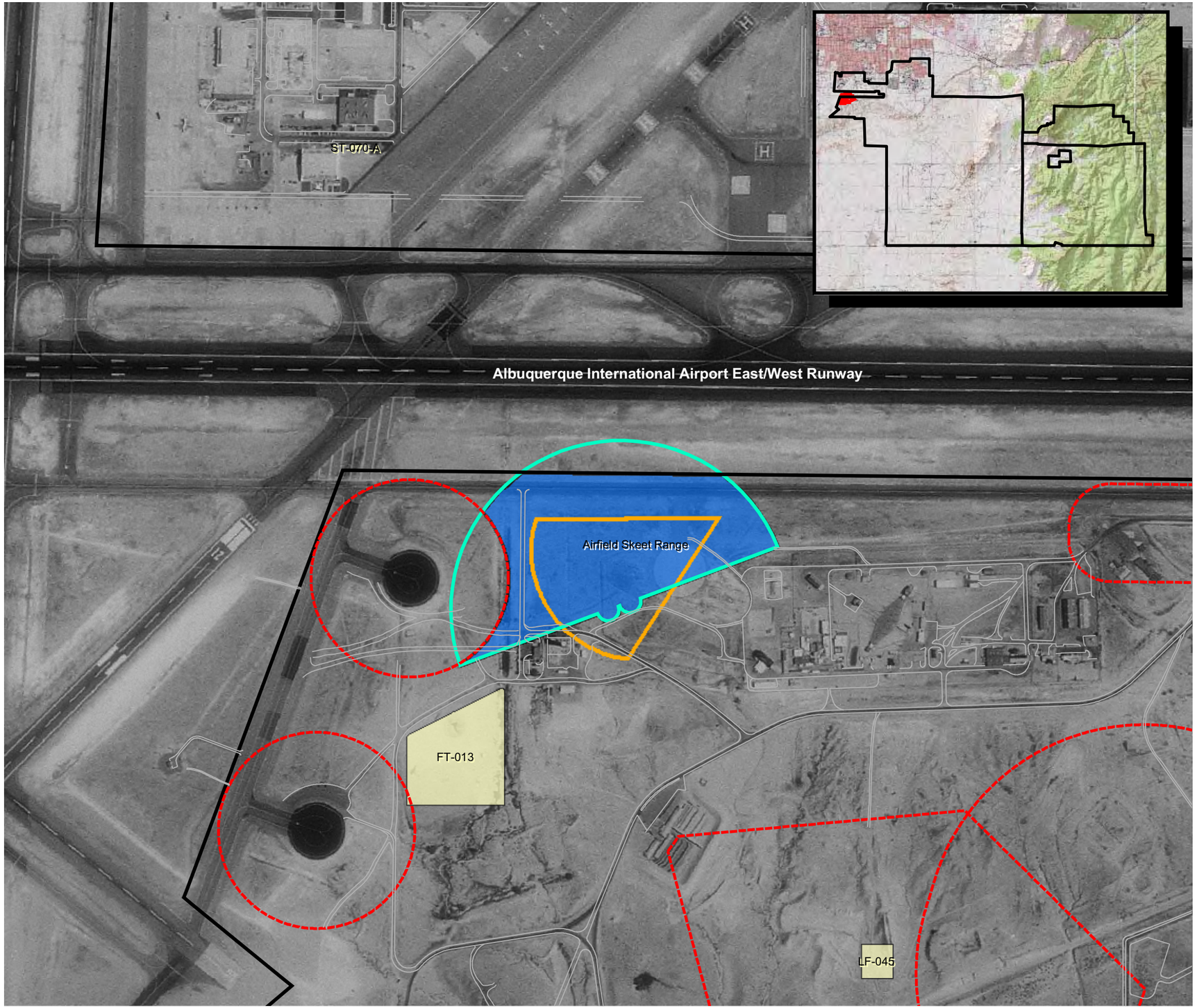

N

600 300 0 600

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-27

TS775
Airfield Skeet Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Historic Range
- Revised Historic Range
- ERP/ ECP Sites
- Revised Munitions Response Areas
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 600 feet	Rev: 4
Checked By:	DS	Date Drawn: 11-17-2005	
Submitted By:	BN	Revision Date: 01-18-2007	

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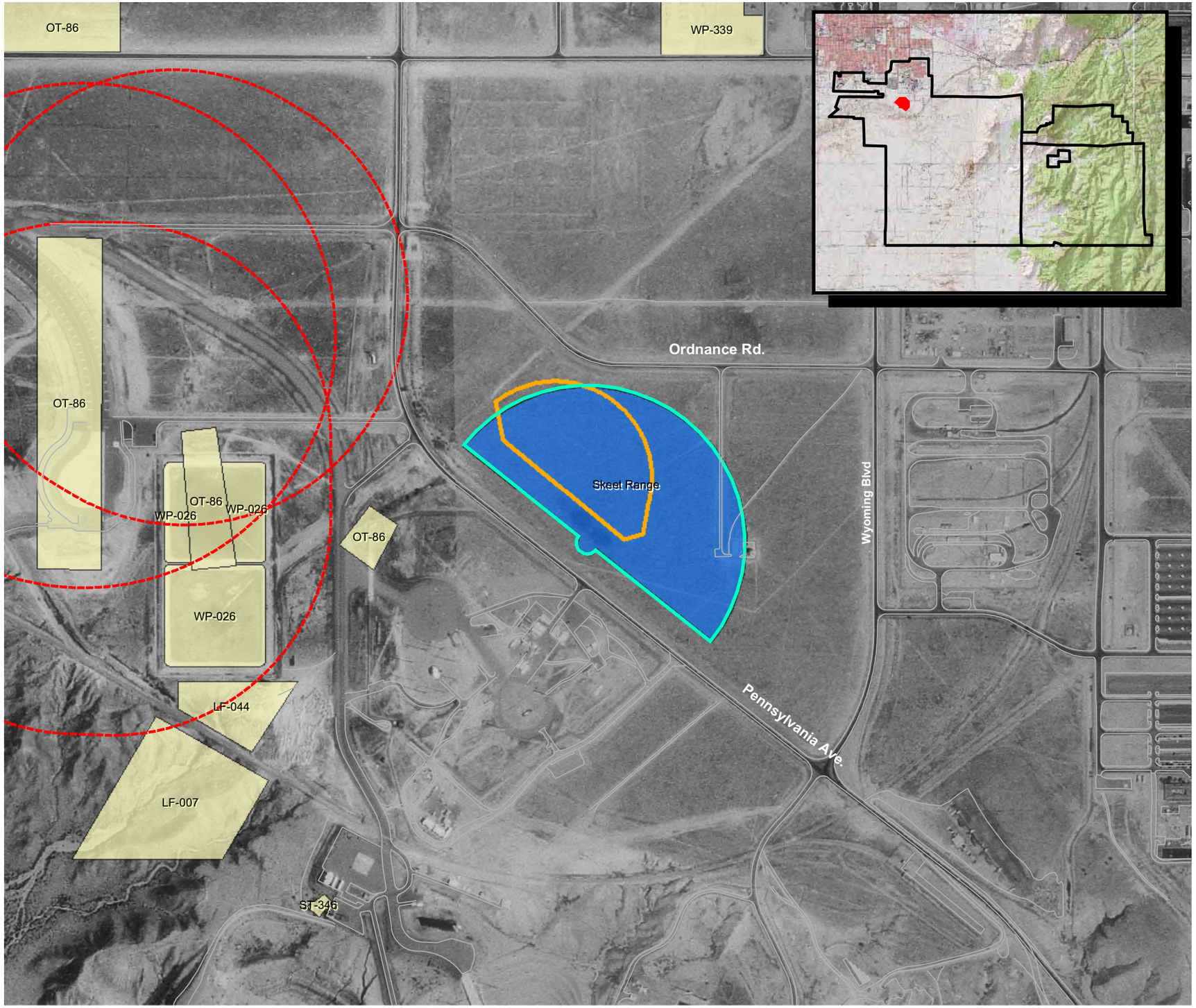

N

600 300 0 600

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-28

TS776
Skeet Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Historic Range
- Revised Historic Range
- ERP/ ECP Sites
- Revised Munitions Response Areas
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 600 feet	Rev: 4
Checked By:	DS	Date Drawn: 11-17-2005	
Submitted By:	BN	Revision Date: 01-18-2007	

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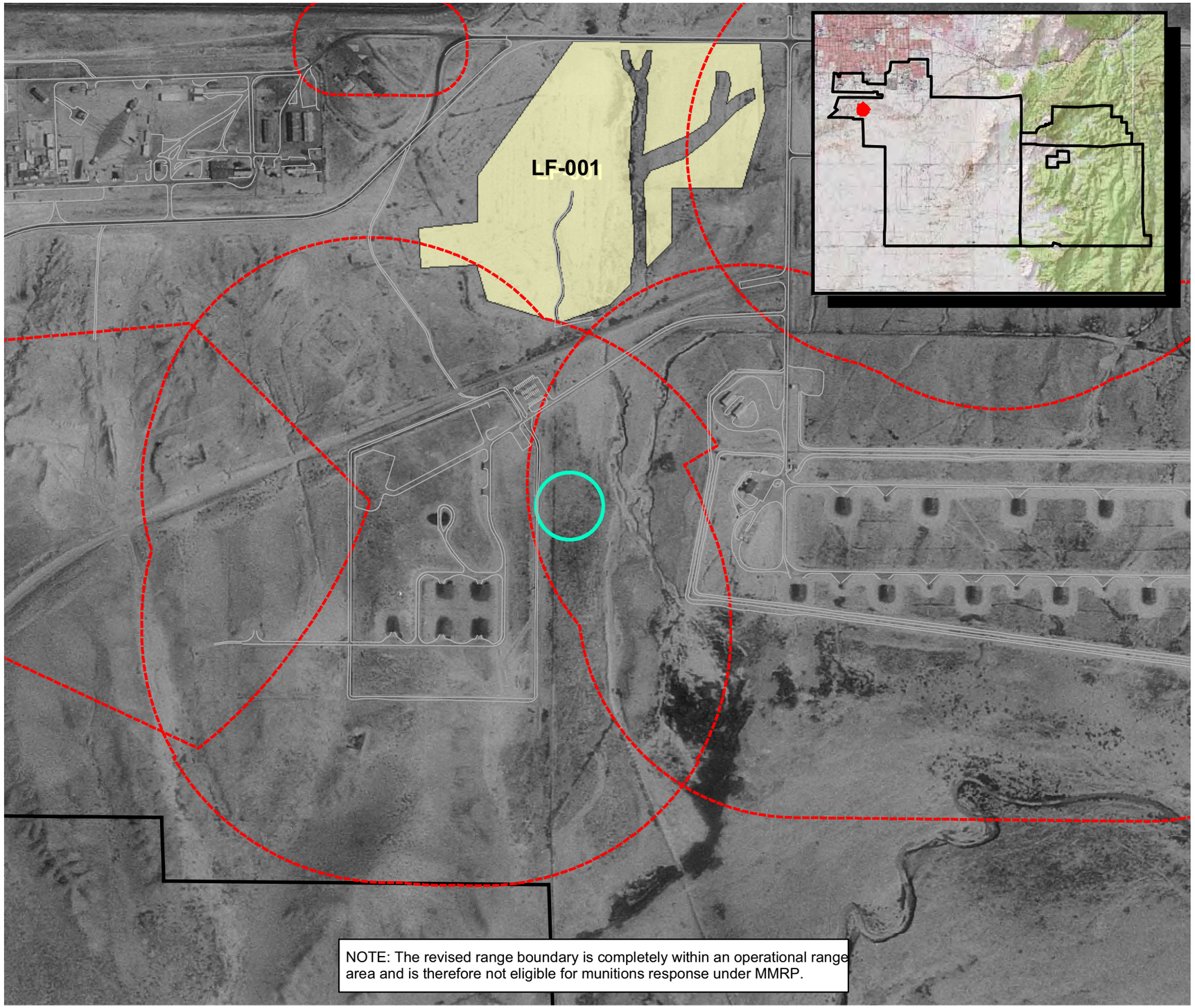

N

600 300 0 600

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-29

Bomb Target

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Revised Historical Range
- ERP/ ECP Sites
- Revised Munitions Response Areas
- Surface Danger Zones
- KAFB Boundary

USA Environmental, Inc.		US Army Corps Of Engineers Omaha District	
Drawn By:	JAL	Scale: 1 inch equals 600 feet	Rev: 3
Checked By:	DS	Date Drawn: 11-17-2005	
Submitted By:	BN	Revision Date: 01-18-2007	
Path: S:\CSE\Kirtland\Report MXDs\4-29_Bomb Target.mxd			

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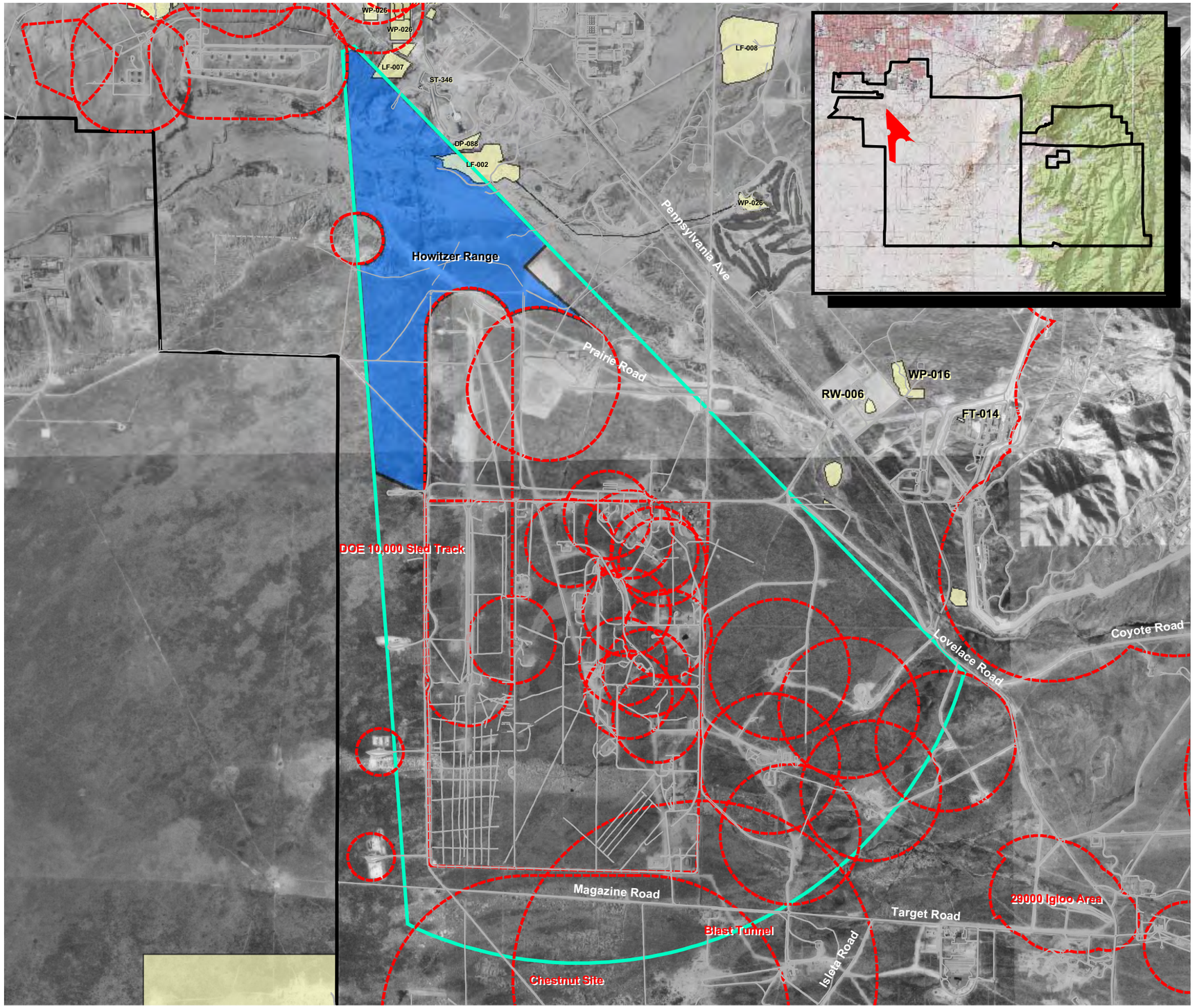

N

3,000 1,500 0 3,000

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-30

Sandia Base Howitzer Range (New MRA)

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Revised Historical Range
- ERP/ ECP Sites
- Revised Munitions Response Areas
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 3,000 feet	Rev: 5
Checked By:	DS	Date Drawn: 11-17-2005	
Submitted By:	BN	Revision Date: 01-18-2007	

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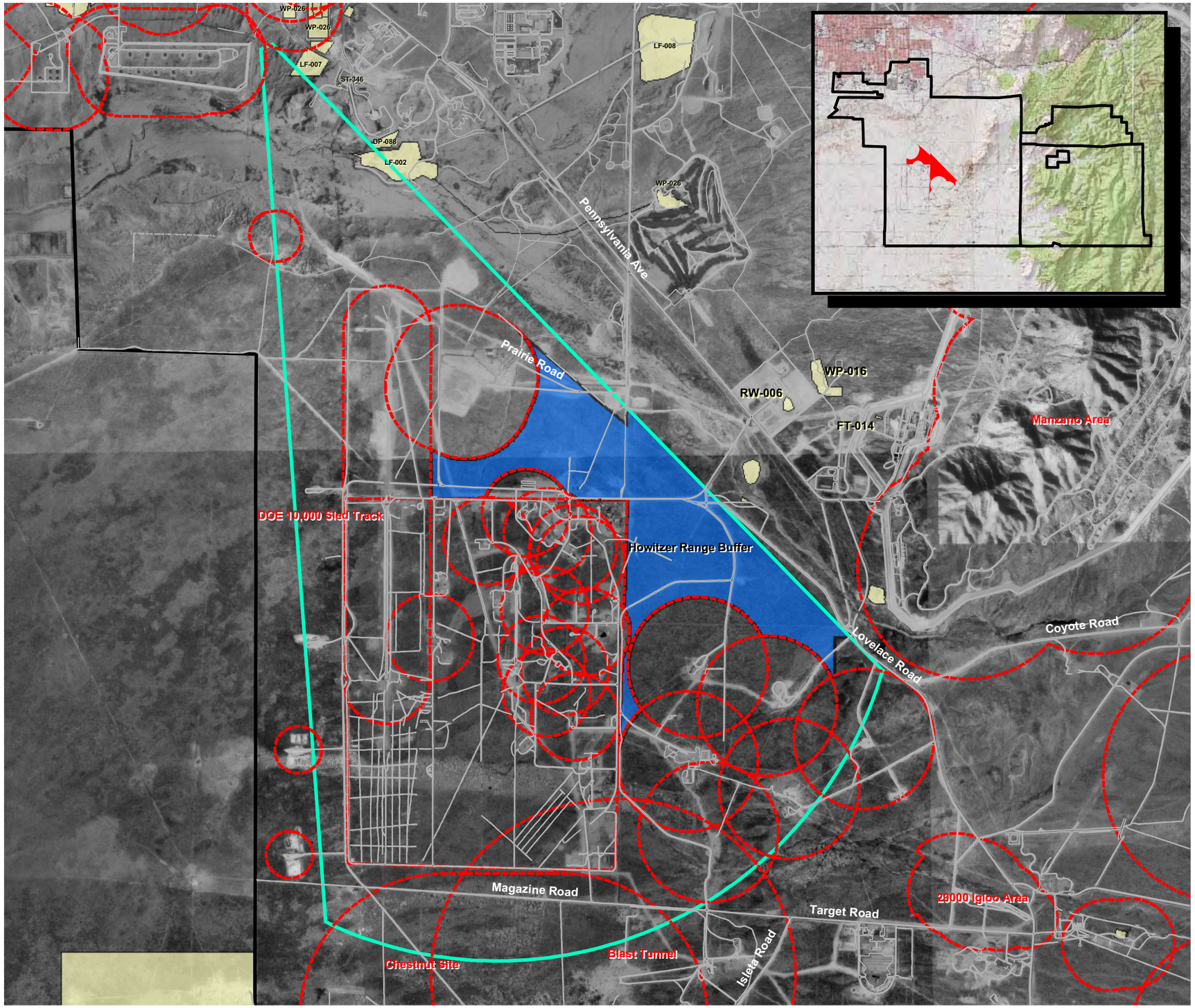

N

3,000 1,500 0 3,000

Feet

Data is projected to the State Plane Coordinate System: New Mexico Central Zone, NAD83, Units in Feet.

Kirtland AFB - Albuquerque, NM

Figure 4-31

Sandia Base Howitzer Range Buffer (New MRA)

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Revised Historical Range
- ERP/ ECP Sites
- Revised Munitions Response Areas
- Operational Areas
- KAFB Boundary

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1 inch equals 3,000 feet	Rev: 5
Checked By:	DS	Date Drawn: 11-17-2005	
Submitted By:	BN	Revision Date: 01-18-2007	

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4.2 Personal Interviews

The HRR Team conducted interviews with personnel from the UNM and Kirtland AFB in support of this CSE Phase I investigation.

Interviews were conducted with Derek Swinson and Howard Bryant of the UNM Physics Department. No information on the Kirtland AFB MRAs was obtained. Interviews were also conducted with Carl Lanz, Restoration Chief, and Jerroll Sillerud, Project Manager. No new information regarding the MRAs was obtained. The HRR Team interviewed Harry Davidson, Retired, Kirtland AFB Environmental Restoration, regarding range areas at the installation, including the NMPG/NMER. In particular, the types of munitions and period of use at each area were discussed, as summarized below.

- **Gun Sight Range** - The Gun Sight Range was used from approximately 1944 through 1947. The range may have been part of the Proximity Fuze Range – testing in the opposite direction – for example, shooting projectiles using 90mm howitzers toward the west to get further projection, rather than toward the east where the mountains were.
- **NMPG/NMER** - Mr. Davidson confirmed the NMPG/NMER was used for proximity fuze testing in the 1940s.

Mr. Davidson was unable to provide any substantive new information. The former NMPG/NMER employees that Mr. Davidson knew had either died or were no longer cooperating with interviewers regarding their NMPG/NMER experiences. Mr. Davidson did not arrive at Kirtland AFB until 1982. His knowledge of the NMPG/NMER is based on information that he gathered in his position with Environmental Restoration at Kirtland AFB and from discussions with former NMPG/NMER employees.

4.3 Visual Survey

A detector-assisted visual survey of each MRA was performed to reconcile the MRAs listed on the initial Kirtland AFB range inventory and identified during the HRR with the actual site conditions. The purpose of the visual survey was to collect physical data needed to evaluate the potential for environmental impact from past munitions-related activities with each MRA. A qualified UXO technician was included in the visual inspection because of explosives safety issues. The following subsections briefly describe the instrument prove-out, data collection, and data management elements of the detector-assisted visual survey.

4.3.1 Initial Instrument Prove-Out and Daily Instrument Checks

To ensure the quality of the survey data, USAE established a geophysical test strip adjacent to the Tijeras Arroyo Golf Course to test and select the optimal handheld geophysical instrument and instrument settings for the site. The geophysical test strip was composed of two inert 20mm projectiles, one inert 40mm grenade, and one inert 60mm mortar, buried in horizontal orientation at 6 inches, 8 inches, 12 inches, and 24 inches, respectively. The Teams evaluated the performance and suitability of both the Schonstedt GA-52Cx and the Minelab Explorer II to site-specific conditions. These geophysical instruments are the preferred handheld metal detectors and magnetometer in the munitions response industry, and can exhibit outstanding performance under various site conditions.

The Team Leaders reviewed the instrument test results and selected the Minelab Explorer II based on site conditions and the detection performance demonstrated during the initial prove-out. After initial instrument prove-out, the Teams tested the metal detectors each workday at the geophysical test strip

prior to field activities. This test included a functions check, as recommended by the instrument manufacturer, and a location check at the geophysical test strip.

4.3.2 Data Collection and Mapping

Once the MRA boundaries were revised, the GIS Technician uploaded those revised boundaries onto each team's Global Positioning System (GPS)/Data Collection Tool, along with preprogrammed survey transects, to guide the team during the detector-assisted visual survey of the Kirtland AFB MRAs.

USAE began the detector-assisted visual survey of Kirtland AFB on 1 December 2005. To maximize the survey coverage, USAE fielded two Core Technical Teams that each worked four 10-hour workdays per week. Each Core Technical Team was composed of one Senior UXO Supervisor (SUXOS), one Environmental Technician, and one GIS Technician.

Each survey team was equipped with a handheld metal detector to identify surface munitions obscured by vegetation or other surface debris. For data collection, navigation, and GPS tracking, each team used the ruggedized GPS/Data Collection Tool with integrated GIS software and a site map/aerial photograph overlain with idealized survey transects. Figure 4-37 depicts the GPS/Data Collection Tool and handheld metal detectors. The GPS/Data Collection Tool allowed the team to digitally record the survey path, the spatial location and identification of items encountered, and the number of subsurface anomalies, and to transfer that site data into the Kirtland AFB CSE GIS project.

Figure 4-32. GPS/Data Collection Tool and Handheld Metal Detectors

The GPS/Data Collection Tool automatically logged GPS data at 20-second intervals, generating the traversed survey path. The GIS Technician guided the team along the idealized survey transects and recorded all data using a series of check-selection and pull-down menus. The SUXOS operated the metal detector, tallied surface and subsurface anomalies, and photographed significant contacts or site features.

The teams recorded the following data during the detector-assisted surveys:

- Size, type, and location coordinates of each MEC encountered;
- Location and type of each MPPEH, munitions debris, or other significant site feature; and
- Number of surface and subsurface detector contacts at 500-ft intervals.

At the end of each workday, the USAE SUXOS downloaded and transferred the electronic survey data to the USAE GIS Manager. The USAE GIS Manager downloaded and retained the electronic data in the

USA GIS Server. The GIS Manager incorporated the electronic data into the Kirtland AFB CSE GIS Project and composed maps to graphically represent the survey data. Electronic survey data maps were retained in the USAE GIS Server.

The Core Technical Teams surveyed 98.8 acres (163 miles) within the MRAs based on 5-feet wide transect paths. The teams completed the detector-assisted visual survey of Kirtland AFB on 19 December 2005. Specific findings of the survey are presented in Section 5.6 of this report.

4.4 Off-Site Reconnaissance

The USAE Team performed an off-site reconnaissance of properties surrounding Kirtland AFB to assess the population, land use, and operations that may be affected by site operations and conditions. The off-site reconnaissance consisted of a drive-through visual survey of public roads and local communities to identify adjacent land ownership, land use, and potential receptors of any wastes that may migrate off the site.

4.5 Data Management

USAE retains hard copies of primary records for the CSE Phase I investigation surveys in the project files located at the USAE Corporate Office in Oldsmar, Florida. These records include the Task Orders and any modifications, draft submittals, responses to comments and final submittals, and correspondence received from USACE Omaha District and Kirtland AFB.

4.5.1 Electronic Data

USAE recorded the range survey data in the GPS/Data Collection Tool. The USAE GIS Manager uploaded this electronic data into the Kirtland AFB CSE Phase I GIS project. The GIS Manager retains the electronic data in the USAE GIS Server.

Electronic versions of working products and digital photographs collected during survey activities are retained within the USAE network server. Photographs of the survey effort and significant findings are provided in Appendix D.

Access to all servers is limited by password to only those individuals manipulating the data.

4.5.2 Hardcopy Data

Hard copies of primary records for this CSE Phase I investigation are retained in the project files at the USAE Corporate Office in Oldsmar, Florida. Such records include the Task Order and any modifications, draft submittals, responses to comments and final submittals, correspondence received from USACE Omaha District and Kirtland AFB, and correspondence including minutes of meetings and monthly reports. Historical records and documents, previous study reports, and related items will be retained in working files located in the USAE Project Manager's office.

During field efforts, records will be maintained in the project field office with copies delivered to the USAE corporate project file in Oldsmar, Florida. Following completion of the fieldwork, all files will be delivered to the corporate project files. Such records will include geophysical logs, geophysical data, daily summary sheets, and related field and daily logs.

4.6 Evaluation of Additional Investigation Areas

During the historical data assessment and visual survey planning phase of the CSE Phase I, the USAE Team evaluated whether additional MRAs exist at Kirtland AFB. Section 4.1.3 and Section 4.1.4 discuss the identification of additional investigation areas. The modifications to historical range boundaries and incorporation of additional investigation areas generated two newly identified MRAs, the Sandia Base Howitzer Range and the Sandia Base Howitzer Range Buffer.

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5. SITE CHARACTERISTICS

5.1 Site Description

The original 26 MRAs are located in areas primarily south and east of the main cantonment at Kirtland AFB, as shown in Figure 2-2. As discussed in Section 4.1.4, the HRR indicated that some of the boundaries for the original 26 MRAs were incorrect. The HRR also identified new historical range sites.

5.2 History of MEC Activities

This section discusses the history of MEC activities for the MRAs associated with Kirtland AFB.

5.2.1 AL120 Proximity Fuze Range

From January 1942 through June 1952, this area encompassed the firing points, firing fans, and main impact area for the NMPG/NMER. The Manzanita Mountains served as the backstop for much of the firing activities at the NMPG/NMER. Documented military munitions activities within this MRA included the testing of proximity fuzes and firing of 3-inch, 5-inch, 57mm, 58mm, 75mm, 76mm, 78mm, 90mm, 105mm, and 120mm projectiles; and 4.5-inch and 5-inch rockets.

The HRR Team identified nine new historical firing points associated with the NMPG/NMER development of the VT fuze. The available history of MEC activities for these firing points is provided below.

- **NMPG Firing Point 1: Section T –** This firing point operated from 1941 to September 1942 and served as a firing point for 57mm guns. Activities included down-range, sabot, and vertical recovery shots. The guns were fired to the east.
- **NMPG Firing Point 2: Section A –** This range operated from September 1942 to 1945 and served as a firing point for 20mm, 57mm, and 75mm guns. Activities included down-range, sabot, and vertical recovery shots. The guns were fired to the east.
- **NMPG Firing Point 3: Section T –** This range operated from 1943 to June 1952 and served as a firing point for 3-inch/50 guns. Activities included down-range, sabot, and vertical recovery shots. The guns were fired to the northeast, based on the assumption that firing would not be directly toward the headquarters building and based on a photograph showing the direction of gun barrels. NOTE: Firing Points 3, 4, and 6 were the Main Firing Line. All are within the current AL120.
- **NMPG Firing Point 4: Section A –** This range operated from 1943 to June 1952 and served as a firing point for 90mm M1 guns. There is only evidence of vertical recovery. NOTE: Firing Points 3, 4, and 6 were the Main Firing Line. All are within the current AL120.
- **NMPG Firing Point 5: Section T –** This range operated from 1943 to June 1952 and served as the firing point for .50-caliber machine guns. Firing at this range was in the same direction as Firing Points 6 and 7, based on proximity to these firing points. NOTE: This range is within the current AL120.
- **NMPG Firing Point 6: Section T, Main Firing Line –** This range operated from 1943 to June 1952. Firing at this range included 90mm M1, 76mm M1A2, 8 Tube 5-inch Rockets, 57mm, 20mm, 75mm, Navy 6 Pounder, 105mm Howitzer, 120mm, 5-inch/38 (MK30 Mod 48, MK21 Mod 7), 3.7-inch British; 3-inch/50 MK22; 58mm, 4.5-inch Rocket Launcher, 5-inch/54, and 3-

inch/70 (vertical recovery only). The rounds and rockets were fired toward the east-southeast, based on 1943 and 1945 maps. NOTE: Firing Points 3, 4, and 6 were the Main Firing Line. All are within the current AL120.

- **NMPG Firing Point 7: Section T** – This range operated from 1943 to June 1952 and served as the firing point for 57mm guns. Activities included down-range shots and vertical recovery. The guns were fired toward the east-southeast, based on 1943 and 1945 maps. NOTE: This range is within the current AL120.
- **NMPG Firing Point 8: Section T** – This range operated from 1943 to June 1952 and served as the firing point for 57mm guns. Activities included down-range and sabot shots. The shots were fired to the east.
- **NMPG Firing Point 9: Section T** – This range operated from 1943 to June 1952 and served as the firing point for 3-inch/50 and 5-inch/38 guns. The guns were fired to the southeast at two separate targets areas. NOTE: This range is within the current AL120.

5.2.2 AL769 Ordnance Drop Zone

The period of use and purpose of the site are currently unknown. Practice grenades with spotting charges are the only type of MEC expected to be found at the site.

5.2.3 AL771 Old Cable Site

The Old Cable Site was formerly used as a test site and projectile impact area. In 1993, Kirtland AFB EOD unit was contracted by SNL Environmental Restoration Project to conduct a visual surface survey/sweep of SNL ER sites with the potential for UXO. Within this MRA, ER sites 19 and 82 were surveyed; several munitions debris items were noted (smoke grenades, flares, small arms, 5-inch projectiles, 5-inch rockets, 2.75-inch rockets), and no surface UXO items were noted (SNL, 1994). The Kirtland AFB EOD team has responded to the site to destroy 5-inch shells and fuzes. In 2001, as many as 40 concrete-filled 90mm projectiles with burned-out tracer elements in fuze bodies were found in this area. Additional types of MEC expected to be found at the site included medium/large caliber shells (20mm and larger), explosive rockets, and practice grenades (with spotting charges).

5.2.4 DA130 Arroyo del Coyote Demolition Area

The period of use and demolition processes at the Arroyo del Coyote Demolition Area are currently unknown. The HRR identified two historical ranges associated with DA130, Defense Training Area D and Area E. These two historical ranges were part of the Defense Training Areas used by Sandia Base in the 1950s (TechLaw, 2006).

- **Defense Training Area D** – This range was used for outdoor instruction-type activity, an Infiltration Course, a Bayonet Course, and an Obstacle Course suitable for advanced training. The obstacle course consisted of ditches and log structures. The bayonet course consisted of swinging parry sticks and burlap dummies. A gas chamber located in Area D consisted of a 20-ft-square sealed building used for individual and squad training in gas chamber exercises.
- **Defense Training Area E** – This range was used for defensive position training for units up to battalion size, extended order drill, and day firing for weapons familiarization.

Types of MEC expected to be found at the site include medium/large caliber shells (20mm and larger), explosive detonators, practice grenades (with spotting charges), demolition charges, flares, signals, and simulators (other than white phosphorous).

The Kirtland AFB restoration site OT-010, within DA130, consists of four Radiation Training Sites (TS-5, TS-6, TS-7, and TS-8), which were used to train military personnel in alpha radiation monitoring and decontamination of simulated nuclear weapon accidents. A second Kirtland AFB restoration site, SS-069, within DA130, consists of a 50-ft x 50-ft fenced area within TS-6, in a drainage area adjacent to Arroyo del Coyote. The area was used to store thorium oxide-contaminated soil and sludge. A suspected EOD area DP-101 was identified within OT-010. A 2001 investigation of DP-101 indicated no buried munitions at the site. In 2003, during restoration operations at site OT-010 (TS-5, TS-6, TS-7, and TS-8), several munitions debris items were recovered. These items included a 3.5-inch rocket warhead (site TS-5), unknown munitions-related items (HE fragments), residue from smoke grenades, grenade spoons, and miscellaneous expended small arms (MWH Americas, 2003). All of these sites have been approved for NFA by NMED.

5.2.5 DA782 Explosives Disposal Area

The period of use and method of disposal at the former Explosives Disposal Area are currently unknown. Demolition charges are the only type of MEC expected to be found at the site.

5.2.6 ED770 Experimental Range

The period of use and purpose of the Experimental Range are currently unknown. The EOD Range located within ED770 began operations in 1972 and is currently active. Demolition charges were the only type of MEC expected to be found.

5.2.7 ML125 Field Firing Range

The period of use and purpose of the Field Firing Range are currently unknown. In 1993, Kirtland AFB EOD unit was contracted by SNL Environmental Restoration Project to conduct a visual surface survey/sweep of SNL ER sites with the potential for UXO. Within this MRA, ER sites 15, 28, and 67 were surveyed; several munitions debris items were noted (various projectiles and fuzes), one live fuze was noted, and EOD indicated the area has live ordnance (SNL, 1994). Additional types of MEC expected to be found at the site include small arms and medium/large caliber shells (20-mm and larger).

5.2.8 ML774 Gun Site Fan

The period of use and purpose of the Gun Site Fan are currently unknown. Types of MEC expected to be found at the site include medium/large caliber shells (20mm and larger), explosive rockets, and practice grenades with spotting charges.

According to the initial range inventory, the Gun Site Fan was used to fire medium to large caliber rounds at target emplacements located at the base boundary, possibly in an effort to test and develop rounds during WWII. The firing point for the range was located just east of where the Tech Area III is currently designated. The range fan extends out in a triangular pattern toward the west. Historically, the fan extended far outside the base boundary, but for the purposes of this investigation, it ends at the current fence boundary.

Four large earthen mounds near the edge/end of the fan seem to be a location to hang/place targets.

Within DOE/SNL's Tech Area III, an existing DOE/SNL historical firing point was found that is approximately one mile west of Gun Site Fan's firing point. The direction of fire from this DOE/SNL site was to the southwest. Another firing point, approximately one-half mile east of the first DOE/SNL Firing

Point, was found also within DOE/SNL's Tech Area III. At the second DOE/SNL firing point, a 155mm firing point is indicated on maps as having fired to the southwest. The firing point for the Gun Site Fan appears to be approximately one-half mile further east of the 155mm firing point. No confirmation of the existence of the Gun Site Fan was found in aerial photographs. It appears that the Gun Site Fan did not exist. If it did exist, it was likely mistaken for the two DOE/SNL firing points (TechLaw, 2006).

5.2.9 ML781 Firing In-Abutment

The Firing In-Abutment was used to unload aircraft weapons misfires; however, this area has also historically been used for aircraft machine gun maintenance. The period of use of the site is unknown. Types of MEC expected to be found at the site include expended small arms and medium to large caliber shells (20-mm and larger).

5.2.10 ML784 40mm Test and Training Range

The 40mm Test and Training Range was used from 1984 to 1994 for the Peacekeeper Challenge competition, which was held annually for security police units worldwide to enhance weapons proficiency, tactics, individual skills, and training programs. One of the marksmanship events was firing orange powder 40mm practice grenades (M781) from 12 different firing points at 12 different targets (Kirtland AFB, 2005b).

A previous site survey identified one unexpended 40mm practice grenade (M781) projectile, one clip of 5.56mm blanks, and several pieces of munitions debris (SNL, 1994). Although the M781 practice grenade cartridge would pose an explosive hazard because of the expelling charge, the projectiles themselves do not pose an explosive hazard.

It should be noted that ML784 is not eligible for munitions response under the Air Force MMRP because it does not meet the definition of a defense site as codified in 10 USC 2710, since it is within the operational range area (explosive safety limit) of the Electro-Explosive Facility.

5.2.11 MU772 H-25 Site

The period of use and purpose of the H-25 Site are currently unknown. Crystallized explosives and 81mm mortar rounds have been recovered at this site. Other types of MEC expected to be found at the site include practice grenades (with spotting charges) and demolition charges.

5.2.12 PT123 Tijeras Small Arms Range

The Tijeras Small Arms Range was a former small combat training range. The period of use of the site is currently unknown. In 1993, Kirtland AFB EOD unit was contracted by SNL Environmental Restoration Project to conduct a visual surface survey/sweep of SNL ER sites with the potential for UXO. Within this MRA, ER sites 10, 59, and 60 were surveyed; several munitions debris items were noted (smoke grenades, flares, small arms, 40mm practice grenades, 3.5-inch rocket motors, and various homemade training devices), and one surface UXO item (ground burst simulator) was noted (SNL, 1994). Additional types of MEC expected to be found at the site include medium/large caliber shells (20mm and larger), practice 75mm projectiles, and pyrotechnic residues.

5.2.13 PT761 Tijeras Small Arms and Training Range

The Tijeras Small Arms and Training Range is the portion of the Tijeras Small Arms Range that extends beyond the northern property boundary of Kirtland AFB. The period of use and purpose of this site are currently unknown. Types of MEC expected to be found at the site include expended small arms, medium/large caliber shells (20mm and larger), explosive hand or rifle grenades, flares, signals, and simulators (other than white phosphorous).

5.2.14 PT773 Coyote Canyon Tech Site

The Coyote Canyon Test Site is a former explosive testing site used in the 1950s and may contain some blast shelters and demolition pads. In 1993, Kirtland AFB EOD unit was contracted by SNL Environmental Restoration Project to conduct a visual surface survey/sweep of SNL ER sites with the potential for UXO. Within this MRA, ER sites 8, 58, and 92 were surveyed; several munitions debris items were noted (smoke grenades, flares/signal devices, small arms, 20mm projectiles, 30mm projectiles, 5-inch rockets, bomb fuzes, heavy case fragments). At site 8, 20 UXO items (bomb fuzes, illumination trip flares, 12 gauge shotgun shells, 20mm cartridge cases, and bulk HE) were noted (SNL, 1994). Types of MEC expected to be found at the site include expended small arms, medium/large caliber shells (20mm and larger), hand or rifle explosive grenades, flares, signals, and simulators.

Live munitions and munitions debris (including white phosphorus canisters) associated with the Manzano Combat Range were removed from the nearby DOE/SNL Site 58 (Coyote Canyon Blast Area) in 1996.

5.2.15 PT783 Bazooka Training Range

The Bazooka Training Range is a former bazooka training area. The period of use is currently unknown. In 1993, Kirtland AFB EOD unit was contracted by SNL Environmental Restoration Project to conduct a visual surface survey/sweep of SNL ER sites with the potential for UXO. Within this MRA, ER site 8 was surveyed; several munitions debris items were noted (smoke grenades, flares/signal devices, small arms, 20mm projectiles, 30mm projectiles, 5-inch rockets, and bomb fuzes) and 20 various UXO items (bomb fuzes, illumination trip flares, 12 gauge shotgun shells, 20mm cartridge cases, and bulk HE) were noted (SNL, 1994). Types of MEC expected to be found at the site include expended small arms, medium/large caliber shells (20mm and larger), 81mm mortar and 3.5-inch training rounds, explosive rockets, and expended smoke grenades with spotting charges.

5.2.16 SR763 Rifle Range

The SR763 Rifle Range is a former Sandia Base rifle range. The period of use is currently unknown. Expended small arms are the only munitions-related items expected to be found at the site.

5.2.17 SR764 Rifle Range

The SR764 Rifle Range is a former Sandia Base rifle range. The range had a 4,000-yard safety fan pointing south. The fan is shown in two forms, indicating that the range size or arms used may have varied over time. The period of use is currently unknown. Expended small arms are the only munitions-related items expected to be found at this site.

5.2.18 SR765 WWII Pistol Range

The WWII Pistol Range is an abandoned WWII-era pistol range. Expended small arms are the only munitions-related items expected to be found at the site.

5.2.19 SR766 Sub-Machine Gun

The Sub-Machine Gun is a WWII-era sub-machine gun range. Expended small arms are the only munitions-related items expected to be found at SR766.

5.2.20 SR767 Rifle Range

The SR767 Rifle Range is a WWII-era rifle range. Expended small arms are the only munitions-related items expected to be found at the site.

5.2.21 SR768 Close Combat Infiltration Course

The period of use and purpose of the Close Combat Infiltration Course are currently unknown. In documentation from 1962, this site was depicted as the "future rifle range." Types of MEC expected to be found at the course include expended small arms, hand or rifle explosive grenades, explosive rockets, and practice grenades (with spotting charges).

5.2.22 SR777 Rifle Range

The SR777 Rifle Range is an abandoned rifle range and the period of use of the site is currently unknown. Expended small arms are the only ordnance expected to be found at the site.

The following two new historical ranges were identified as associated with SR777. They were part of the Defense Training Areas used by Sandia Base in the 1950s (TechLaw, 2006).

- **Defense Training Area I** – This range was used for company attack problems, extended close order drills, “dry firing,” and combat and field exercises, and was suitable for night exercises. This range was re-aligned and contained SR777 at one point.
- **Defense Training Area K** - This range was used for company attack problems, extended close order drills, “dry firing,” and combat and field exercises, and was suitable for night exercises. This range was re-aligned and contained SR777 at one point.

5.2.23 SR778 Airfield Pistol Range

The Airfield Pistol Range is a WWII-era pistol range. The period of use is currently unknown. Expended small arms are the only munitions-related items expected to be found at the site.

5.2.24 SR780 Impact Area

The period of use and purpose of the Impact Area are currently unknown. Types of MEC expected to be found at the site include expended small arms, hand or rifle explosive grenades, explosive rockets, and practice grenades (with spotting charges).

It should be noted that SR780 is not eligible for munitions response under the Air Force MMRP because it does not meet the definition of a defense site as codified in 10 USC 2710, since it is within the operational range area (explosives safety limit) of the DOE/SNL Burn Site.

5.2.25 TS775 Airfield Skeet Range

The Airfield Skeet Range is a former trap and skeet range that was identified during the assessment of ECP site ST-351. Clay targets and spent pellets were observed at the site. It was determined that the site was a WWII-era skeet range. No additional information on the period or type of use is currently available. Expended small arms are the only munitions-related items expected to be found at the site.

5.2.26 TS776 Skeet Range

The Skeet Range is a WWII and post-WWII-era skeet range. From the late 1960s through May 1998, the Skeet Range was used as a recreational facility for clay pigeon shooting practice. As an operational facility, the range was not subject to the regulations regarding lead for shot accumulation on the range; however, on several occasions, the Skeet Club had Kirtland AFB Civil Engineering group scrape the range. Records indicate that 84,000 lb of lead shot were removed and sent to Illinois for reclamation. Estimates of lead shot accumulation, based on past facility usage, indicated approximately 86,000 lb of lead were deposited on the range every 3 years. Because of these past practices, the range was sampled, cleaned, and determined appropriate for NFA petition (Kirtland AFB, 2001).

No additional information regarding the period of use is currently available. Expended small arms are the only munitions-related items expected to be found at the site.

Although this site was used as a recreational skeet range, the TS776 is within DOD property and MC concerns related to those past activities are eligible for munitions response under the Air Force MMRP.

5.2.27 Bomb Target

The Bomb Target was identified from a 1958 aerial photograph that depicted the outline of a bomb target. No other historical information was found for this target. Tail fins and other debris from what appeared to be practice bombs were found during a 29 March 2006 site survey by Carl Lanz, Chief of Environmental Restoration at Kirtland AFB.

5.2.28 Sandia Base Howitzer Range and Sandia Base Howitzer Range Buffer

The Sandia Base Howitzer Range and the Sandia Base Howitzer Range Buffer are new MRAs derived from the 75mm Howitzer Range identified from the Sandia Base Range Regulations during the 1950s. The MRAs are part of the Defense Training Areas used by Sandia Base (TechLaw, 2006). This range was located southeast of SR767 and was used only for flat trajectory line of sight fire. There is no additional information on period of use or purpose of these MRAs.

5.3 Current Land Use

Kirtland AFB is located on land that is under the control of DoD and in use by Kirtland AFB and DOE/SNL (TechLaw, 2006). Currently, the eastern portion of Kirtland AFB is on USDA Forest Service land that was withdrawn from public entry for use as part of the NMPG. Although some of the lands initially withdrawn have been released, much of the United States Department of Agriculture (USDA) Forest Service lands are still withdrawn for use by the Air Force and/or DOE/SNL. However, these lands

are still under the authority of the USDA Forest Service (TechLaw, 2006). All historical range activities within the MRAs investigated for this report ceased prior to Fiscal Year 2002, although some areas of those historical range footprints are within operational range areas and are excluded from response actions under the Air Force MMRP. All MRAs investigated lie within the Kirtland AFB boundary with the exception of PT761 (Tijeras Small Arms Training Range), which extends out to the north and east of the northern fence line. As with all land property within Kirtland AFB, land use at the MRAs supports the respective missions of the Air Force and DOE/SNL.

The Kirtland AFB General Plan lists the following major land-use categories currently designated for Kirtland AFB.

- **Aircraft Operations/Maintenance -** Mission uses are closely associated with the airfield and include maintenance hangars and docks, avionics, facilities such as control towers, base operations, and flight simulators. Other instructional facilities are also included. The airfield used by Kirtland AFB is primarily owned and operated by the City of Albuquerque. Airport uses include runways, taxiways, aprons, and airfield parking. Kirtland AFB flight-related associates maintain their own hangars and aprons.
- **Administration/Research -** Numerous administration and research facilities exist at Kirtland AFB, and both functions frequently proceed within a single building. Uses such as personnel, headquarters, legal, research, laboratory, and other support functions are included in this category.
- **Industrial -** Industrial uses include sites for storage of supplies, base maintenance, and utility facilities. Munitions facilities are also included. Since industrial land uses are often associated with the aircraft operations/maintenance facilities at Kirtland AFB, they are often adjacent to each other.
- **Department of Energy** – DOE/SNL land uses include only the facilities owned by DOE and used by their contractor, SNL. DOE/SNL occupies more land area than any other associate tenant at Kirtland AFB.
- **Medical -** Facilities for medical support, such as hospitals, medical clinics, dental clinics, and pharmacies, are included in this category. Kirtland AFB has a joint agreement with medical facilities of the Veterans Administration, the primary medical facility for Kirtland AFB.
- **Military Family Housing -** Housing land use includes both accompanied and unaccompanied housing. Accompanied housing is single-family housing provided to personnel with dependents, while unaccompanied housing is dormitory housing reserved for single personnel, temporary personnel, and visitors.
- **Community -** Community uses include both commercial and service functions. Commercial uses include the base exchange, dining halls, service stations, bowling alley, and clubs, while service uses include chapels, library facilities, banks, credit unions, child care facilities, elementary schools, and arts and craft centers. Outdoor recreation including ball fields, golf courses, riding stables, and other recreational uses are also included as community land uses.
- **Open Space -** Open space includes all developable sites, all areas used to buffer base facilities, and areas preserved because of environmental sensitivity. Much of the southern portion of Kirtland AFB exists as open space (Kirtland AFB, 2005a).

A classification of constrained land use at Kirtland AFB has also been used during planning. Areas designated as constrained land use are the result of restrictions imposed by airfield or explosive safety criteria, physical constraints, zoning, and compatibility with the development of surrounding communities

(Kirtland AFB, 2005a). The southern and eastern portions of Kirtland AFB are categorized as constrained use areas because of the nature of ongoing and historical activities in these areas. [NOTE: Constrained land use is not defined in the Kirtland AFB General Plan. Information about constrained land use was developed from interviews with Kirtland AFB personnel and contractors.]

The approved land use category in which each MRA lies is described in Table 5-1. In some instances, the MRA lies across several land use categories. MRAs that lie in constrained use categories are indicated as well.

Table 5-1. Munitions Response Areas Current Land Use Classification

MRA ID	MRA Name	Current Land Use Classification
AL120	Proximity Fuze Range	Constrained Use Area
AL769	Ordnance Drop Zone	Constrained Use Area
AL771	Old Cable Site	Constrained Use Area
DA130	Arroyo del Coyote Demolition Area	Constrained Use Area
DA782	Explosive Disposal Area	Constrained Use Area
ED770	Experimental Range	Constrained Use Area
ML125	Field Firing Range	Constrained Use Area
ML774	Gun Site Fan	Constrained Use Area
ML781	Firing In-Abutment	Aircraft Operations/Maintenance
ML784	40mm Test and Training Range	Constrained Use Area
MU772	H-25 Site	Constrained Use Area
PT123	Tijeras Small Arms Range	Constrained Use Area
PT761	Tijeras Small Arms and Training Range	Constrained Use Area
PT773	Coyote Canyon Tech Site	Constrained Use Area
PT783	Bazooka Training Range	Constrained Use Area
SR763	Rifle Range	Administration and Research, Aircraft Operations/ Maintenance, Open Space, Industrial, Constrained Use Area
SR764	Rifle Range	Administration and Research, Aircraft Operations/ Maintenance, Open Space, Industrial, Constrained Use Area
SR765	WWII Pistol Range	Administration and Research, Aircraft Operations/ Maintenance, Open Space, Constrained Use Area
SR766	Sub-Machine Gun	Administration and Research, Aircraft Operations/Maintenance, Open Space, Industrial
SR767	Rifle Range	Administration and Research, Aircraft Operations/ Maintenance, Open Space, Industrial
SR768	Close Combat Infiltration Course	Constrained Use Area
SR777	Rifle Range	Constrained Use Area
SR778	Airfield Pistol Range	Administration and Research, Open Space, Industrial
SR780	Impact Area	Constrained Use Area
TS775	Airfield Skeet Range	Administration and Research, Open Space, Industrial
TS776	Skeet Range	Open Space

MRA ID	MRA Name	Current Land Use Classification
No ID	Bomb Target	Industrial, Constrained Use Area
No ID	Sandia Base Howitzer Range	Industrial, Constrained Use Area
No ID	Sandia Base Howitzer Range Buffer	Constrained Use Area

5.4 Access Control

Access to the Kirtland AFB is restricted to military and authorized personnel. A perimeter fence surrounds nearly the entire Installation boundary. However, a few controls are in place to limit access to the MRAs from within the Installation. As noted above, the eastern boundary between Kirtland AFB and Cibola National Forest is not completely fenced. Several gates and natural barriers restrict vehicular access onto the Installation and the MRAs from the eastern boundary. However, all-terrain vehicle riders, mountain bikers, and hikers have unrestricted access to the site. Perimeter signs identify the Kirtland AFB property boundary.

5.5 Restrictions

As discussed above in Section 5.3, Current Land Use, the constrained land use classification at Kirtland AFB has been developed during land use planning. Land use constraints are a result of restrictions imposed by airfield or explosive safety criteria, physical constraints, zoning, and compatibility with the development of surrounding communities (Kirtland AFB, 2005a).

5.6 Visual Survey Observations and Results

The USAE Team surveyed 98.8 acres (approximately 163 linear miles) within the MRAs based on 5-ft-wide transects. Table 5-2 summarizes the survey acreage for each MRA summarized in the subsections below. The USAE Team did not survey ML784, SR780, or the Bomb Target, since they are ineligible for munitions response under the Air Force MMRP. The USAE Team did not survey SR765, SR766, SR767, TS775, or the Sandia Base Howitzer Range Buffer because of schedule and access constraints.

Table 5-2. Survey Acreage per MRA

MRA ID	MRA Name	Survey Acreage
AL120	Proximity Fuze Range	32.3
AL769	Ordnance Drop Zone	1.4
AL771	Old Cable Site	7.7
DA130	Arroyo del Coyote Demolition Area	2.6
DA782	Explosive Disposal Area	0.8
ED770	Experimental Range	9.6
ML125	Field Firing Range	13.1
ML774	Gun Site Fan	4.7
ML781	Firing In-Abutment	0.2
ML784	40mm Test and Training Range	0
MU772	H-25 Site	0.9

MRA ID	MRA Name	Survey Acreage
PT123	Tijeras Small Arms Range	3.8
PT761	Tijeras Small Arms and Training Range	3.7
PT773	Coyote Canyon Tech Site	2.3
PT783	Bazooka Training Range	3.3
SR763	Rifle Range	1.0
SR764	Rifle Range	0.6
SR765	WWII Pistol Range	0
SR766	Sub-Machine Gun	0
SR767	Rifle Range	0
SR768	Close Combat Infiltration Course	4.0
SR777	Rifle Range	0.7
SR778	Airfield Pistol Range	0.3
SR780	Impact Area	0
TS775	Airfield Skeet Range	0
TS776	Skeet Range	0.5
No ID	Bomb Target	0
No ID	Sandia Base Howitzer Range	4.2
No ID	Sandia Base Howitzer Range Buffer	0

5.6.1 AL120 Proximity Fuze Range

The USAE Teams visually surveyed 32.3 acres (53.3 miles, based on 5-ft-wide transects) within this 6,058-acre MRA. Figure 5-1 depicts the survey transects and surface findings for this MRA. Figure 5-2 depicts the density of subsurface anomalies based on subsurface anomaly counts.

The teams surveyed 3.7 acres (6.1 miles) within the McCormick Ranch Impact Area and recorded one UXO (57mm, fired, base fuzed) and two munitions debris items (HE fragmentations) within this portion of AL120.

The teams surveyed 4 acres (6.6 miles) within the Isleta Drop Zone and recorded six munitions debris items (HE fragmentations) within this portion of AL120.

The teams surveyed 9.5 acres (15.7 miles) within the Workman Site and recorded two MPPEH items (one 3-inch projectile and one 90mm projectile) and numerous munitions debris items within this portion of AL120. Most of these munitions-related items were located near ML125.

The teams did not survey the NMPG Buffer Zone North because of schedule constraints and the lack of GIS data.

The USAE Teams visually surveyed 15.1 acres (24.9 miles) within the NMPG Buffer Zone South and recorded three MPPEH items (5-inch projectiles, no fuzing) and one munitions debris items (grenade spoon) within this portion of AL120.

5.6.2 AL769 Ordnance Drop Zone

The USAE Teams visually surveyed 1.4 acres of AL769 (2.3 miles) and found no MEC or surface indicators of MC contamination (e.g., impact craters, concentrations of munitions debris, scarred ground, unusual absence or abundance of vegetation) with this 159-acre MRA. Figures 5-3 and 5-4 depict the survey transects and the surface and subsurface findings of the visual survey.

5.6.3 AL771 Old Cable Site

The USAE Teams visually surveyed 7.7 acres within AL771 (12.7 miles). The teams recorded one UXO item (40mm grenade, riot control), several pieces of unfired rocket motor propellant (Ballistite), two MPPEH items (one 5-inch projectile without fuzing and one partially expended smoke grenade), and several munitions debris items within this 863-acre MRA. Figure 5-5 depicts the survey transects and surface findings for this MRA. Figure 5-6 depicts the density of subsurface anomalies based on subsurface anomaly counts.

5.6.4 DA130 Arroyo del Coyote Demolition Area

The USAE Teams visually surveyed 2.6 acres within DA130 (4.3 miles). The teams recorded one munitions debris item (light case metal fragment) within this 386-acre MRA. Figure 5-7 depicts the survey transects and surface findings for this MRA. Figure 5-8 depicts the density of subsurface anomalies based on subsurface anomaly counts.

5.6.5 DA782 Explosive Disposal Area

The USAE Teams visually surveyed 0.8 acres within DA782 (1.3 miles) and found no MEC or surface indicators MC contamination (e.g., impact craters, concentrations of munitions debris, scarred ground, unusual absence or abundance of vegetation) within this 6-acre MRA. Figures 5-9 and 5-10 depict the survey transects and the surface and subsurface findings for this MRA.

5.6.6 ED770 Experimental Range

The USAE Teams visually surveyed 9.6 acres within ED770 (15.8 miles). The teams recorded several munitions debris items within this 1,480-acre MRA. Figure 5-11 depicts the survey transects and surface findings for this MRA. Figure 5-12 depicts the density of subsurface anomalies based on subsurface anomaly counts.

5.6.7 ML125 Field Firing Range

The USAE Teams visually surveyed 13.1 acres within ML125 (21.6 miles). The teams recorded two UXO items (one 5-inch projectile with MK48 Series fuze and one 57mm projectile with partially intact fuze), numerous MPPEH items, and two munitions debris items within this 1,993-acre MRA. This MRA has the highest concentration of MEC and munitions debris, and the types of munitions recorded represent a wide range of munitions reportedly fired at the NMPG from 1943 through 1952, including 5-inch, 3-inch, 105mm, 90mm, 76mm, 75mm, and 57mm projectiles, and 5-inch rockets. The team also recorded several munitions that indicate limited use of this MRA as the former Field Firing Range and Mortar Impact Area, including the 60mm mortar, 57mm and 75mm projectiles, and 3.5-inch rockets. Figure 5-13 depicts the survey transects and surface findings for this MRA. Figure 5-14 depicts the density of subsurface anomalies based on subsurface anomaly counts.

5.6.8 ML774 Gun Site Fan

The USAE Teams visually surveyed 4.7 acres within ML774 (7.8 miles). The team found no surface evidence of 155mm firing at this 634-acre MRA. The teams found three pieces of munitions debris (HE fragments) within the eastern portion and two pieces of munitions debris (HE fragments) within the western portion of ML774. However, the eastern portion of the site is completely within the surface danger zones of nearby operational range areas and thus this portion of ML774 does not meet the definition of a defense site. Figures 5-15 and 5-16 depict the survey transects and the surface and subsurface findings for this MRA.

5.6.9 ML781 Firing In-Abutment

The USAE Teams visually surveyed 0.2 acres within ML781 (0.3 miles). The teams recorded one munitions debris item (20mm projectile debris) within this 1-acre MRA. Figures 5-17 and 5-18 depict the survey transects and the surface and subsurface findings for this MRA.

5.6.10 ML784 40mm Test and Training Range

The USAE Teams did not survey ML784 because this site is not eligible for munitions response under the Air Force MMRP. This site does not meet the definition of a defense site as codified in 10 USC 2710, since it is within the operational range area (explosive safety limit) of the Electro-Explosive Facility.

5.6.11 MU772 H-25 Site

The USAE Teams visually surveyed 0.9 acre within MU772 (1.5 miles). The teams did not record any UXO, DMM, munitions debris, or surface indicators of MC contamination (e.g., impact craters, concentrations of munitions debris, scarred ground, unusual absence or abundance of vegetation, etc.) within this 133-acre MRA. Figures 5-19 and 5-20 depict the survey transects and the surface and subsurface findings for this MRA.

5.6.12 PT123 Tijeras Small Arms Range

The USAE Teams visually surveyed 3.8 acres within PT123 (6.3 miles). The teams recorded one munitions debris item (smoke grenade spoon) and several expended small arms cartridge cases within this 434-acre MRA. Figures 5-21 and 5-22 depict the survey transects and the surface and subsurface findings for this MRA.

5.6.13 PT761 Tijeras Small Arms and Training Range

The USAE Teams visually surveyed 3.7 acres within PT761 (6.1 miles). The teams recorded one munitions debris item (cartridge section of a slap flare) near the Installation boundary within this 575-acre MRA. Figures 5-23 and 5-24 depict the survey transects and the surface and subsurface findings for this MRA.

5.6.14 PT773 Coyote Canyon Tech Site

The USAE Teams visually surveyed 2.3 acres within PT773 (3.8 miles). The teams recorded miscellaneous munitions debris items (57mm projectile debris, multiple pieces of unknown munitions-related items, HE fragmentation, and aluminum fragmentation), and expended small arms within this 77-acre MRA. As part of the visual survey of PT773, the team surveyed the additional other-than-

operational range areas east of PT773 and found no surface evidence of MEC or MC contaminant (e.g., impact craters, concentrations of munitions debris, scarred ground, unusual absence or abundance of vegetation, etc.) in this area. Figure 5-25 depicts the survey transects and surface findings for this MRA. Figure 5-26 depicts the density of subsurface anomalies based on subsurface anomaly counts.

5.6.15 PT783 Bazooka Training Range

The USAE Teams visually surveyed 3.3 acres within PT783 (5.4 miles). The teams recorded several munitions debris items (multiple pieces of HE fragmentations) within this 354-acre MRA. As part of the visual survey of PT783, the team surveyed the additional other-than-operational range areas east of PT783 and found no UXO, DMM, munitions debris, or surface indicators of MC contaminant (e.g., impact craters, concentrations of munitions debris, scarred ground, unusual absence or abundance of vegetation, etc.) in this area. The USAE Teams did not survey the additional other-than-operational range areas southwest of PT783 because of schedule constraints. Figure 5-27 depicts the survey transects and surface findings for this MRA. Figure 5-28 depicts the density of subsurface anomalies based on subsurface anomaly counts.

5.6.16 SR763 Rifle Range

The USAE Teams visually surveyed 1.0 acres within SR763 (1.7 miles). The teams did not record any UXO, DMM, munitions debris, or surface indicators of MC contamination (e.g., impact craters, concentrations of munitions debris, scarred ground, unusual absence or abundance of vegetation, etc.) within this 232-acre MRA. Figure 5-29 depicts the survey transects and surface findings for this MRA. Figure 5-30 depicts the density of subsurface anomalies based on subsurface anomaly counts.

5.6.17 SR764 Rifle Range

The USAE Teams visually surveyed 0.6 acres within SR764 (1.0 miles). The teams recorded multiple munitions debris items (7.62mm small arms cartridge case and links) in a 6-ft-diameter area within this 116-acre MRA. Figure 5-29 depicts the survey transects and surface findings for this MRA. Figure 5-30 depicts the density of subsurface anomalies based on subsurface anomaly counts.

5.6.18 SR765 WWII Pistol Range

The USAE Teams did not survey SR765 because the discrepancies in the location and boundary of the WWII Pistol Range were identified after the CSE Phase I survey efforts.

5.6.19 SR766 Sub-Machine Gun

The USAE Teams did not survey SR766 because the discrepancies in the location and boundary of the Sub-Machine Gun range were identified after the CSE Phase I survey efforts.

5.6.20 SR767 Rifle Range

The USAE Teams did not survey SR767 because the discrepancies in the location and boundary of the Rifle Range were identified after the CSE Phase I survey efforts.

5.6.21 SR768 Close Combat Infiltration Course

The USAE Teams visually surveyed 4 acres within SR768 (6.6 miles). The teams recorded one munitions debris item from the 40mm grenade within this 536-acre MRA. Figure 5-31 depicts the survey transects and surface findings for this MRA. Figure 5-32 depicts the density of subsurface anomalies based on subsurface anomaly counts.

5.6.22 SR777 Rifle Range

The USAE Teams visually surveyed 0.73 acres within SR777 (1.2 miles). The teams did not record any UXO, DMM, munitions debris, or surface indicators of MC contamination (e.g., impact craters, concentrations of munitions debris, scarred ground, unusual absence or abundance of vegetation, etc.) within this 57-acre MRA. Figures 5-33 and 5-34 depict the survey transects and the surface and subsurface findings for this MRA.

5.6.23 SR778 Airfield Pistol Range

The USAE Teams visually surveyed 0.3 acres within SR778 (0.5 miles). The teams did not record any UXO, DMM, munitions debris, or surface indicators of MC contamination (e.g., impact craters, concentrations of munitions debris, scarred ground, unusual absence or abundance of vegetation, etc.) within this 86-acre MRA. The team did not survey large portions of SR778 because the discrepancies in the boundary and location of the Airfield Pistol Range were identified after the survey effort. Figures 5-35 and 5-36 depict the survey transect and the surface and subsurface findings for this MRA.

5.6.24 SR780 Impact Area

The USAE Teams did not survey SR780 because this site is not eligible for munitions response under the Air Force MMRP. This site does not meet the definition of a defense site as codified in 10 USC 2710, since it is within the operational range area (explosive safety limit) of the DOE/SNL Burn Site.

5.6.25 TS775 Airfield Skeet Range

The USAE Teams did not survey TS775 because this 25-acre MRA is located within the fenced airport property and the team was unable to coordinate access during the CSE Phase I data collection effort. It will be added as a recommendation for the CSE Phase II investigation. Obtaining airport permission to enter the property will be necessary for any follow-up investigation.

5.6.26 TS776 Skeet Range

The USAE Teams visually surveyed 0.5 acres within TS776 (0.8 miles). The teams did not record any UXO, DMM, munitions debris, or surface indicators of MC contamination (e.g., impact craters, concentrations of munitions debris, scarred ground, unusual absence or abundance of vegetation, etc.) within this 29-acre MRA. Figures 5-37 and 5-38 depict the survey transects and the surface and subsurface findings for this MRA.

5.6.27 Sandia Base Howitzer Range

The USAE Teams visually surveyed 4.2 acres within the Sandia Base Howitzer Range (7 miles). The teams recorded one munitions debris item (practice 76mm armor-piercing [AP] projectile, fired, inert)

within this 743-acre site. Figures 5-39 and 5-40 depict the survey transects and the surface and subsurface findings for this site.

5.6.28 Sandia Base Howitzer Range Buffer

The USAE Teams did not survey the Sandia Base Howitzer Range Buffer because of schedule and access constraints.

5.7 Off-site Reconnaissance Observations

Information collected during the HRR and interview process indicated that there is a potential for MEC to be located in six off-base MRAs. However, five of these off-base MRAs are eligible for munitions response under the FUDS Program and are beyond the scope of the CSE Phase I investigation of Kirtland AFB. Refer to Subsection 5.6.13 for reconnaissance observations for PT761, which is the only off-base MRA in the Kirtland AFB MMRP Site Inventory.

5.8 Receptors

5.8.1 Nearby Population

The City of Albuquerque metropolitan area hosts a population of approximately 600,000 people. The Kirtland AFB work force is composed of over 23,000 people, including more than 4,000 active duty and 1,000 National Guard personnel, 3,200 part-time reservists, and 14,600 civilian employees, including civilian employees who work for other Federal agencies, base support agencies, and contractors (Kirtland AFB, 2004). The Pueblo of Isleta, south of Kirtland AFB, contains over 329 square miles. Based on 1998 tribal census data, there are 3,814 tribal members living on the reservation (www.isletapueblo.com).

5.8.2 Buildings within the MRAs

Table 5-3 lists the buildings found within each MRA. For sites with no buildings, “None” is listed.

Table 5-3. Kirtland AFB Buildings within MRAs

MRA ID	MRA Name	Kirtland AFB ERP/ECP Sites within an MRA
AL120	Proximity Fuze Range	29054, 29061, 66000, 66001, 66005, 66007, 66008, 66009, 66011, 66013, 66017, 66019, 66022, 66022, 66029, 66041, 66042, 66047, 9252, 9268 There are additional 27 buildings without numbers. [NOTE: There are two separate buildings listed as number 66022.]
AL769	Ordnance Drop Zone	None
AL771	Old Cable Site	66017 There are an additional 4 buildings without numbers.
DA130	Arroyo del Coyote Demolition Area	There are 4 buildings without numbers
DA782	Explosive Disposal Area	None
ED770	Experimental Range	29012, 29014, 29015, 29016, 29017, 29020, 29021, 29022, 29023, 29025, 29026, 29027, 29028, 29029, 29030, 29031, 29040, 29042, 29051, 29053, 29054, 29061, 29095, 39071, 57003, 57006, 57007, 57009, 57010, 57012, 66019, 66029, 66041, 66042, 66047, 9010, 9045, 9096, 9097, 9098, 9102, 9925, 9938, 9939, 9947,

MRA ID	MRA Name	Kirtland AFB ERP/ECP Sites within an MRA
		9960, 9961, 9962, 9978, 9981, 9982, 9984 There are an additional 80 buildings without numbers.
ML125	Field Firing Range	66001, 66007, 66009, 66011, 66019, 66022, 66041, 66042, 66047 There are an additional 11 buildings without numbers.
ML774	Gun Site Fan	6501, 6505, 6560, 6561, 6570, 6610, 6620, 6630, 6631, 6632, 6636, 6640, 6642, 6643, 6644, 6650, 9950, 9951, 9956, 9957 There are an additional 127 buildings without numbers.
ML781	Firing In-Abutment	None
ML784	40mm Test and Training Range	None
MU772	H-25 Site	There are 3 buildings without numbers.
PT123	Tijeras Small Arms Range	37607 There is an additional building without a number.
PT761	Tijeras Small Arms Training Range	Unknown
PT773	Coyote Canyon Tech Site	9800, 9801, 9806 There are an additional 6 buildings without numbers.
PT783	Bazooka Training Range	None
SR763	Rifle Range	20550, 20553, 20792, 26053 There are an additional 7 buildings without numbers.
SR764	Rifle Range	20318, 20550, 20553, 20562, 20565, 20598, 20792, 2402, 2406, 2408, 26038, 26039, 26053, 2635, 765, 766, 767, 769 There are an additional 22 buildings without numbers.
SR765	WWII Pistol Range	20550, 20553, 20565, 20792, 20795 There are an additional 7 buildings without numbers.
SR766	Sub-Machine Gun	1030, 1031, 20318, 20598, 2402, 2406, 2408, 25015, 26008, 26010, 26014, 26016, 26025, 26028, 26038, 26039, 2613, 2635, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 765, 766, 767, 769 There are an additional 14 buildings without numbers.
SR767	Rifle Range	20318, 2402, 2406, 2408, 26038, 26039, 2613, 2635, 760, 761, 765, 766, 767, 769 There are an additional 10 buildings without numbers.
SR768	Close Combat Infiltration Course	66017 There are an additional 11 buildings without numbers.
SR777	Rifle Range	None
SR778	Airfield Pistol Range	2514, 636, 702, 703, 704, 707, 708, 709 There are an additional 57 buildings without numbers.
SR780	Impact Area	None
TS775	Airfield Skeet Range	635
TS776	Skeet Range	20599

5.8.3 Utilities within the MRA

Table 5-4 summarizes utilities within the MRAs.

Table 5-4. Kirtland AFB Utilities within MRAs

MRA ID	MRA Name	Kirtland AFB Utilities Within MRA
AL120	Proximity Fuze Range	Electric, Water, Sewer
AL769	Ordnance Drop Zone	None
AL771	Old Cable Site	Electric, Water
DA130	Arroyo del Coyote Demolition Area	Electric, Water, Sewer
DA782	Explosive Disposal Area	None
ED770	Experimental Range	Electric, Water, Sewer
ML125	Field Firing Range	Electric, Water, Sewer
ML774	Gun Site Fan	Electric, Water, Sewer
ML781	Firing In-Abutment	Electric, Water, Sewer
ML784	40mm Test and Training Range	None
MU772	H-25 Site	None
PT123	Tijeras Small Arms Range	None
PT761	Tijeras Small Arms Training Range	None
PT773	Coyote Canyon Tech Site	Electric, Water
PT783	Bazooka Training Range	Electric
SR763	Rifle Range	Electric, Water, Sewer
SR764	Rifle Range	Electric, Water, Sewer
SR765	WWII Pistol Range	Electric, Water, Sewer
SR766	Sub-Machine Gun	None
SR767	Rifle Range	Electric, Water, Sewer
SR768	Close Combat Infiltration Course	None
SR777	Rifle Range	Electric, Water, Sewer
SR778	Airfield Pistol Range	None
SR780	Impact Area	None
TS775	Airfield Skeet Range	Electric, Water, Sewer
TS776	Skeet Range	Electric, Water, Sewer

5.9 Cultural/Archeological Resources

To inventory and protect cultural resources within the Installation, Kirtland AFB has performed numerous archeological surveys and a comprehensive historical buildings survey during the 2000-2004 timeframe. Through these surveys, Kirtland AFB has identified over 600 archeological sites. Kirtland AFB employs a full-time archeologist to manage the investigation and security of these cultural resources. During a

2003 survey of the installation, 86 properties and 3 historical districts (incorporating 27 of the properties) were recommended as eligible for the National Register of Historical Places and determined to be eligible by the State Historical Preservation Office (Van Citters, 2003). Table 5-5 summarizes the Cultural and Archeological sites and Historical Buildings within each MRA.

Table 5-5. Kirtland AFB Cultural/Archeological Sites and Historical Buildings

MRA ID	MRA Name	No. of Cultural/ Archeological Sites within the MRA	No. of Historical Buildings within the MRA
AL120	Proximity Fuze Range	196	0
AL769	Ordnance Drop Zone	3	0
AL771	Old Cable Site	6	18
DA130	Arroyo del Coyote Demolition Area	5	0
DA782	Explosive Disposal Area	1	0
ED770	Experimental Range	46	0
ML125	Field Firing Range	56	0
ML774	Gun Site Fan	4	0
ML781	Firing In-Abutment	0	0
ML784	40mm Test and Training Range	0	0
MU772	H-25 Site	3	0
PT123	Tijeras Small Arms Range	32	0
PT761	Tijeras Small Arms Training Range	Unknown	Unknown
PT773	Coyote Canyon Tech Site	3	0
PT783	Bazooka Training Range	8	0
SR763	Rifle Range	5	0
SR764	Rifle Range	6	3
SR765	WWII Pistol Range	1	0
SR766	Sub-Machine Gun	2	2
SR767	Rifle Range	0	0
SR768	Close Combat Infiltration Course	7	0
SR777	Rifle Range	0	0
SR778	Airfield Pistol Range	9	0
SR780	Impact Area	20	0
TS775	Airfield Skeet Range	0	0
TS776	Skeet Range	0	0

5.10 Natural Resources

5.10.1 Threatened, Endangered, and Sensitive Species

Of the Federally listed threatened or endangered animal species, only the peregrine falcon (also a State-listed Endangered Group 1 species) has been observed on Kirtland AFB; however, no nesting activity of this species has been observed and only marginal habitat exists for nesting. No known threatened plant species listed exist within Kirtland AFB (Kirtland AFB, 2006c). No Federally proposed or candidate species are known to occur on Kirtland AFB, and no critical habitat occurs on the base. Of the State-listed threatened or endangered species, no plant species currently listed by the New Mexico Forestry and Resource Conservation Division (NMFRCD) are known to occur on Kirtland AFB. Of the State-listed endangered wildlife species that are not listed by the U.S. Fish and Wildlife Service (USFWS), only the gray vireo is known to breed on Kirtland AFB (Kirtland AFB, 2006e). The Federally listed Rio Grande silvery minnow and the southwestern willow flycatcher and their critical habitat occur along the Rio Grande and its riparian corridor, outside of Kirtland AFB (Kirtland AFB, 2006f).

5.10.2 Sensitive Environments

The 1997 Natural Resources Management Plan prepared for Kirtland AFB describes the native vegetation of grasslands and woodlands on Kirtland AFB, noting transition zones between plains mesa grassland and desert scrub community types in the lower elevations, and a juniper savanna transition zone between desert grassland and piñon-juniper woodland in higher elevations. The base is bisected by two arroyos, Tijeras Arroyo and Coyote Arroyo. There are numerous other smaller tributaries to these arroyos on the base.

A Special Flood Hazard Information report was prepared by the USACE Albuquerque District for Tijeras Arroyo and Arroyo del Coyote in September 1979 (USACE, 1979). This report provided information on the areas within Kirtland AFB that are subject to flooding from Tijeras Arroyo and Arroyo del Coyote. Most of the floods in the Albuquerque area are experienced during the period of May to October by high intensity summer thunderstorms. Approximately two-thirds of the annual 8-inch rainfall occurs during this period, while July and August usually have the most severe storms, accounting for almost one-third of the yearly total. Floods in the study area are characterized by high peak flows, small volumes, and short duration.

The flood-plain delineations depict areas inundated by flooding from Tijeras Arroyo and Arroyo del Coyote. Areas outside the flooded areas shown could be subject to flooding from other sources. If roadways, culverts or other structures form obstacles to local drainage paths, localized flooding can occur, which is not related to flooding from the arroyos. Also, runoff may pond in low-lying areas and cause flooding.

Based on a USACE 1995 Wetland Inventory Survey and a 2001 Wetland Delineation Report (USACE, 1995; Ogden, 2001), there are 13 identified wetland sites at Kirtland AFB:

- Four springs along Arroyo del Coyote, Sec. 24, T9N, R4E
- Two unnamed springs located on the northeast side of Manzano base, Sec 1, T9N
- One Sol se Mete Spring located at the end of Sol se Mete Canyon road, Sec. 28, T9N, R5E
- One Lurance Spring located in Lurance Canyon on withdrawal lands in the Manzanita Mountains, about 1/4 mile northeast of Primitive Road leading into the canyon, Sec. 16, T9N, R5E

- One spring located on the north side of Coyote Springs Road, Sec. 23, T9N, R4E
- Four springs in the Manzano Area:
    - Manzano Spring 1 located in the SE1/4, Sec 14, T 9 N, R 4 E
    - Manzano Spring 2 located in the NE1/4, Sec 2, T 9 N, R 4 E
    - Manzano Springs 3 and 4 located in N1/2, Sec 11, T 9 N, R 4 E.

The 2001 report documented wetlands at Manzano Springs 1, 2, and 3, Unnamed Spring, and four Coyote Springs (Lurance Spring could not be located) (Ogden, 2001). In 2006, these and potentially other wetlands on Kirtland AFB will be delineated, with GPS data collected and information gathered to define the site-specific structure and functional relationships.

5.11 Appropriate Future Land Use (AFLU) Designation

Kirtland AFB does not own any facilities off base; however the eastern portion of Kirtland AFB is primarily Cibola National Forest land, which was withdrawn from public use for military purposes (Kirtland AFB, 2005a).

State environmental regulatory officials require that risk analysis and clean-up criteria consider a residential land use scenario for all sites regardless of future use. Air Force guidance requires consideration of an industrial land use scenario for environmental restoration sites except for sites where residential housing is planned. Family housing development is presently planned only on the northeast part of the northwest section of Kirtland AFB. Future development plans include creation of “town sites” that would include areas of mixed community, family housing, and administration/research uses. It is planned that future military family housing development on Kirtland AFB will be transferred to private entities.

Airfield-related mission activities will be concentrated along the flight line. Several locations along the flight line could accommodate new flight-related mission activities. Industrial and aircraft operations/maintenance land uses are planned along or near the flight line. The classification of constrained land use at Kirtland AFB will continue to be used (Kirtland AFB, 2005a).

AFLU designations for Kirtland AFB were prepared by Kirtland AFB Base Civil Engineering as part of the Kirtland AFB General Plan in 2002 (USAF, 2002). The Land Use Categories are discussed above in Section 5.3. The future land use category in which each MRA lies is indicated in Table 5-6. In some instances, the MRA lies across several land use categories. MRAs that lie in constrained use categories are indicated in the table as well.

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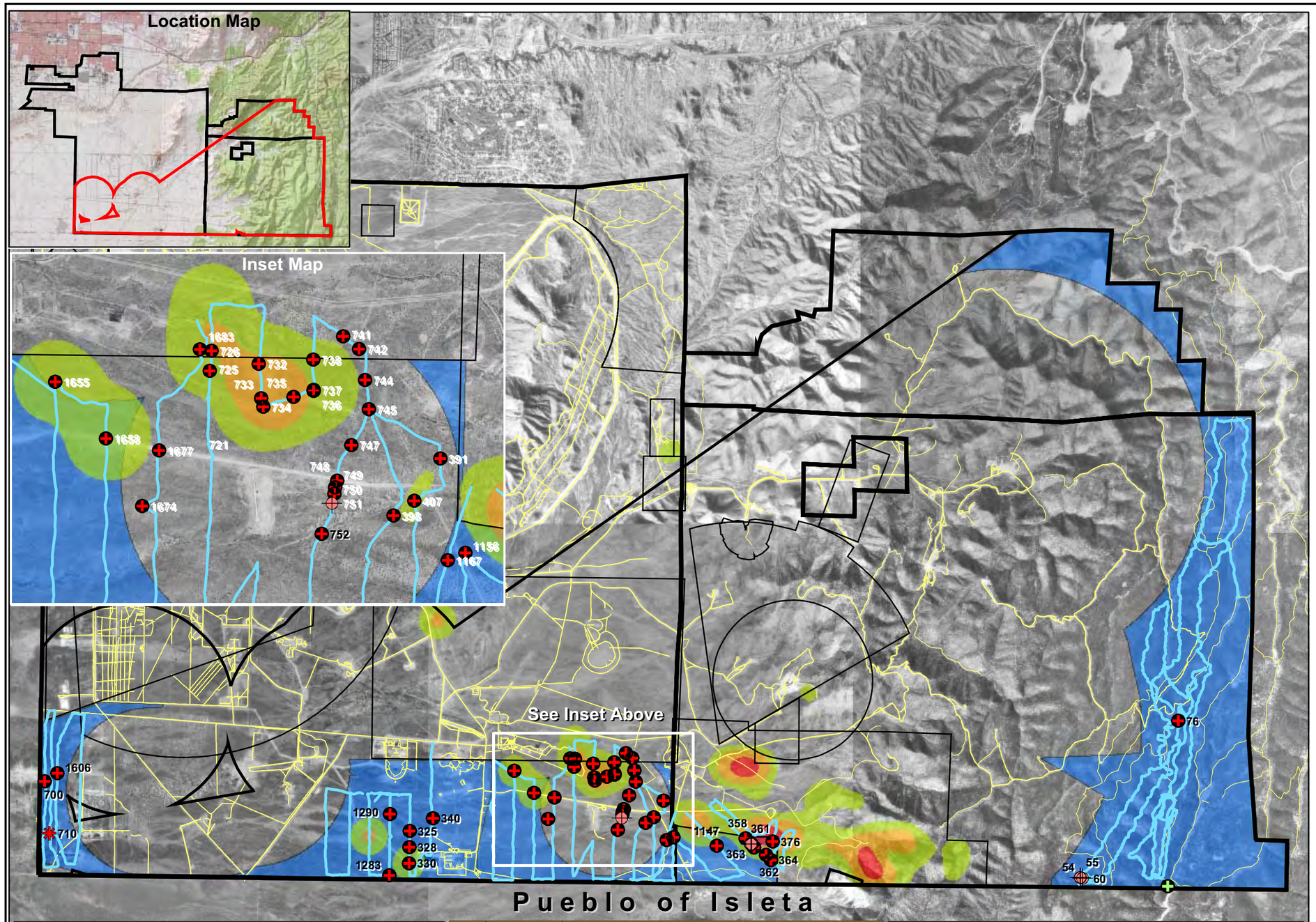
Table 5-6. Munitions Response Areas Future Land Use Classification

MRA ID	MRA Name	Future Land Use Classification
AL120	Proximity Fuze Range	Constrained Use Area
AL769	Ordnance Drop Zone	Constrained Use Area
AL771	Old Cable Site	Constrained Use Area
DA130	Arroyo del Coyote Demolition Area	Constrained Use Area
DA782	Explosive Disposal Area	Constrained Use Area
ED770	Experimental Range	Constrained Use Area
ML125	Field Firing Range	Constrained Use Area
ML774	Gun Site Fan	Constrained Use Area
ML781	Firing In-Abutment	Aircraft Operations/Maintenance
ML784	40mm Test and Training Range	Constrained Use Area
MU772	H-25 Site	Constrained Use Area
PT123	Tijeras Small Arms Range	Constrained Use Area
PT761	Tijeras Small Arms and Training Range	Constrained Use Area
PT773	Coyote Canyon Tech Site	Constrained Use Area
PT783	Bazooka Training Range	Constrained Use Area
SR763	Rifle Range	Administration and Research, Aircraft Operations/ Maintenance, Open Space, Industrial, Constrained Use Area
SR764	Rifle Range	Administration and Research, Aircraft Operations/ Maintenance, Open Space, Industrial, Constrained Use Area
SR765	WWII Pistol Range	Administration and Research, Aircraft Operations/ Maintenance, Open Space, Constrained Use Area
SR766	Sub-Machine Gun	Administration and Research, Aircraft Operations/Maintenance, Open Space, Industrial
SR767	Rifle Range	Administration and Research, Aircraft Operations/ Maintenance, Open Space, Industrial
SR768	Close Combat Infiltration Course	Constrained Use Area
SR777	Rifle Range	Constrained Use Area
SR778	Airfield Pistol Range	Administration and Research, Open Space, Industrial
SR780	Impact Area	Constrained Use Area
TS775	Airfield Skeet Range	Administration and Research, Open Space, Industrial
TS776	Skeet Range	Open Space
No ID	Bomb Target	Industrial, Constrained Use Area
No ID	Sandia Base Howitzer Range	Industrial, Constrained Use Area
No ID	Sandia Base Howitzer Range Buffer	Constrained Use Area



N

1 0.5 0 1 Miles

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-1

Density of Surface Anomalies and Locations of MEC

AL120
Proximity Fuze Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

UXO- 5" Round found by Shaw

Recon Data

Label

UXO

MPPEH

MD

Traversed Transects

Roads

Historic Ranges

KAFB Boundary

Anomalies Per Acre

Noise (0 - 20)

Low (20 - 100)

Medium (100 - 300)

High (301+)

Revised Munitions Response Areas

Item ID	Item	Comments
54	MPPEH	5"/38 Projectile, fired, possible MK35 MOD 0. No Fuze. Unknown Filler
55	MPPEH	5"/38 Projectile, fired, possible MK41 MOD 0. No Fuze. Unknown Filler
60	MPPEH	5"/38 Projectile, fired, possible MK35 MOD 0. No Fuze. Unknown Filler
76	MD	Grenade spoon.
325	MD	HE frag, medium case, 5" x 3".
328	MD	HE frag, thin case 1" x 3" and 2" x 3".
330	MD	HE Frag. Dirt road at this point. Sewer line just south.
340	MD	HE frag, heavy case, 3"x3".
358	MD	MK 53 mod 3 fuze, expended.
359	MD	Heavy case frag.
360	MPPEH	3" projectile, fired, no fuze.
361	MPPEH	90mm projectile, fired, no fuze.
362	MD	Possible archeological site "AR 782" -- rock pile. 90mm and 5" projectile, fired, no fuzes.
363	MD	5" projectile, fired, no fuze.
364	MD	90mm x3, 5" x1 projectile, fired, no fuze.
376	MD	Heavy case HE frag.
391	MD	Fuze parts.

Item ID	Item	Comments
398	MD	Fuze parts.
407	MD	HE heavy case frag.
700	MD	No subsurface contacts. 2 pieces of heavy case HE frag, 1" x 3" & 1" x 2".
710	UXO	Projectile, fired, 57mm, with Base Detonating Fuze/Tracer Element
721	Range Related Debris	Large pieces of metal scattered around. Small amounts of wood. Possible abandoned target.
725	MD	HE Frag 1" x 6"
726	MD	Mutiple small pieces of HE frag.
732	MD	Mutiple small pieces of HE frag.
733	MD	Mutiple small pieces of HE frag.
734	MD	Mutiple small pieces of HE frag; End sweeping south. Start sweeping west.
735	MD	Mutiple small pieces of HE frag.
736	MD	HE frag, largest 2" x 6".
737	MD	Projectile, fired, 57mm, no Fuzing.
738	MD	HE frag, largest 1" x 4".
741	MD	Projectile, fired, low ordered in base section, 57mm, no fuzing.
742	MD	Projectile, fired, low orderedin base section, 57mm, no fuzing.
744	MD	Projectile, fired, low ordered in base section, 57mm, no fuzing.

Item ID	Item	Comments
745	MD	HE frag, largest 3" x 3"
747	MD	5 inch projectile, fired, lot #444
748	MD	VT fuze, expended.
749	MD	76mm projectile, fired (partial).
750	MD	VT fuze, expended.
751	MPPEH	5" rocket warhead, fired, no fuze.
752	MD	5" projectile, fired, base ejection, no fuzing.
1147	MD	5in projectile, expended half of body section; heavy case frag.
1156	MD	Unknown imploded munition item; possible kickout from 21st EOD Demolition Disposal Range
1283	MD	2in. by 3in. heavy case projectile frag
1290	MD	4in by 6in piece of light case frag.
1606	MD	1in. by 5in. piece of heavy case munitions fragmentation.
1655	MD	Multiple small metal fragments and VT Fuze components on surface
1674	MD	Large heavy case projectile body section, located at base of unknown platform structure
1677	MD	3in. Projectile, fired, no fuzing, empty/inert, located on south shoulder of Isleta Road
1683	MD	Small projectile fragments on surface.

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Checked By:		Date Drawn: 1-31-2006	
Submitted By:	DS	Revision Date: 01-18-2007	

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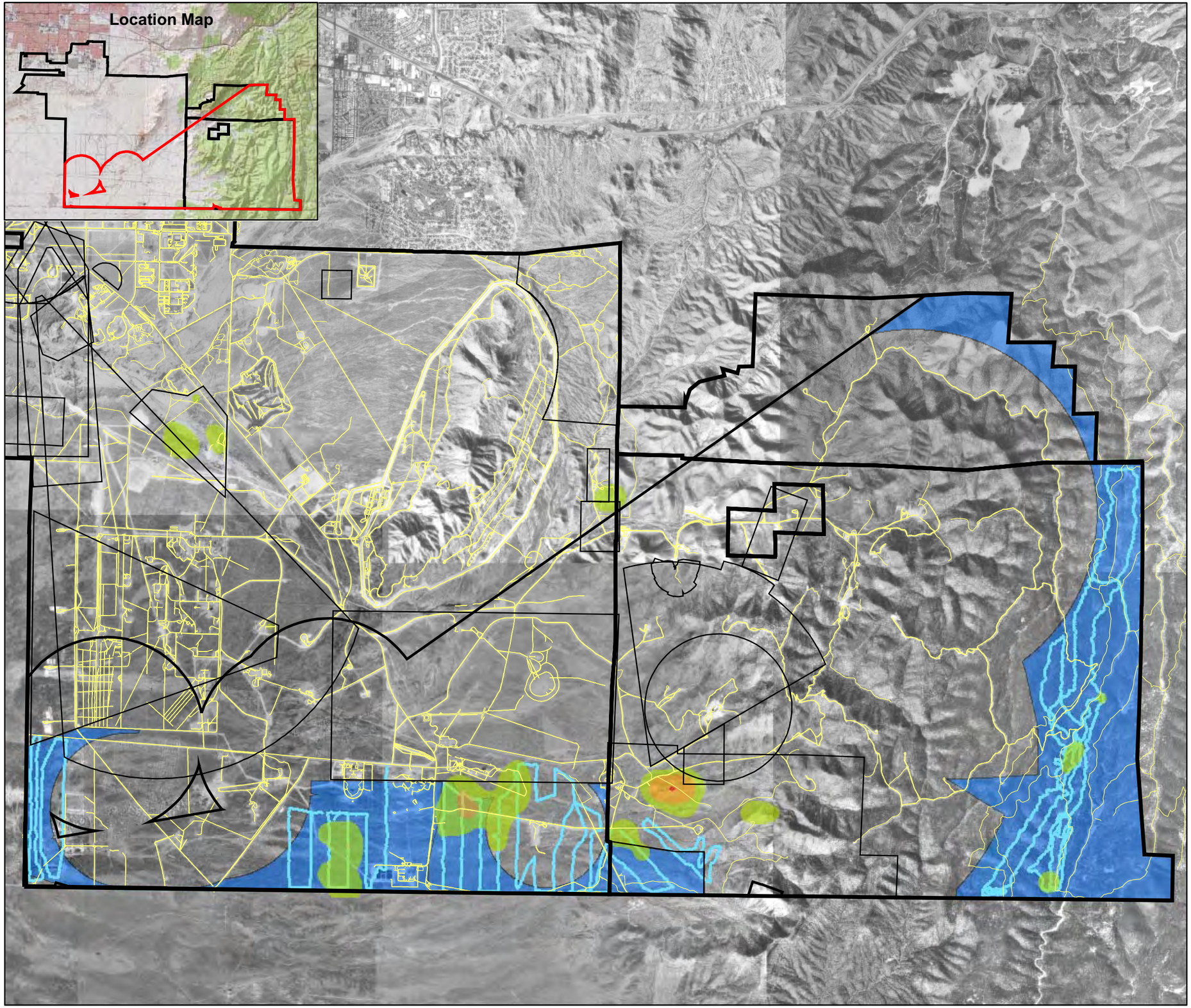

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1 0.5 0 1 Miles

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-2

Density of Subsurface Anomalies

AL120
Proximity Fuze Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Traversed Transects
- Revised Historic Range
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

Anomalies Per Acre

- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

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Checked By:		Date Drawn:	1-31-2006		
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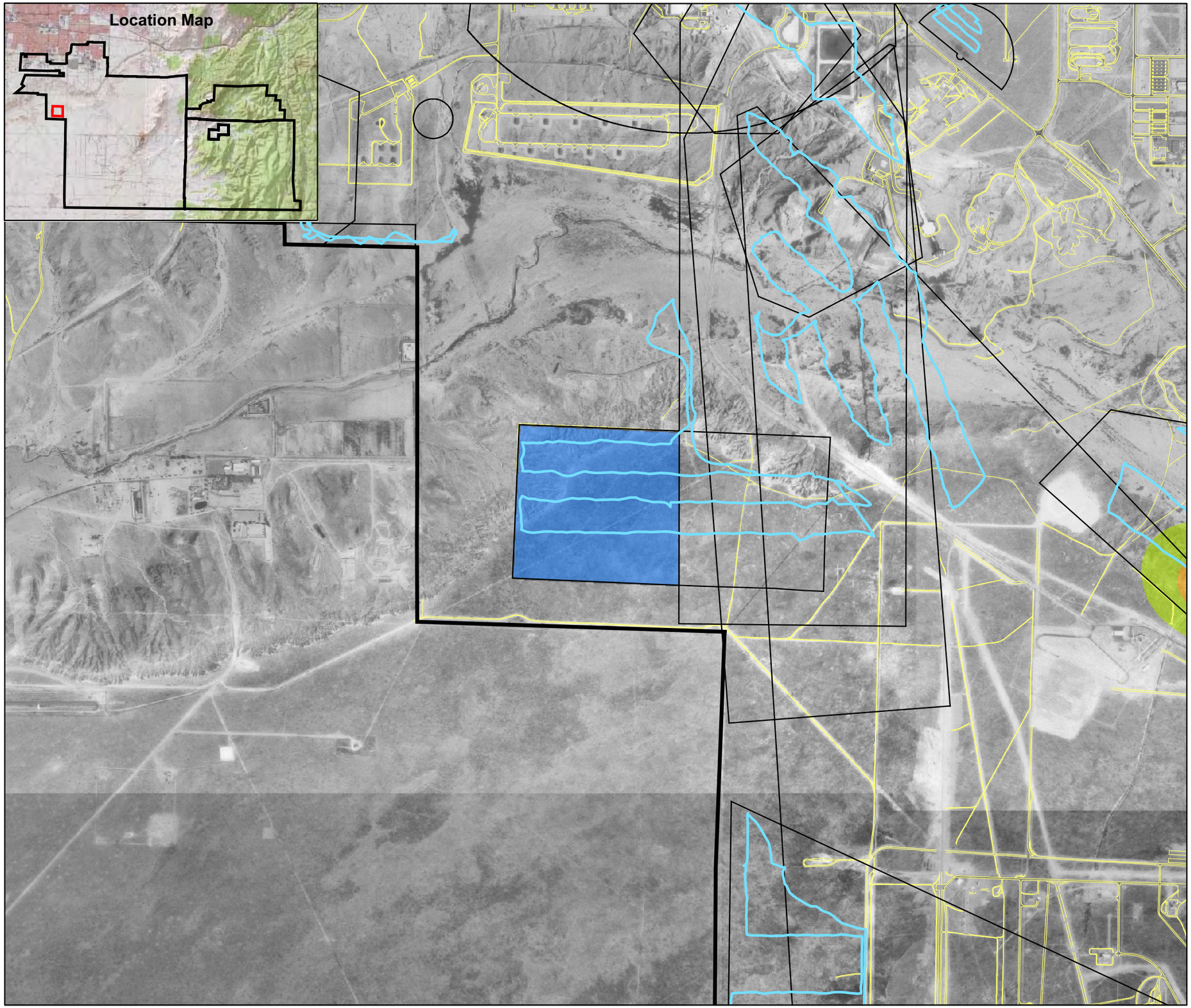

N

500 250 0 500

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-03

Density of Surface Anomalies and Locations of MEC

AL769
Ordnance Drop Zone

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

Recon Data
Label
- UXO
- MPPEH
- MD
- UXO- 5" Round found by Shaw
- Traversed Transects
- Roads
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

ANomalies Per Acre
- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

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Drawn By: JAL	Scale: 1" = 600 m	Rev: 4	
Checked By:	Date Drawn: 1-31-2006		
Submitted By: DS	Revision Date: 01-18-2007		

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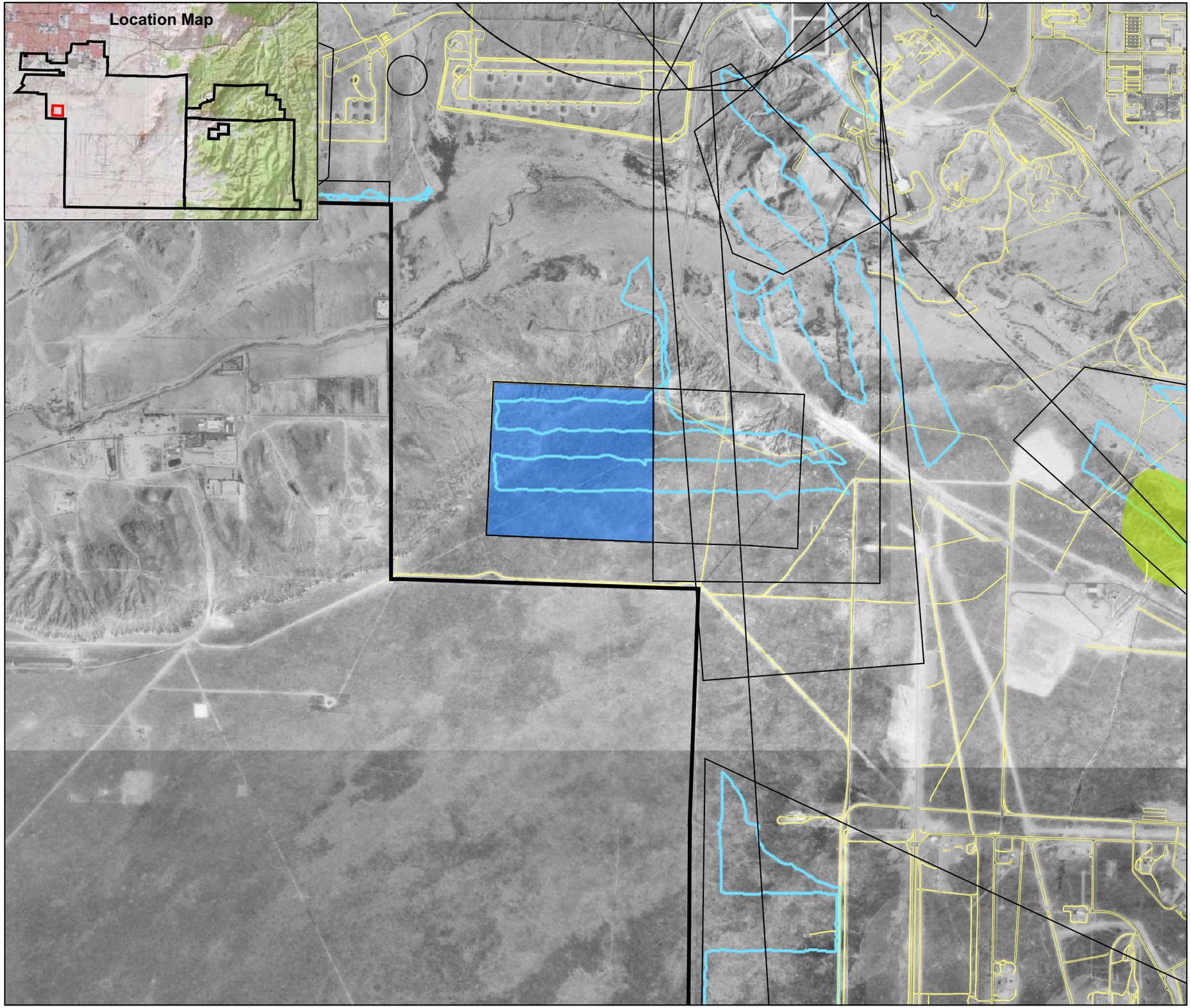

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500 250 0 500
Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-04

Density of Subsurface Anomalies

AL769
Ordnance Drop Zone

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Traversed Transects
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

Anomalies Per Acre

- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

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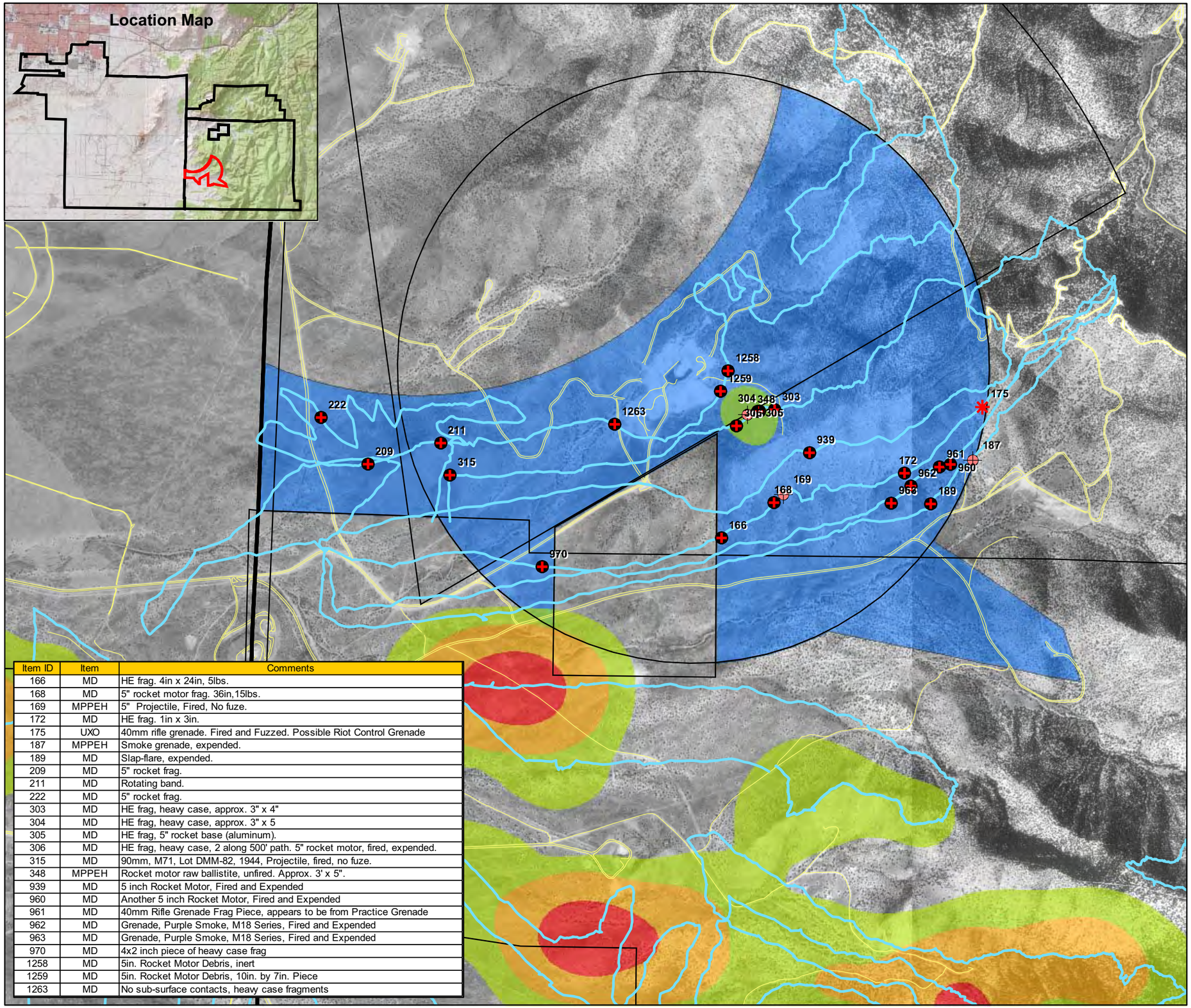

Item ID	Item	Comments
166	MD	HE frag. 4in x 24in, 5lbs.
168	MD	5" rocket motor frag. 36in,15lbs.
169	MPPEH	5" Projectile, Fired, No fuze.
172	MD	HE frag. 1in x 3in.
175	UXO	40mm rifle grenade. Fired and Fuzzed. Possible Riot Control Grenade
187	MPPEH	Smoke grenade, expended.
189	MD	Slap-flare, expended.
209	MD	5" rocket frag.
211	MD	Rotating band.
222	MD	5" rocket frag.
303	MD	HE frag, heavy case, approx. 3" x 4"
304	MD	HE frag, heavy case, approx. 3" x 5
305	MD	HE frag, 5" rocket base (aluminum).
306	MD	HE frag, heavy case, 2 along 500' path. 5" rocket motor, fired, expended.
315	MD	90mm, M71, Lot DMM-82, 1944, Projectile, fired, no fuze.
348	MPPEH	Rocket motor raw ballistite, unfired. Approx. 3' x 5".
939	MD	5 inch Rocket Motor, Fired and Expended
960	MD	Another 5 inch Rocket Motor, Fired and Expended
961	MD	40mm Rifle Grenade Frag Piece, appears to be from Practice Grenade
962	MD	Grenade, Purple Smoke, M18 Series, Fired and Expended
963	MD	Grenade, Purple Smoke, M18 Series, Fired and Expended
970	MD	4x2 inch piece of heavy case frag
1258	MD	5in. Rocket Motor Debris, inert
1259	MD	5in. Rocket Motor Debris, 10in. by 7in. Piece
1263	MD	No sub-surface contacts, heavy case fragments

N

400 200 0 400

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-5

Density of Surface Anomalies and Locations of MEC

AL771
Old Cable Site

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

Recon Data
Label
- UXO
- MPPEH
- MD
- UXO- 5" Round found by Shaw
- Traversed Transects
- Roads
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

ANomalies Per Acre
- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

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Submitted By: DS	Revision Date: 01-18-2007		

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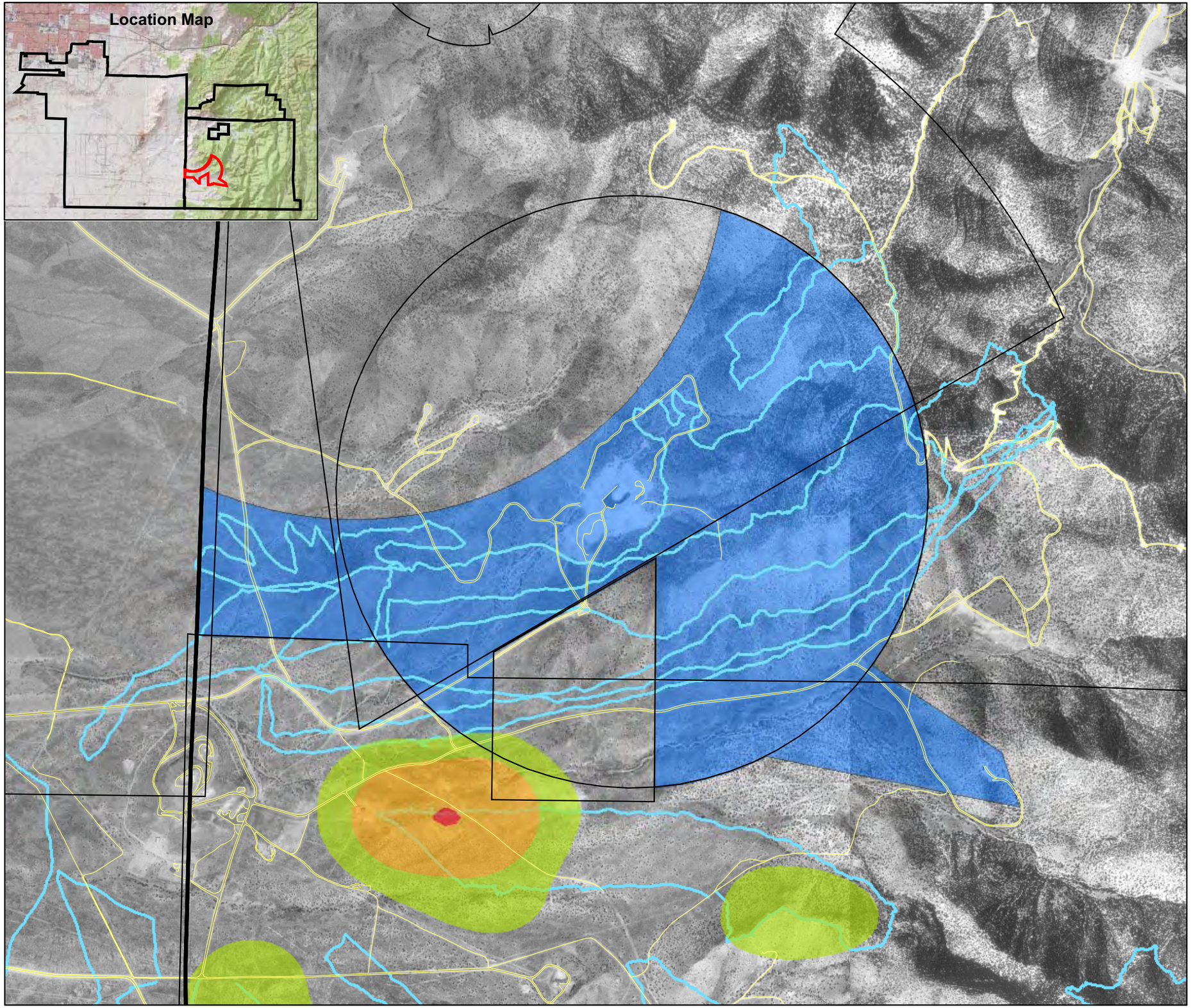

N

400 200 0 400

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-6

Density of Subsurface Anomalies

AL771
Old Cable Site

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Traversed Transects
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

Anomalies Per Acre

- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

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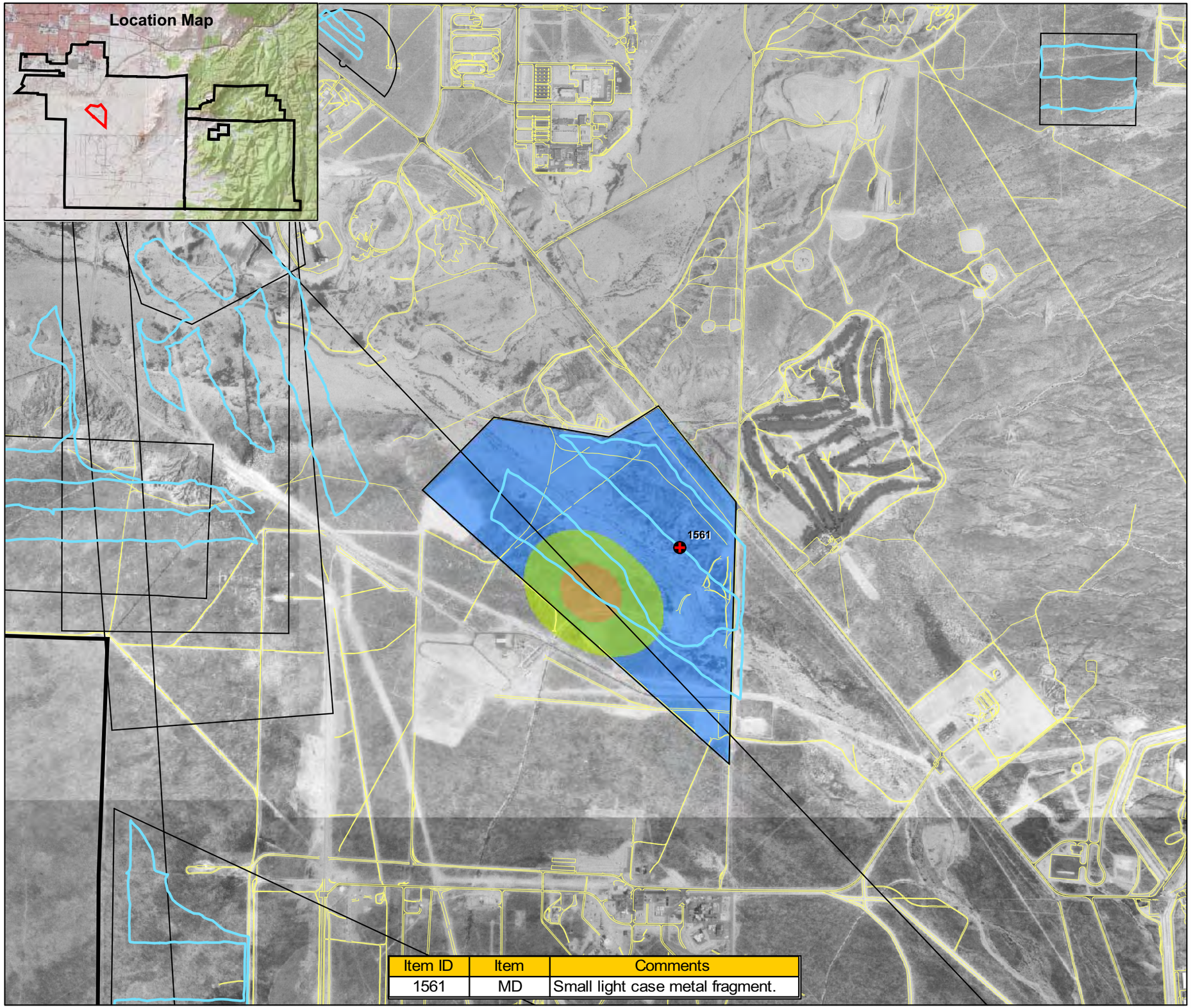

Item ID	Item	Comments
1561	MD	Small light case metal fragment.

N

500 250 0 500

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-7

Density of Surface Anomalies and Locations of MEC

DA130
Arroyo del Coyote Demolition Area

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

Recon Data
Label
- UXO
- MPPEH
- MD
- UXO- 5" Round found by Shaw
- Traversed Transects
- Roads
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

ANomalies Per Acre
- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By: JAL	Scale: 1" = 500 m	Rev: 4	
Checked By:	Date Drawn: 1-31-2006		
Submitted By: DS	Revision Date: 01-18-2007		

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N

500 250 0 500

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-8

Density of Subsurface Anomalies

DA130
Arroyo del Coyote Demolition Area

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Traversed Transects
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

Anomalies Per Acre

- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.	**US Army Corps Of Engineers Omaha District**

Drawn By:	JAL	Scale:	1" = 500 m	Rev: 4
Checked By:		Date Drawn:	1-31-2006	
Submitted By:	DS	Revision Date:	01-18-2007	

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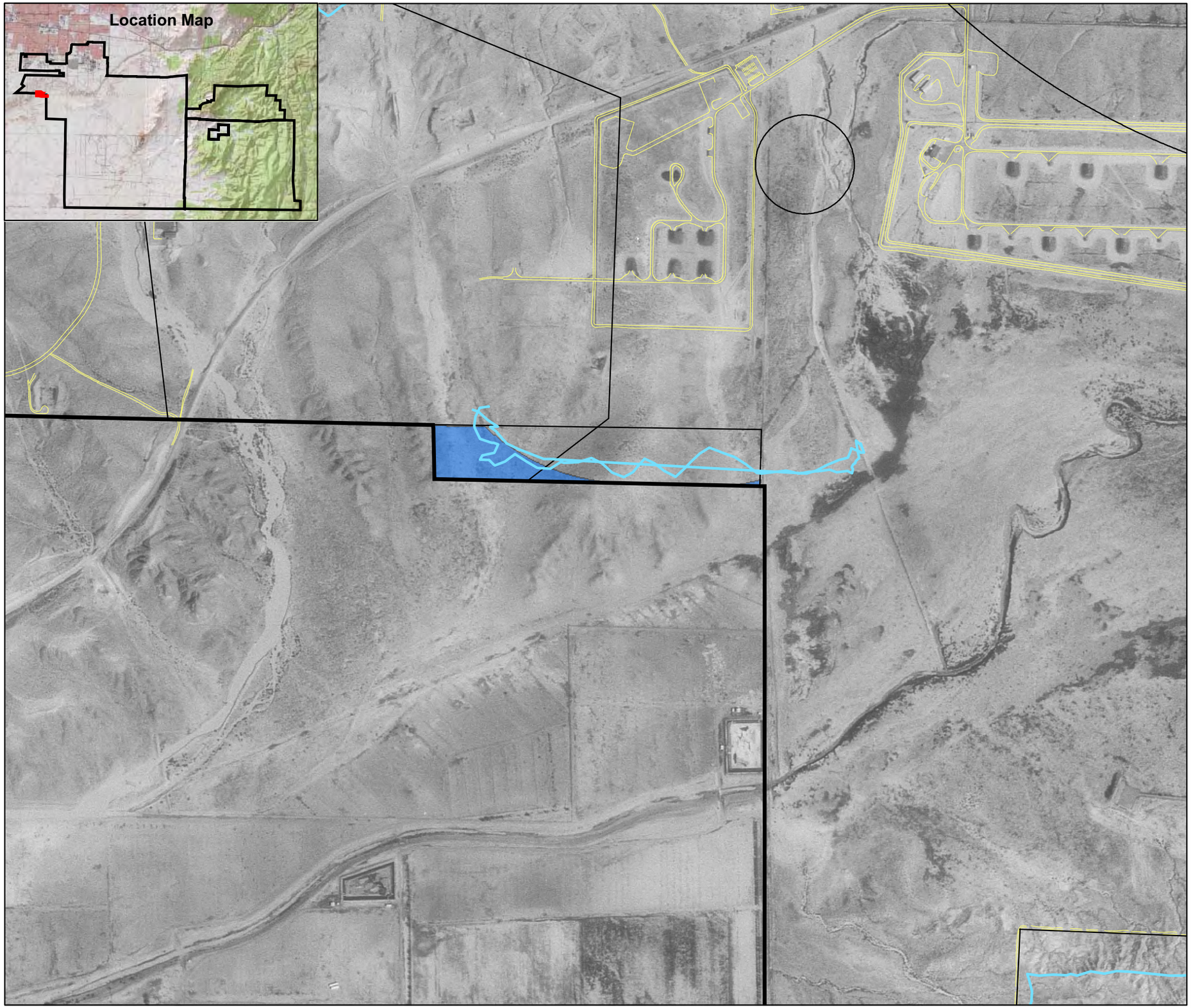

N

200 100 0 200

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-9

Density of Surface Anomalies and Locations of MEC

DA782
Explosive Disposal Area

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

Recon Data
Label
- UXO
- MPPEH
- MD
- UXO- 5" Round found by Shaw
- Traversed Transects

- Roads
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

ANomalies Per Acre
- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale:	1" = 200 m	Rev:	4
Checked By:		Date Drawn:	1-31-2006		
Submitted By:	DS	Revision Date:	01-18-2007		

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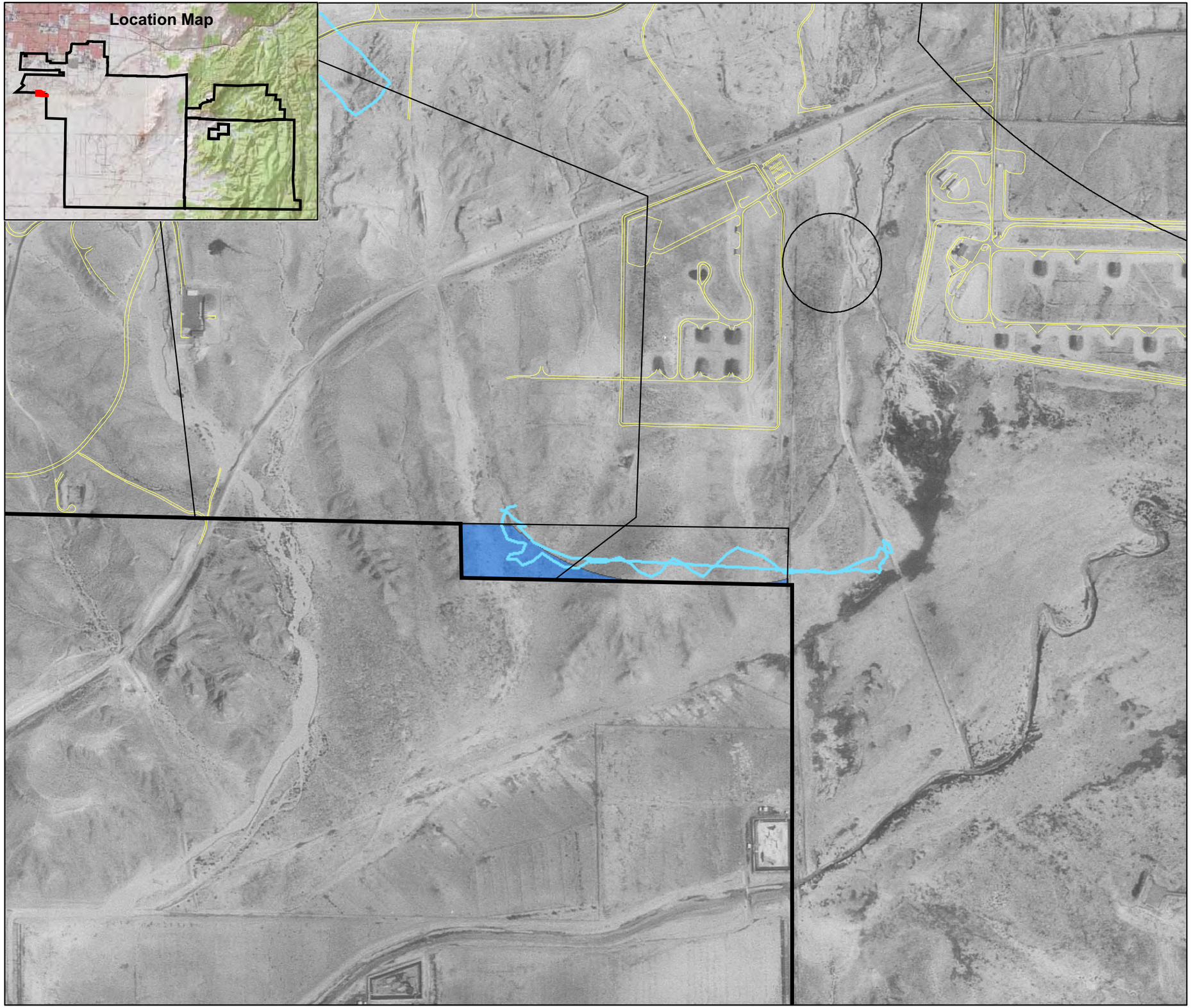

N

200 100 0 200

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-10

Density of Subsurface Anomalies

DA782
Explosive Disposal Area

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Traversed Transects
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

Anomalies Per Acre

- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

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Drawn By:	JAL	Scale: 1" = 200 m	Rev: 4
Checked By:		Date Drawn: 1-31-2006	
Submitted By:	DS	Revision Date: 01-18-2007	

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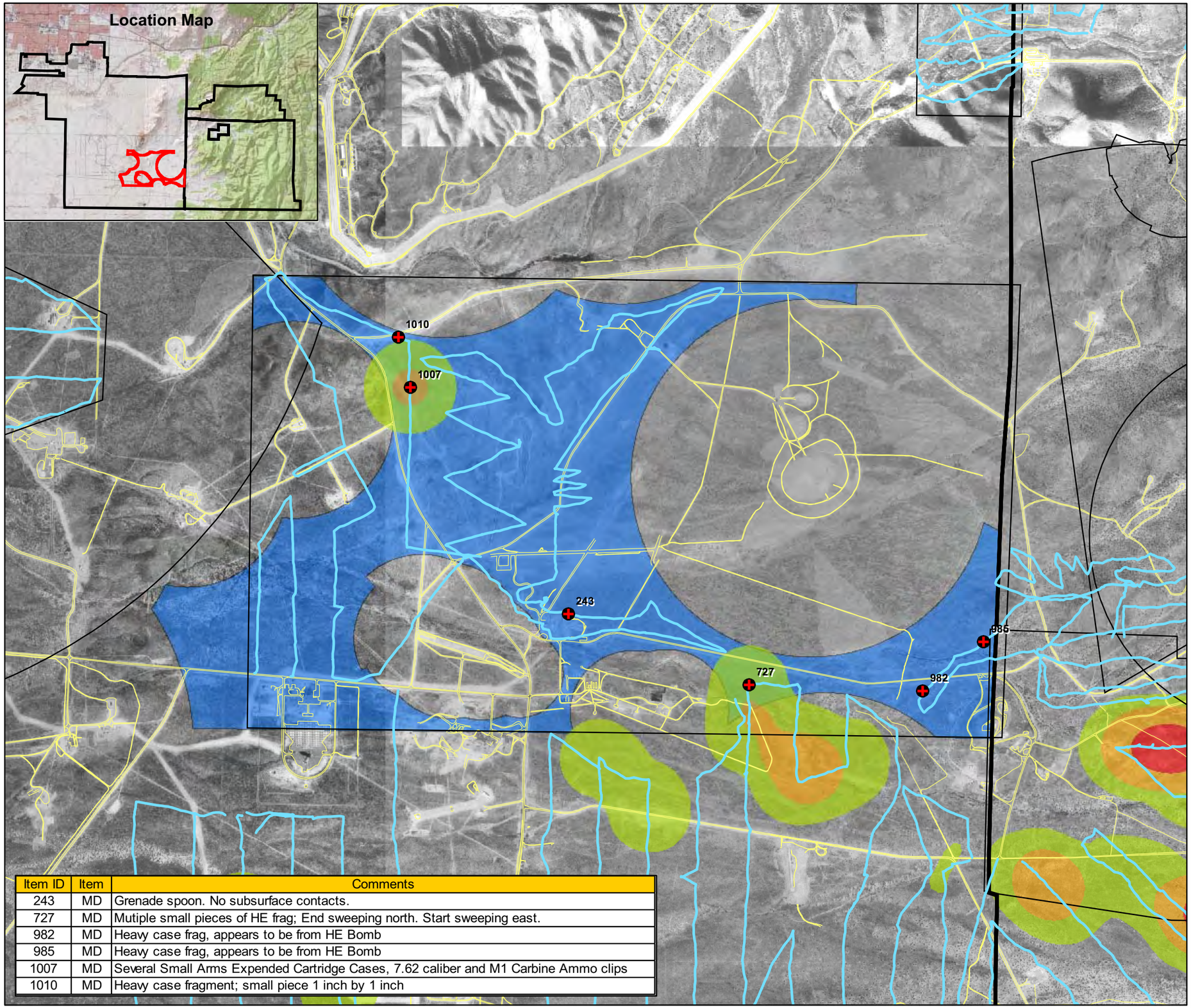

Item ID	Item	Comments
243	MD	Grenade spoon. No subsurface contacts.
727	MD	Mutiple small pieces of HE frag; End sweeping north. Start sweeping east.
982	MD	Heavy case frag, appears to be from HE Bomb
985	MD	Heavy case frag, appears to be from HE Bomb
1007	MD	Several Small Arms Expended Cartridge Cases, 7.62 caliber and M1 Carbine Ammo clips
1010	MD	Heavy case fragment; small piece 1 inch by 1 inch

N

600 300 0 600
Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-11

Density of Surface Anomalies and Locations of MEC

ED770
Experimental Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

Recon Data
Label
- UXO
- MPPEH
- MD
- UXO- 5" Round found by Shaw
- Traversed Transects
- Roads
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

ANomalies Per Acre
- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By: JAL	Scale: 1" = 600 m	Rev: 4	
Checked By:	Date Drawn: 1-31-2006		
Submitted By: DS	Revision Date: 01-18-2007		

Path:
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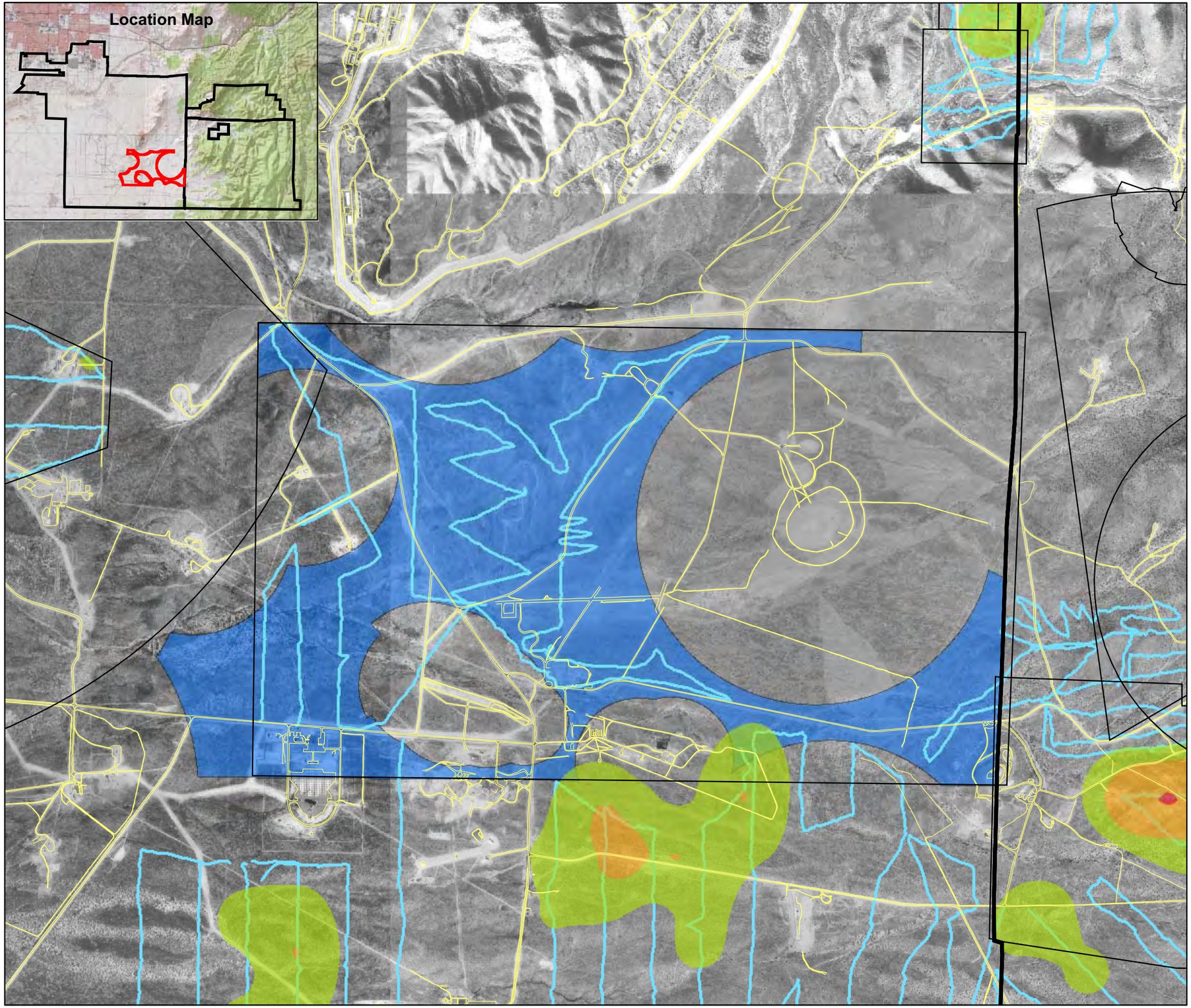

N

600 300 0 600

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-12

Density of Subsurface Anomalies

ED770
Experimental Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Traversed Transects
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

Anomalies Per Acre

- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1" = 600 m	Rev: 4
Checked By:		Date Drawn: 1-31-2006	
Submitted By:	DS	Revision Date: 01-18-2007	

Path:
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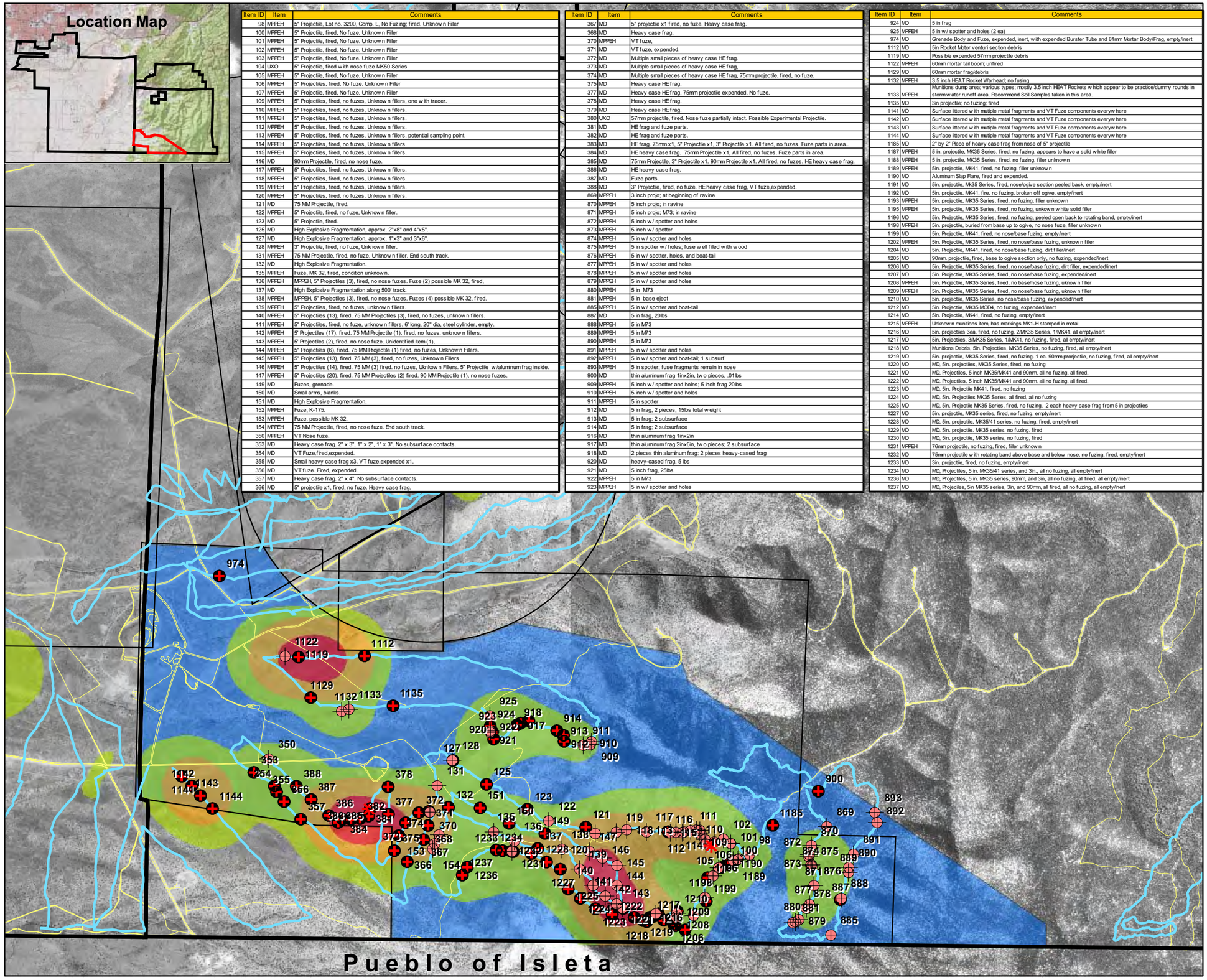

Item ID	Item	Comments
98	MPPEH	5" Projectile, Lot no. 3200, Comp. L, No Fuzing; fired. Unknown Filler
100	MPPEH	5" Projectile, fired, No fuze. Unknown Filler
101	MPPEH	5" Projectile, fired, No fuze. Unknown Filler
102	MPPEH	5" Projectile, fired, No fuze. Unknown Filler
103	MPPEH	5" Projectile, fired, No fuze. Unknown Filler
104	UXO	5" Projectile, fired with nose fuze MK50 Series
105	MPPEH	5" Projectile, fired, No fuze. Unknown Filler
106	MPPEH	5" Projectiles, fired, No fuze. Unknown Filler
107	MPPEH	5" Projectile, fired, No fuze. Unknown Filler
109	MPPEH	5" Projectiles, fired, no fuzes, Unknown fillers, one with tracer.
110	MPPEH	5" Projectiles, fired, no fuzes, Unknown fillers.
111	MPPEH	5" Projectiles, fired, no fuzes, Unknown fillers.
112	MPPEH	5" Projectiles, fired, no fuzes, Unknown fillers.
113	MPPEH	5" Projectiles, fired, no fuzes, Unknown fillers, potential sampling point.
114	MPPEH	5" Projectiles, fired, no fuzes, Unknown fillers.
115	MPPEH	5" Projectiles, fired, no fuzes, Unknown fillers.
116	MD	90mm Projectile, fired, no nose fuze.
117	MPPEH	5" Projectiles, fired, no fuzes, Unknown fillers.
118	MPPEH	5" Projectiles, fired, no fuzes, Unknown fillers.
119	MPPEH	5" Projectiles, fired, no fuzes, Unknown fillers.
120	MPPEH	5" Projectiles, fired, no fuzes, Unknown fillers.
121	MD	75 MM Projectile, fired.
122	MPPEH	5" Projectile, fired, no fuze, Unknown filler.
123	MD	5" Projectile, fired.
125	MD	High Explosive Fragmentation, approx. 2"x8" and 4"x5".
127	MD	High Explosive Fragmentation, approx. 1"x3" and 3"x6".
128	MPPEH	3" Projectile, fired, no fuze, Unknown filler.
131	MPPEH	75 MM Projectile, fired, no fuze, Unknown filler. End south track.
132	MD	High Explosive Fragmentation.
135	MPPEH	Fuze, MK 32, fired, condition unknown.
136	MPPEH	MPPEH, 5" Projectiles (3), fired, no nose fuzes. Fuze (2) possible MK 32, fired,
137	MD	High Explosive Fragmentation along 500' track.
138	MPPEH	MPPEH, 5" Projectiles (3), fired, no nose fuzes. Fuzes (4) possible MK 32, fired.
139	MPPEH	5" Projectiles, fired, no fuzes, unknown fillers.
140	MPPEH	5" Projectiles (13), fired. 75 MM Projectiles (3), fired, no fuzes, unknown fillers.
141	MPPEH	5" Projectiles, fired, no fuze, unknown fillers. 6' long, 20" dia, steel cylinder, empty.
142	MPPEH	5' Projectiles (17), fired. 75 MM Projectile (1), fired, no fuzes, unknown fillers.
143	MPPEH	5' Projectiles (2), fired. no nose fuze. Unidentified item (1),
144	MPPEH	5" Projectiles (6), fired. 75 MM Projectile (1) fired, no fuzes, Unknown Fillers.
145	MPPEH	5" Projectiles (13), fired. 75 MM (3), fired, no fuzes, Unknown Fillers.
146	MPPEH	5" Projectiles (14), fired. 75 MM (3) fired. no fuzes, Uknkown Fillers. 5" Projectile w/aluminum frag inside.
147	MPPEH	5" Projectiles (20), fired. 75 MM Projectiles (2) fired. 90 MM Projectile (1), no nose fuzes.
149	MD	Fuzes, grenade.
150	MD	Small arms, blanks.
151	MD	High Explosive Fragmentation.
152	MPPEH	Fuze, K-175.
153	MPPEH	Fuze, possible MK 32.
154	MPPEH	75 MM Projectile, fired, no nose fuze. End south track.
350	MPPEH	VT Nose fuze.
353	MD	Heavy case frag. 2" x 3", 1" x 2", 1" x 3". No subsurface contacts.
354	MD	VT Fuze,fired,expended.
355	MD	Small heavy case frag x3. VT fuze,expended x1.
356	MD	VT fuze. Fired, expended.
357	MD	Heavy case frag. 2" x 4". No subsurface contacts.
366	MD	5" projectile x1, fired, no fuze. Heavy case frag.

Item ID	Item	Comments
367	MD	5" projectile x1 fired, no fuze. Heavy case frag.
368	MD	Heavy case frag.
370	MPPEH	VT fuze,
371	MD	VT fuze, expended.
372	MD	Multiple small pieces of heavy case HE frag.
373	MD	Multiple small pieces of heavy case HE frag.
374	MD	Multiple small pieces of heavy case HE frag, 75mm projectile, fired, no fuze.
375	MD	Heavy case HE frag.
377	MD	Heavy case HE frag. 75mm projectile expended. No fuze.
378	MD	Heavy case HE frag.
379	MD	Heavy case HE frag.
380	UXO	57mm projectile, fired. Nose fuze partially intact. Possible Experimental Projectile.
381	MD	HE frag and fuze parts.
382	MD	HE frag and fuze parts.
383	MD	HE frag. 75mm x1, 5" Projectile x1, 3" Projectile x1. All fired, no fuzes. Fuze parts in area..
384	MD	HE heavy case frag. 75mm Projectile x1, All fired, no fuzes. Fuze parts in area.
385	MD	75mm Projectile, 3" Projectile x1. 90mm Projectile x1. All fired, no fuzes. HE heavy case frag.
386	MD	HE heavy case frag.
387	MD	Fuze parts.
388	MD	3" Projectile, fired, no fuze. HE heavy case frag, VT fuze,expended.
869	MPPEH	3 inch projo; at beginning of ravine
870	MPPEH	5 inch projo; in ravine
871	MPPEH	5 inch projo; M73; in ravine
872	MPPEH	5 inch w/ spotter and holes
873	MPPEH	5 inch w/ spotter
874	MPPEH	5 in w/ spotter and holes
875	MPPEH	5 in spotter w/ holes; fuse well filled with wood
876	MPPEH	5 in w/ spotter, holes, and boat-tail
877	MPPEH	5 in w/ spotter and holes
878	MPPEH	5 in w/ spotter and holes
879	MPPEH	5 in w/ spotter and holes
880	MPPEH	5 in M73
881	MPPEH	5 in base eject
885	MPPEH	5 in w/ spotter and boat-tail
887	MD	5 in frag, 20lbs
888	MPPEH	5 in M73
889	MPPEH	5 in M73
890	MPPEH	5 in M73
891	MPPEH	5 in w/ spotter and holes
892	MPPEH	5 in w/ spotter and boat-tail; 1 subsurf
893	MPPEH	5 in spotter; fuse fragments remain in nose
900	MD	thin aluminum frag 1inx2in, two pieces, .01lbs
909	MPPEH	5 inch w/ spotter and holes; 5 inch frag 20lbs
910	MPPEH	5 inch w/ spotter and holes
911	MPPEH	5 in spotter
912	MD	5 in frag, 2 pieces, 15lbs total weight
913	MD	5 in frag; 2 subsurface
914	MD	5 in frag; 2 subsurface
916	MD	thin aluminum frag 1inx2in
917	MD	thin aluminum frag 2inx6in, two pieces; 2 subsurface
918	MD	2 pieces thin aluminum frag; 2 pieces heavy-cased frag
920	MD	heavy-cased frag, 5 lbs
921	MD	5 inch frag, 25lbs
922	MPPEH	5 in M73
923	MPPEH	5 in w/ spotter and holes

Item ID	Item	Comments
924	MD	5 in frag
925	MPPEH	5 in w/ spotter and holes (2 ea)
974	MD	Grenade Body and Fuze, expended, inert, with expended Burster Tube and 81mm Mortar Body/Frag, empty/inert
1112	MD	5in Rocket Motor venturi section debris
1119	MD	Possible expended 57mm projectile debris
1122	MPPEH	60mm mortar tail boom; unfired
1129	MD	60mm mortar frag/debris
1132	MPPEH	3.5 inch HEAT Rocket Warhead; no fusing
1133	MPPEH	Munitions dump area; various types; mostly 3.5 inch HEAT Rockets which appear to be practice/dummy rounds in stormwater runoff area. Recommend Soil Samples taken in this area.
1135	MD	3in projectile; no fuzing; fired
1141	MD	Surface littered with mutiple metal fragments and VT Fuze components everywhere
1142	MD	Surface littered with mutiple metal fragments and VT Fuze components everywhere
1143	MD	Surface littered with mutiple metal fragments and VT Fuze components everywhere
1144	MD	Surface littered with mutiple metal fragments and VT Fuze components everywhere
1185	MD	2" by 2" Piece of heavy case frag from nose of 5" projectile
1187	MPPEH	5 in. projectile, MK35 Series, fired, no fuzing, appears to have a solid white filler
1188	MPPEH	5 in. projectile, MK35 Series, fired, no fuzing, filler unknown
1189	MPPEH	5in. projectile, MK41, fired, no fuzing, filler unknown
1190	MD	Aluminum Slap Flare, fired and expended.
1191	MD	5in. projectile, Mk35 Series, fired, nose/ogive section peeled back, empty/inert
1192	MD	5in. projectile, MK41, fire, no fuzing, broken off ogive, empty/inert
1193	MPPEH	5in. projectile, MK35 Series, fired, no fuzing, filler unknown
1195	MPPEH	5in. projectile, MK35 Series, fired, no fuzing, unknown white solid filler
1196	MD	5in. Projectile, MK35 Series, fired, no fuzing, peeled open back to rotating band, empty/inert
1198	MPPEH	5in. projectile, buried from base up to ogive, no nose fuze, filler unknown
1199	MD	5in. Projectile, MK41, fired, no nose/base fuzing, empty/inert
1202	MPPEH	5in. Projectile, MK35 Series, fired, no nose/base fuzing, unknown filler
1204	MD	5in. Projectile, MK41, fired, no nose/base fuzing, dirt filler/inert
1205	MD	90mm. projectile, fired, base to ogive section only, no fuzing, expended/inert
1206	MD	5in. Projectile, MK35 Series, fired, no nose/base fuzing, dirt filler, expended/inert
1207	MD	5in. Projectile, MK35 Series, fired, no nose/base fuzing, expended/inert
1208	MPPEH	5in. Projectile, MK35 Series, fired, no base/nose fuzing, unknown filler
1209	MPPEH	5in. Projectile, MK35 Series, fired, no nose/base fuzing, unknown filler
1210	MD	5in. projectile, MK35 Series, no nose/base fuzing, expended/inert
1212	MD	5in. Projectile, MK35 MOD4, no fuzing, expended/inert
1214	MD	5in. Projectile, MK41, fired, no fuzing, empty/inert
1215	MPPEH	Unknown munitions item, has markings MK1-H stamped in metal
1216	MD	5in. projectiles 3ea, fired, no fuzing, 2/MK35 Series, 1/MK41, all empty/inert
1217	MD	5in. Projectiles, 3/MK35 Series, 1/MK41, no fuzing, fired, all empty/inert
1218	MD	Munitions Debris, 5in. Projectiles, MK35 Series, no fuzing, fired, all empty/inert
1219	MD	5in. projectile, MK35 Series, fired, no fuzing. 1 ea. 90mm projectile, no fuzing, fired, all empty/inert
1220	MD	MD, 5in. projectiles, MK35 Series, fired, no fuzing
1221	MD	MD, Projectiles, 5 inch MK35/MK41 and 90mm, all no fuzing, all fired,
1222	MD	MD, Projectiles, 5 inch MK35/MK41 and 90mm, all no fuzing, all fired,
1223	MD	MD, 5in. Projectile MK41, fired, no fuzing
1224	MD	MD, 5in. Projectiles MK35 Series, all fired, all no fuzing
1225	MD	MD, 5in. Projectile MK35 Series, fired, no fuzing, 2 each heavy case frag from 5 in projectiles
1227	MD	5in. projectile, MK35 series, fired, no fuzing, empty/inert
1228	MD	MD, 5in. projectile, MK35/41 series, no fuzing, fired, empty/inert
1229	MD	MD, 5in. projectile, MK35 series, no fuzing, fired
1230	MD	MD, 5in. projectile, MK35 series, no fuzing, fired
1231	MPPEH	76mm projectile, no fuzing, fired, filler unknown
1232	MD	75mm projectile with rotating band above base and below nose, no fuzing, fired, empty/inert
1233	MD	3in. projectile, fired, no fuzing, empty/inert
1234	MD	MD, Projectiles, 5 in. MK35/41 series, and 3in., all no fuzing, all empty/inert
1236	MD	MD, Projectiles, 5 in. MK35 series, 90mm, and 3in, all no fuzing, all fired, all empty/inert
1237	MD	MD, Projecciles, 5in MK35 series, 3in, and 90mm, all fired, all no fuzing, all empty/inert

N

600 300 0 600

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-13

Density of Surface Anomalies and Locations of MEC

ML125
Field Firing Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

Recon Data

Label

- UXO
- MPPEH
- MD
- UXO- 5" Round found by Shaw
- Traversed Transects
- Roads
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

ANomalies Per Acre

- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By: JAL	Scale: 1" = 600 m	Rev: 3	
Checked By:	Date Drawn: 1-31-2006		
Submitted By: DS	Revision Date: 01-18-2007		

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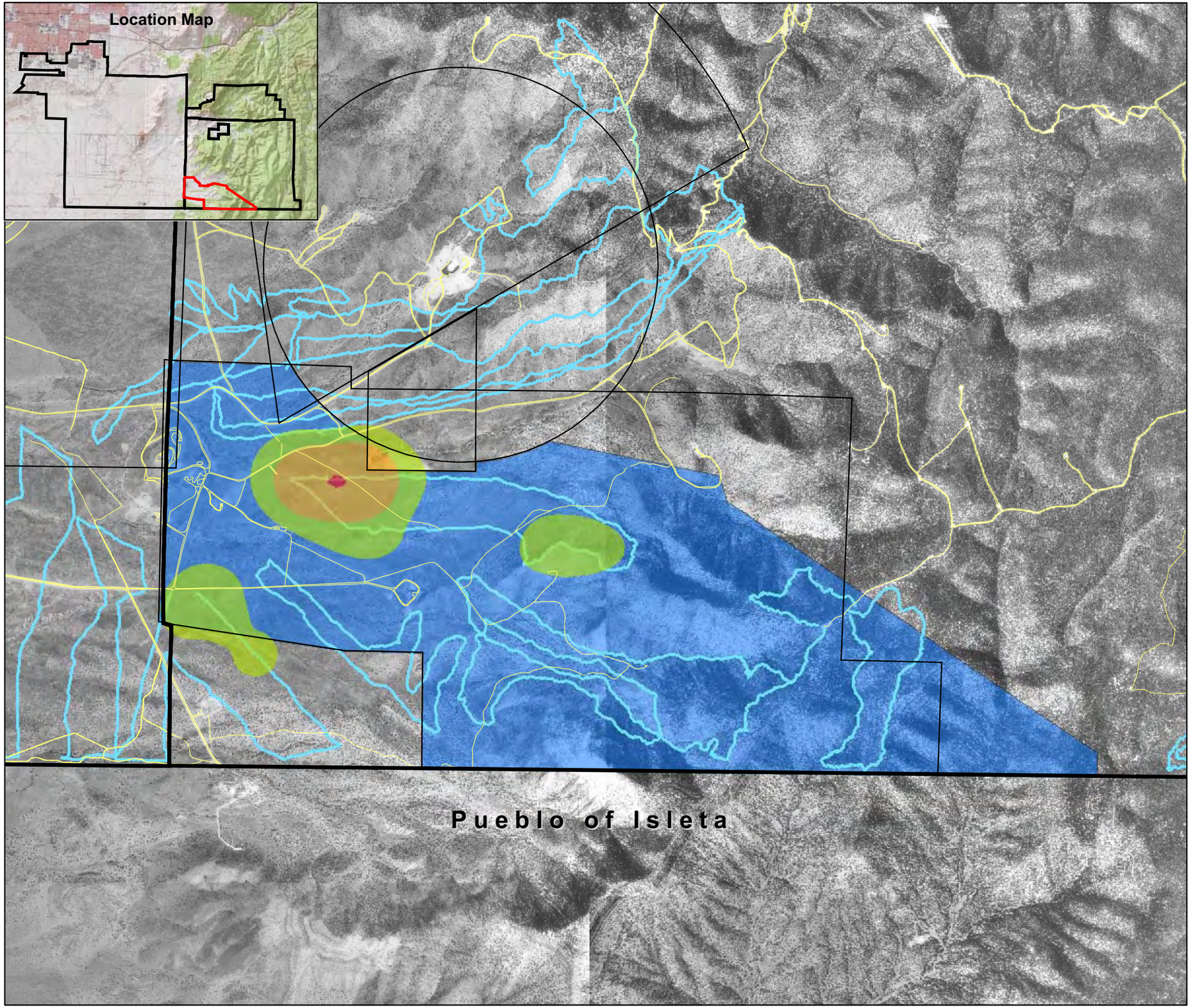

N

600 300 0 600
Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-14

Density of Subsurface Anomalies

ML125
Field Firing Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Traversed Transects
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

Anomalies Per Acre

- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale:	1" = 600 m	Rev: 4
Checked By:		Date Drawn:	1-31-2006	
Submitted By:	DS	Revision Date:	01-18-2007	

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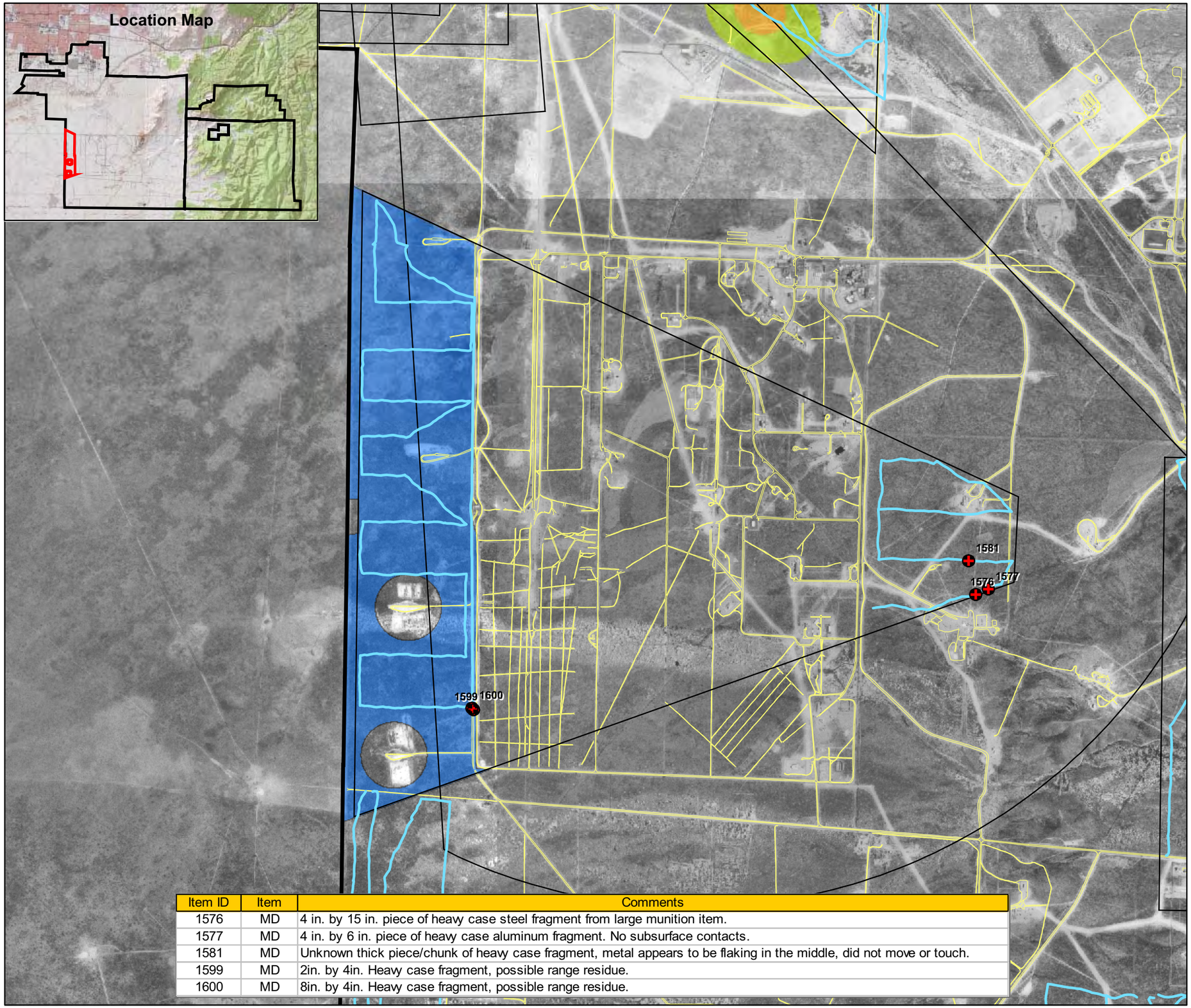

Item ID	Item	Comments
1576	MD	4 in. by 15 in. piece of heavy case steel fragment from large munition item.
1577	MD	4 in. by 6 in. piece of heavy case aluminum fragment. No subsurface contacts.
1581	MD	Unknown thick piece/chunk of heavy case fragment, metal appears to be flaking in the middle, did not move or touch.
1599	MD	2in. by 4in. Heavy case fragment, possible range residue.
1600	MD	8in. by 4in. Heavy case fragment, possible range residue.

N

600 300 0 600
Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-15

Density of Surface Anomalies and Locations of MEC

ML774
Gun Site Fan

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

Recon Data
Label
- UXO
- MPPEH
- MD
- UXO- 5" Round found by Shaw
- Traversed Transects

- Roads
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

ANomalies Per Acre
- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By: JAL	Scale: 1" = 600 m	Rev: 4	
Checked By:	Date Drawn: 1-31-2006		
Submitted By: DS	Revision Date: 01-18-2007		

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5-15 ML774_MEC.mxd

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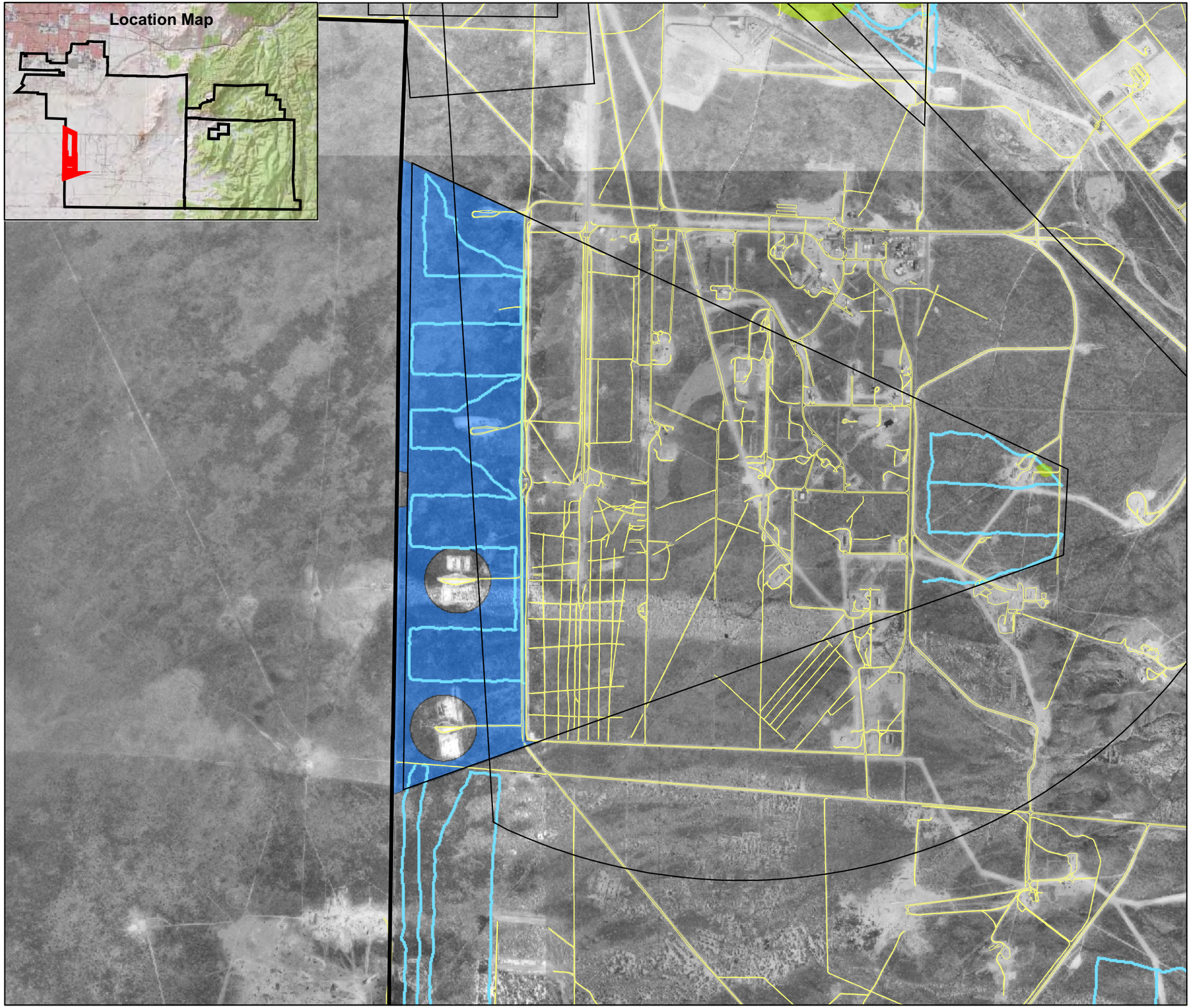

N

600 300 0 600

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-16

Density of Subsurface Anomalies

ML774
Gun Site Fan

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Traversed Transects
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

Anomalies Per Acre

- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1" = 600 m	Rev: 4
Checked By:		Date Drawn: 1-31-2006	
Submitted By:	DS	Revision Date: 01-18-2007	

Path:
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5-16 ML774_Subsurface.mxd

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Item ID	Item	Comments
1463	MD	20mm Projectile, fired, no fuzing, expended/inert, Projectile body broken open

N

100 50 0 100
Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-17

Density of Surface Anomalies and Locations of MEC

ML781
Firing In-Abutment

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

Recon Data
Label
- UXO
- MPPEH
- MD
- UXO- 5" Round found by Shaw
- Traversed Transects
- Roads
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

ANomalies Per Acre
- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By: JAL	Scale: 1" = 100 m	Rev: 4	
Checked By:	Date Drawn: 1-31-2006		
Submitted By: DS	Revision Date: 01-18-2007		

Path:
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5-17 ML781_MEC.mxd

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N

100 50 0 100
Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-18

Density of Subsurface Anomalies

ML781
Firing In-Abutment

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Traversed Transects
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

Anomalies Per Acre

- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale:	1" = 100 m	Rev:	4
Checked By:		Date Drawn:	1-31-2006		
Submitted By:	DS	Revision Date:	01-18-2007		

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5-18 ML781_Subsurface.mxd

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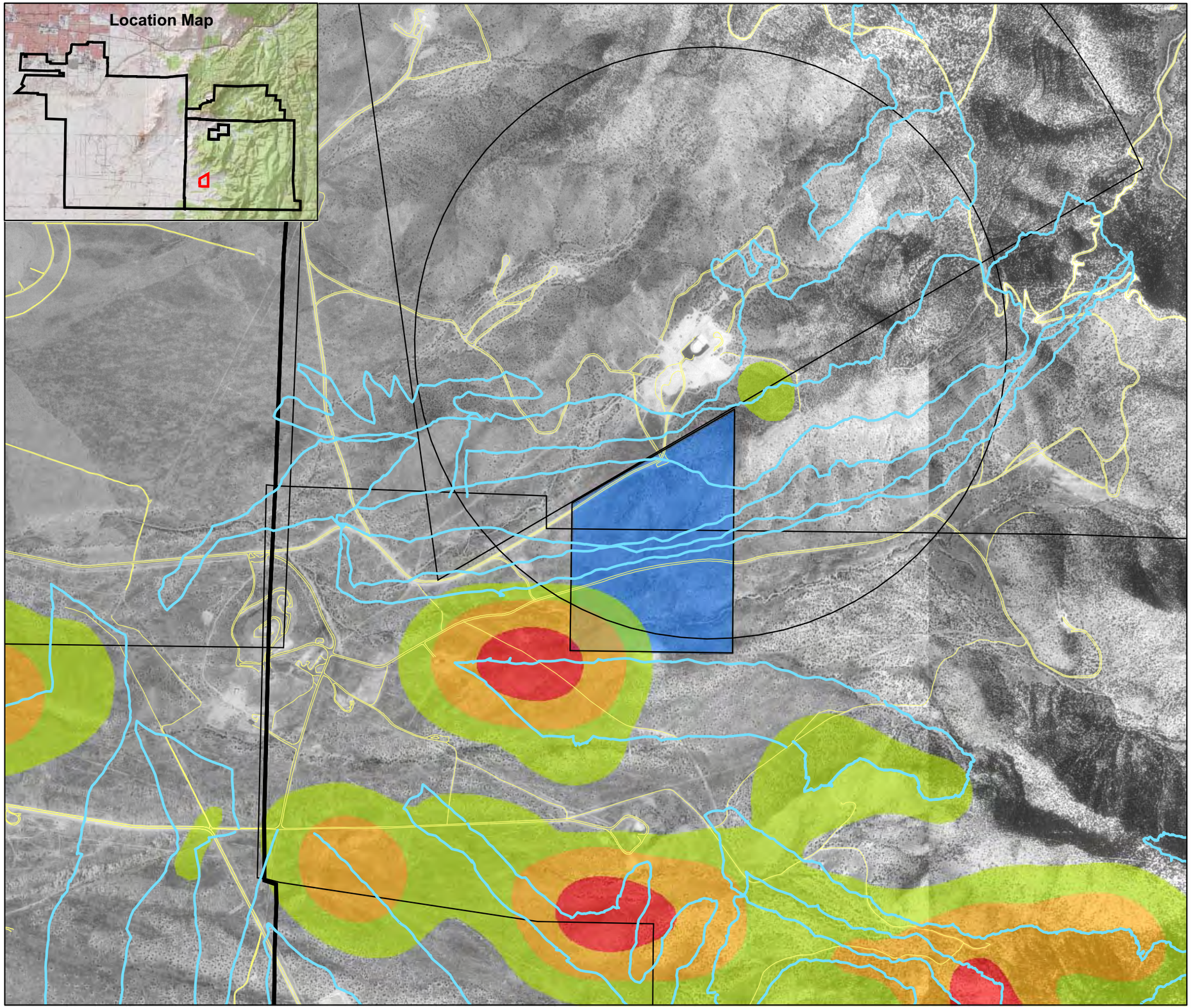

N

400 200 0 400

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-19

Density of Surface Anomalies and Locations of MEC

MU772
H-25 Site

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

Recon Data
Label
- UXO
- MPPEH
- MD
- UXO- 5" Round found by Shaw
- Traversed Transects
- Roads
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

Anomalies Per Acre
- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1" = 400 m	Rev: 4
Checked By:		Date Drawn: 1-31-2006	
Submitted By:	DS	Revision Date: 01-18-2007	

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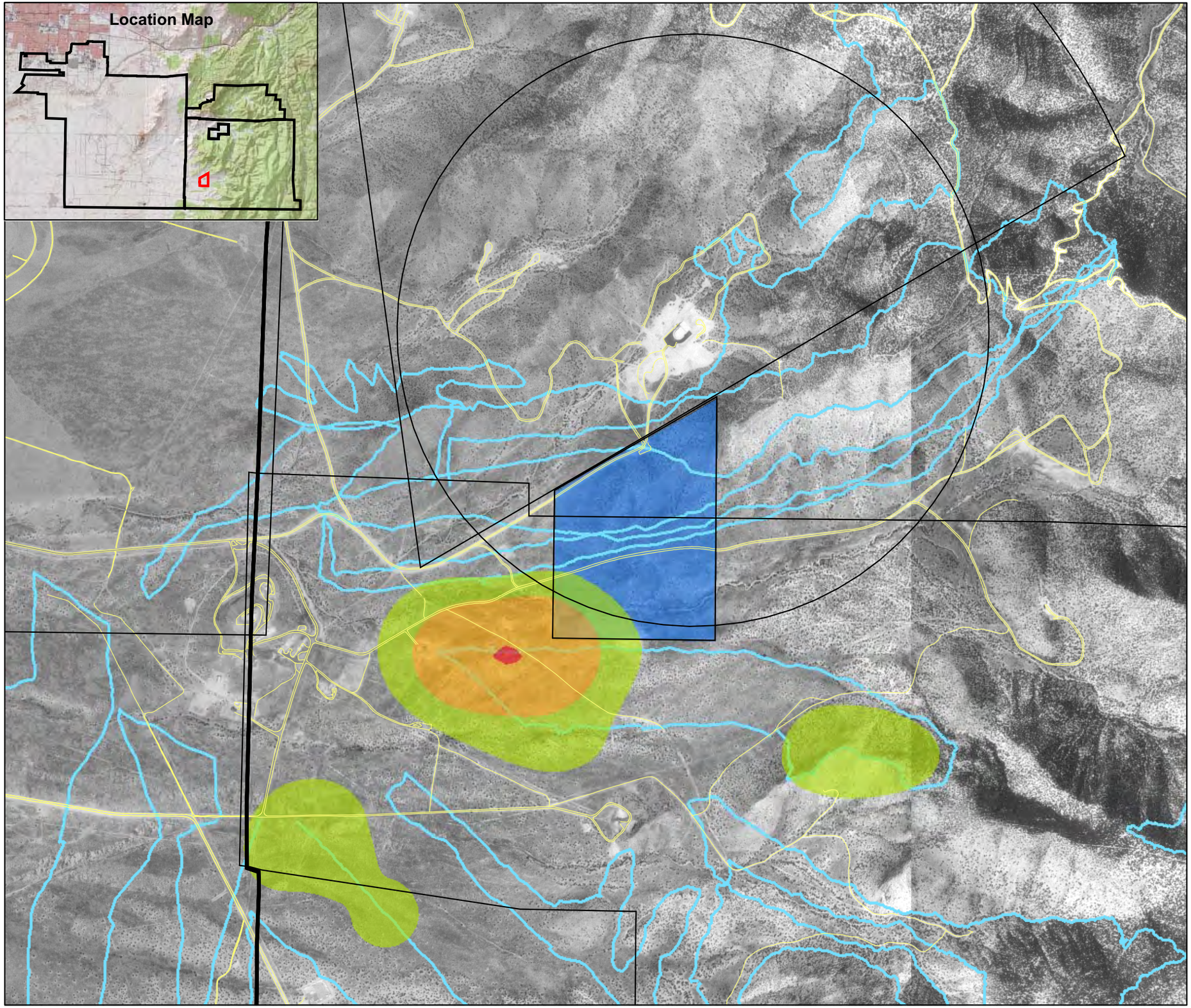

N

400 200 0 400

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-20

Density of Subsurface Anomalies

MU772
H-25 Site

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Traversed Transects
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

Anomalies Per Acre

- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale:	1" = 400 m	Rev:	4
Checked By:		Date Drawn:	1-31-2006		
Submitted By:	DS	Revision Date:	01-18-2007		

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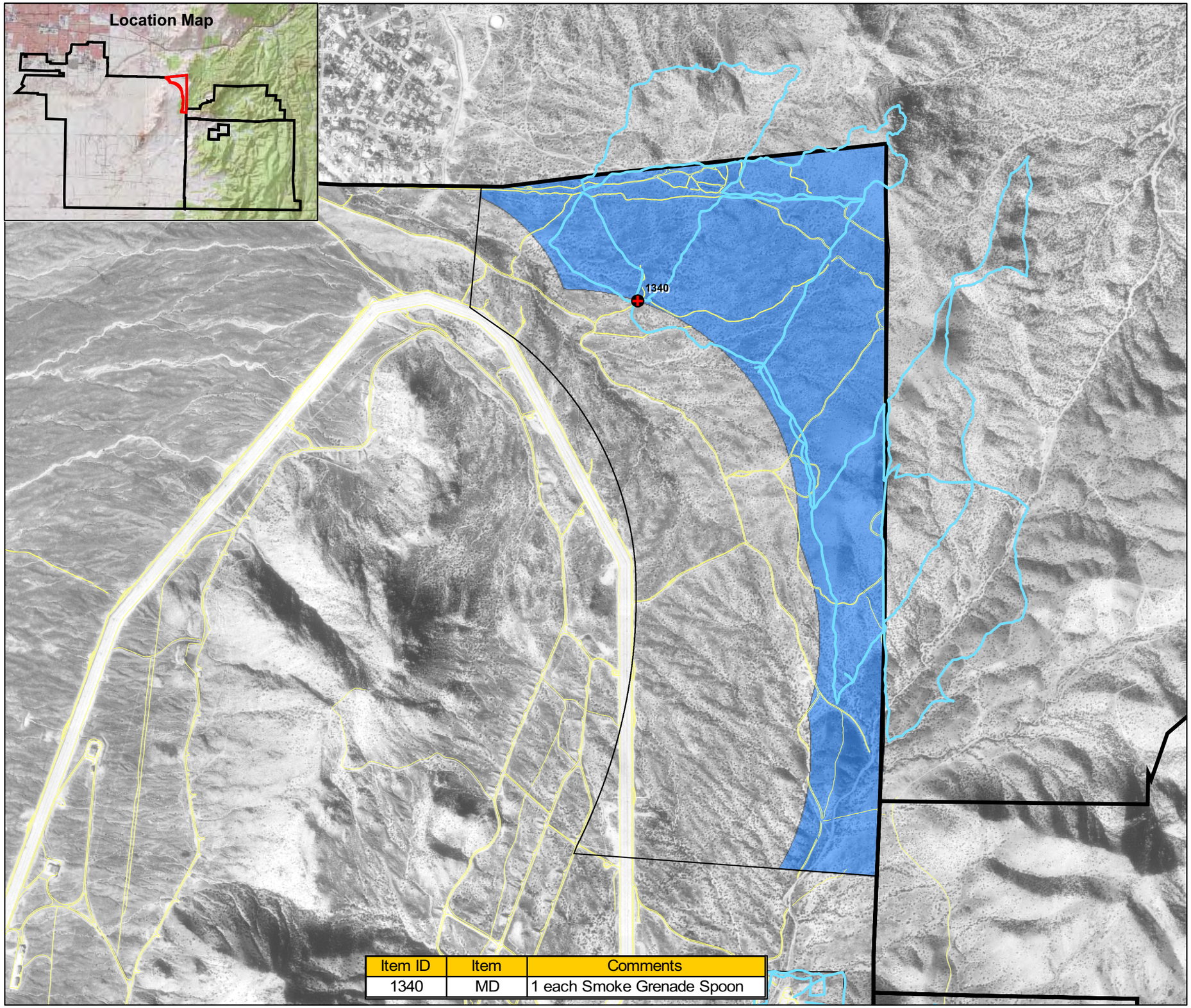

Item ID	Item	Comments
1340	MD	1 each Smoke Grenade Spoon

N

400 200 0 400

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-21

Density of Surface Anomalies and Locations of MEC

PT123
Tijeras Small Arms Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

Recon Data
Label
- UXO
- MPPEH
- MD
- UXO- 5" Round found by Shaw
- Traversed Transects
- Roads
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

ANomalies Per Acre
- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1" = 400 m	Rev: 4
Checked By:		Date Drawn: 1-31-2006	
Submitted By:	DS	Revision Date: 01-18-2007	

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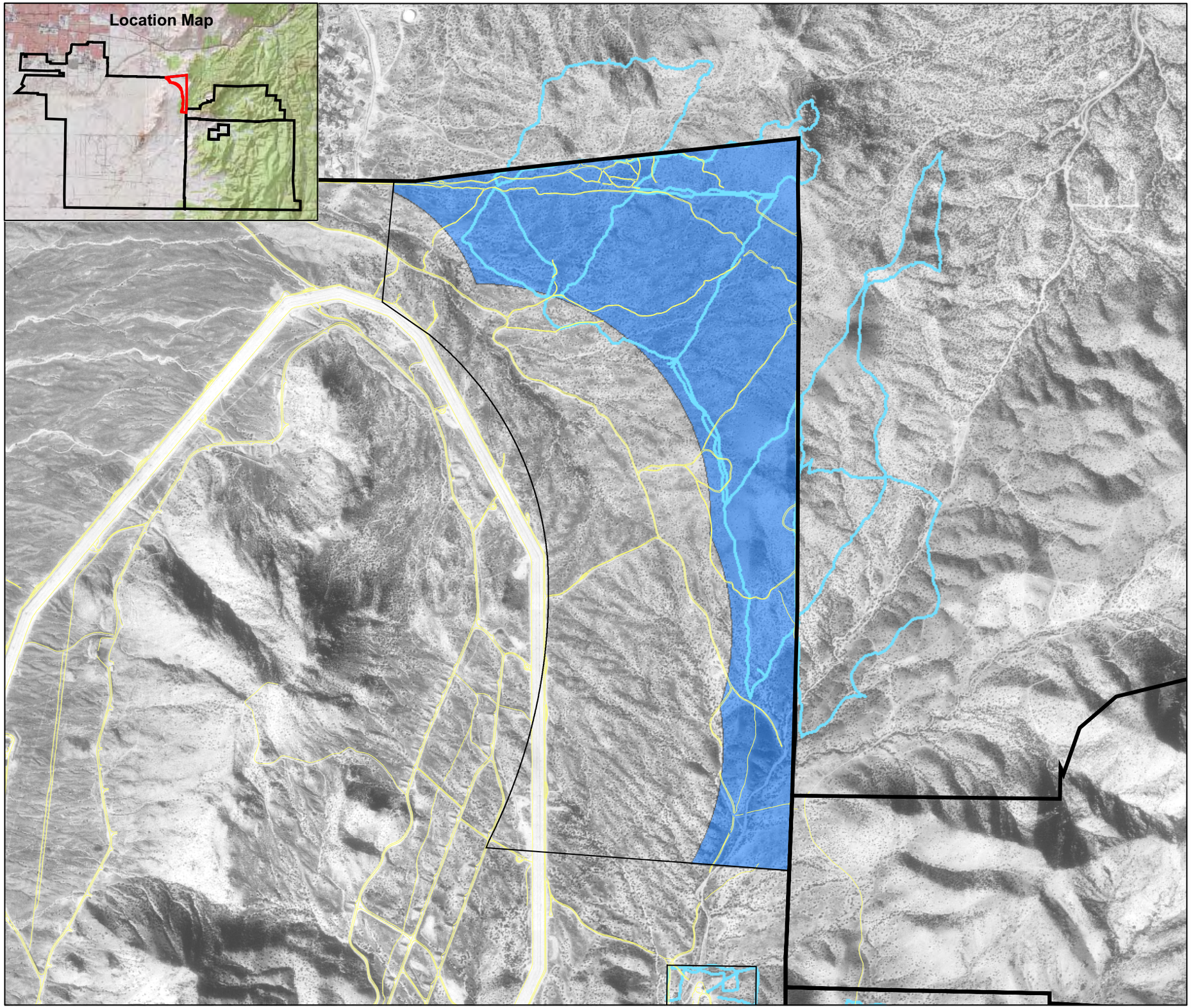

N

400 200 0 400

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-22

Density of Subsurface Anomalies

PT123
Tijeras Small Arms Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Traversed Transects
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

Anomalies Per Acre

- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1" = 400 m	Rev: 4
Checked By:		Date Drawn: 1-31-2006	
Submitted By:	DS	Revision Date: 01-18-2007	

Path:
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5-22 PT123_Subsurface.mxd

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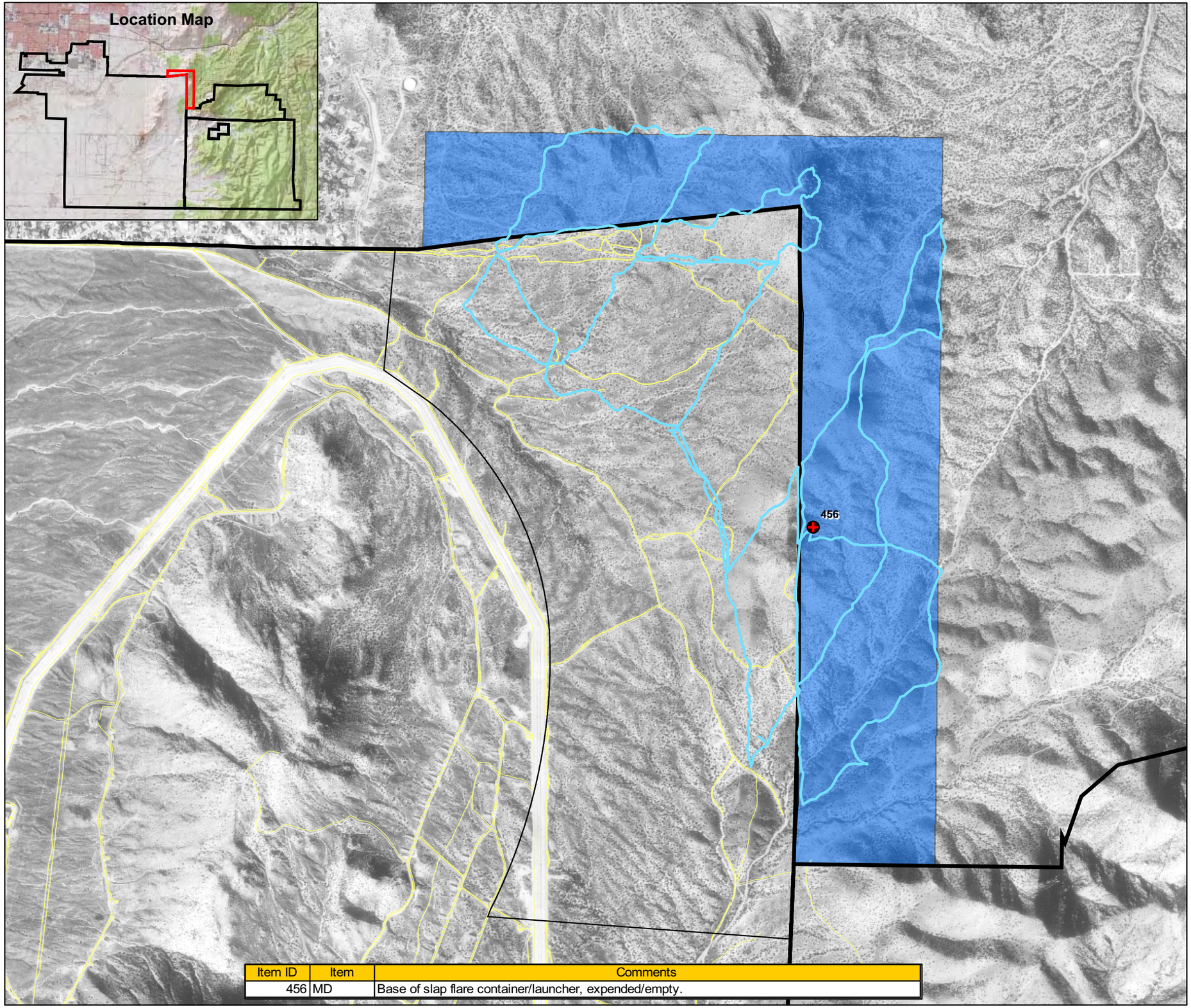

Item ID	Item	Comments
456	MD	Base of slap flare container/launcher, expended/empty.

N

400 200 0 400

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-23

Density of Surface Anomalies and Locations of MEC

PT761
Tijeras Small Arms Training Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

Recon Data
Label
- UXO
- MPPEH
- MD
- UXO- 5" Round found by Shaw
- Traversed Transects

- Roads
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

ANomalies Per Acre
- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1" = 400 m	Rev: 4
Checked By:		Date Drawn: 1-31-2006	
Submitted By:	DS	Revision Date: 01-18-2007	

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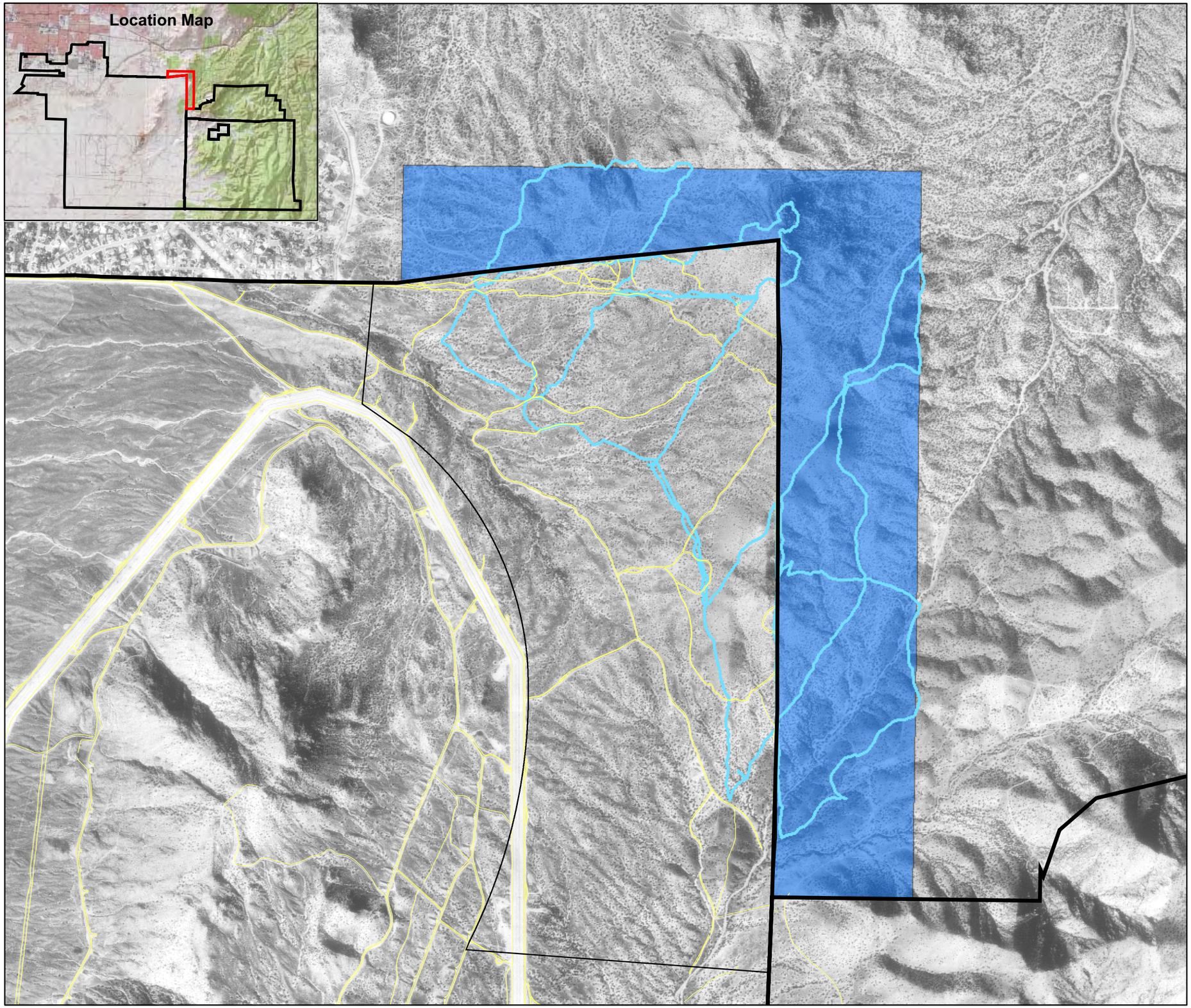

N

400 200 0 400

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-24

Density of Subsurface Anomalies

PT761
Tijeras Small Arms Training Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Traversed Transects
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

Anomalies Per Acre

- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1" = 400 m	Rev: 4
Checked By:		Date Drawn: 1-31-2006	
Submitted By:	DS	Revision Date: 01-18-2007	

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5-24 PT761_Subsurface.mxd

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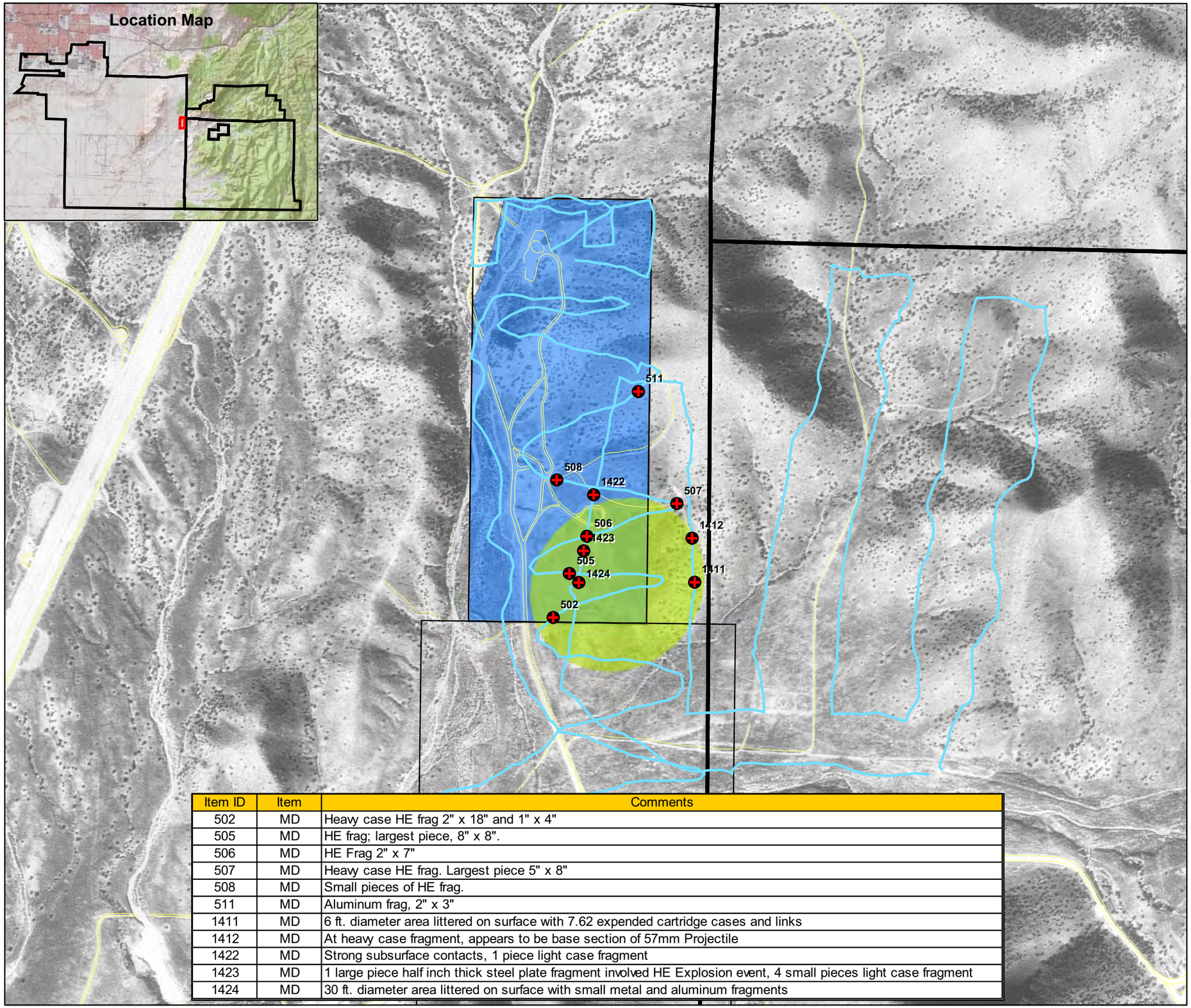

Item ID	Item	Comments
502	MD	Heavy case HE frag 2" x 18" and 1" x 4"
505	MD	HE frag; largest piece, 8" x 8".
506	MD	HE Frag 2" x 7"
507	MD	Heavy case HE frag. Largest piece 5" x 8"
508	MD	Small pieces of HE frag.
511	MD	Aluminum frag, 2" x 3"
1411	MD	6 ft. diameter area littered on surface with 7.62 expended cartridge cases and links
1412	MD	At heavy case fragment, appears to be base section of 57mm Projectile
1422	MD	Strong subsurface contacts, 1 piece light case fragment
1423	MD	1 large piece half inch thick steel plate fragment involved HE Explosion event, 4 small pieces light case fragment
1424	MD	30 ft. diameter area littered on surface with small metal and aluminum fragments

N

200 100 0 200
Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-25

Density of Surface Anomalies and Locations of MEC

PT773
Coyote Canyon Tech Site

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

Recon Data
Label
- UXO
- MPPEH
- MD
- UXO- 5" Round found by Shaw
- Traversed Transects
- Roads
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

ANomalies Per Acre
- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By: JAL	Scale: 1" = 200 m	Rev: 4	
Checked By:	Date Drawn: 1-31-2006		
Submitted By: DS	Revision Date: 01-18-2007		

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5-25 PT773_MEC.mxd

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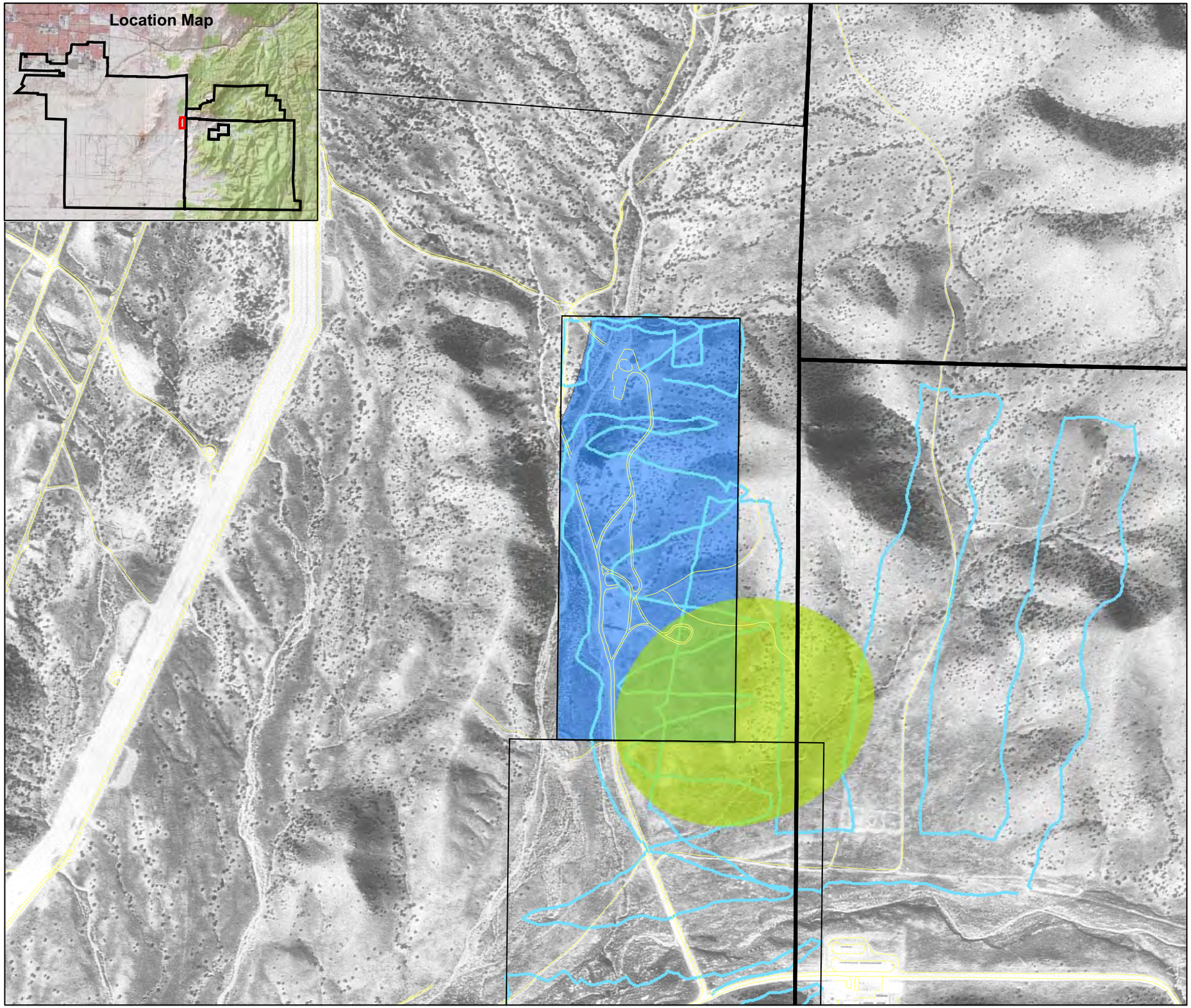

N

200 100 0 200

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-26

Density of Subsurface Anomalies

PT773
Coyote Canyon Tech Site

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Traversed Transects
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

Anomalies Per Acre

- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1" = 200 m	Rev: 4
Checked By:		Date Drawn: 1-31-2006	
Submitted By:	DS	Revision Date: 01-18-2007	

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5-26 PT773_Subsurface.mxd

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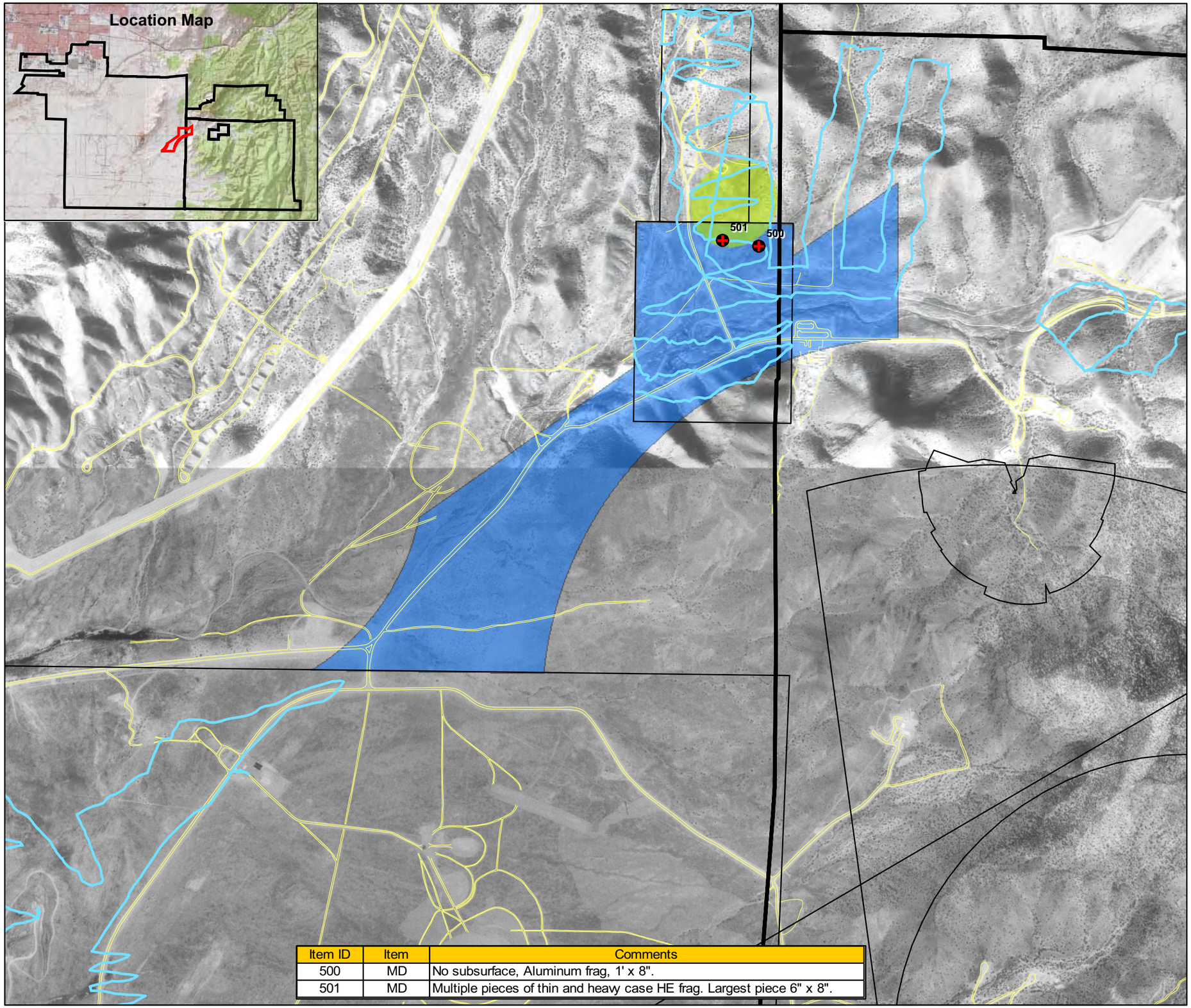

Item ID	Item	Comments
500	MD	No subsurface, Aluminum frag, 1' x 8".
501	MD	Multiple pieces of thin and heavy case HE frag. Largest piece 6" x 8".

N

400 200 0 400

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-27

Density of Surface Anomalies and Locations of MEC

PT783
Bazooka Training Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

Recon Data
Label
- UXO
- MPPEH
- MD
- UXO- 5" Round found by Shaw
- Traversed Transects
- Roads
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

ANomalies Per Acre
- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1" = 400 m	Rev: 4
Checked By:		Date Drawn: 1-31-2006	
Submitted By:	DS	Revision Date: 01-18-2007	

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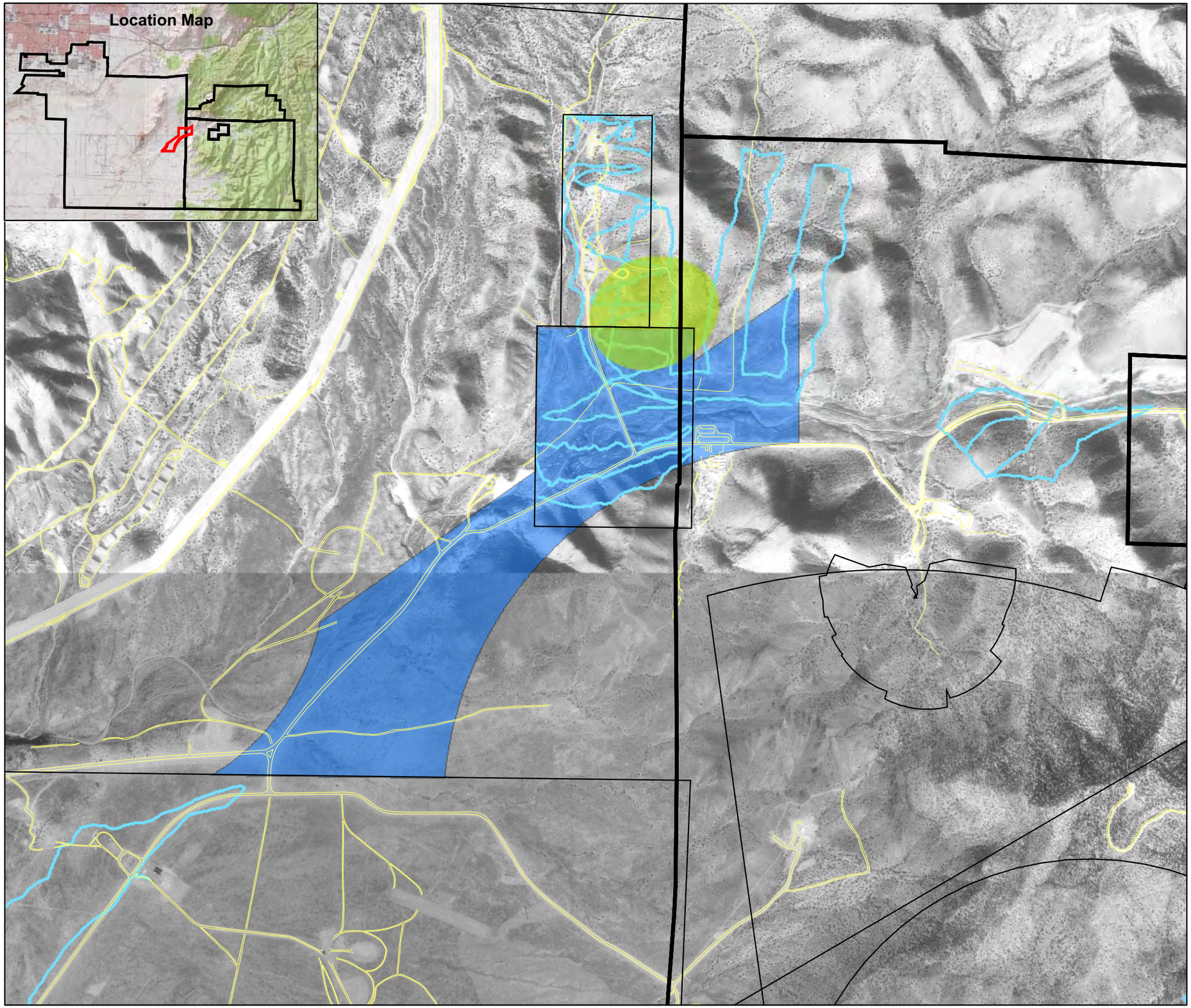

N

400 200 0 400

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-28

Density of Subsurface Anomalies

PT783
Bazooka Training Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Traversed Transects
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

Anomalies Per Acre

- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1" = 400 m	Rev: 4
Checked By:		Date Drawn: 1-31-2006	
Submitted By:	DS	Revision Date: 01-18-2007	

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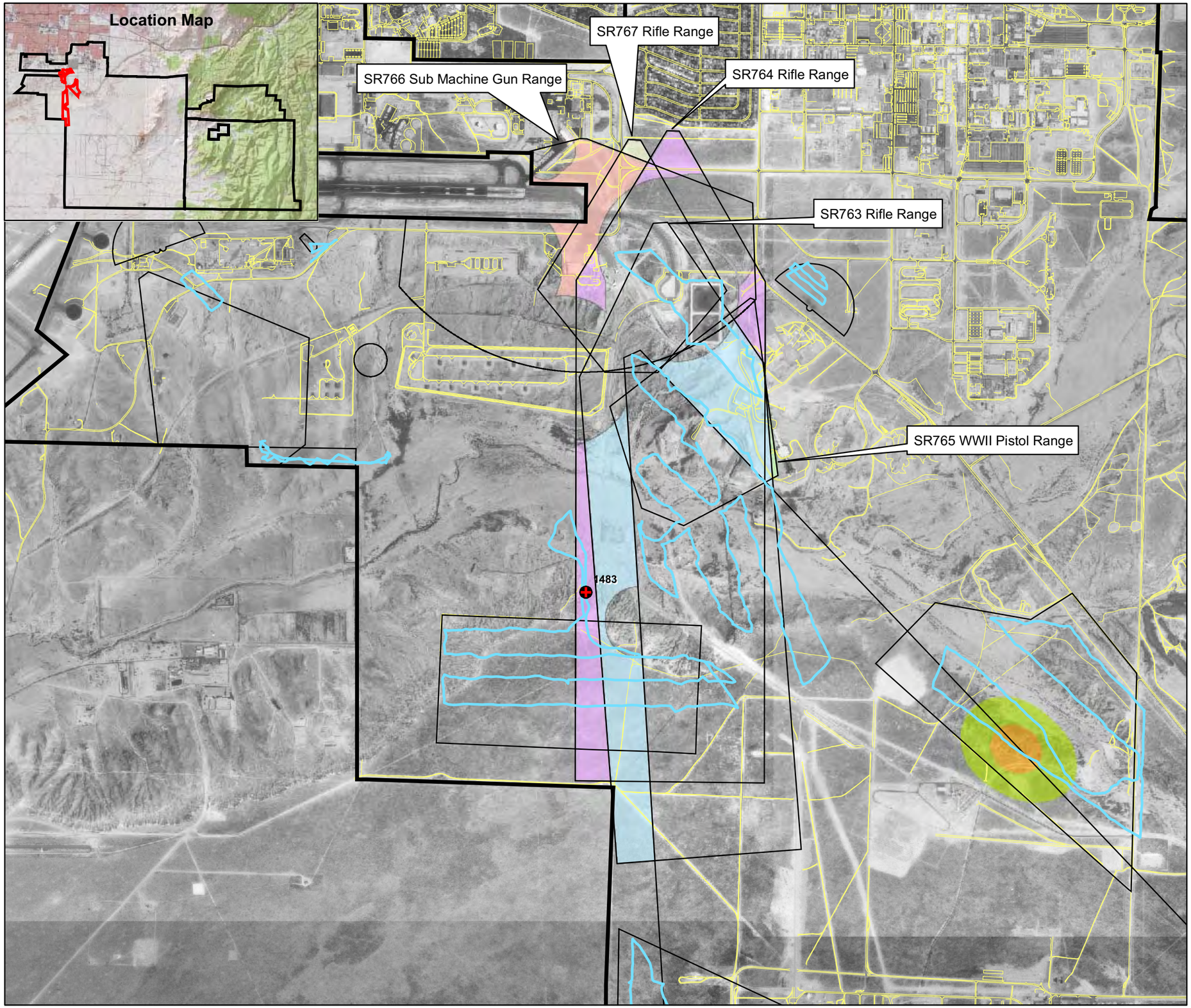

N

600 300 0 600
Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-29

Density of Surface Anomalies and Locations of MEC

SR763, SR764, SR765, SR766, SR767

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

Recon Data
Label
- UXO
- MPPEH
- MD
- UXO- 5" Round found by Shaw
- Traversed Transects
- Roads
- Historic Ranges
- KAFB Boundary

ANomalies Per Acre
- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

Range ID
- SR763
- SR764
- SR765
- SR766
- SR767

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale:	1" = 600 m	Rev:	6
Checked By:		Date Drawn:	1-31-2006		
Submitted By:	DS	Revision Date:	02-02-2007		

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5-29 _small_arms_MEC.mxd

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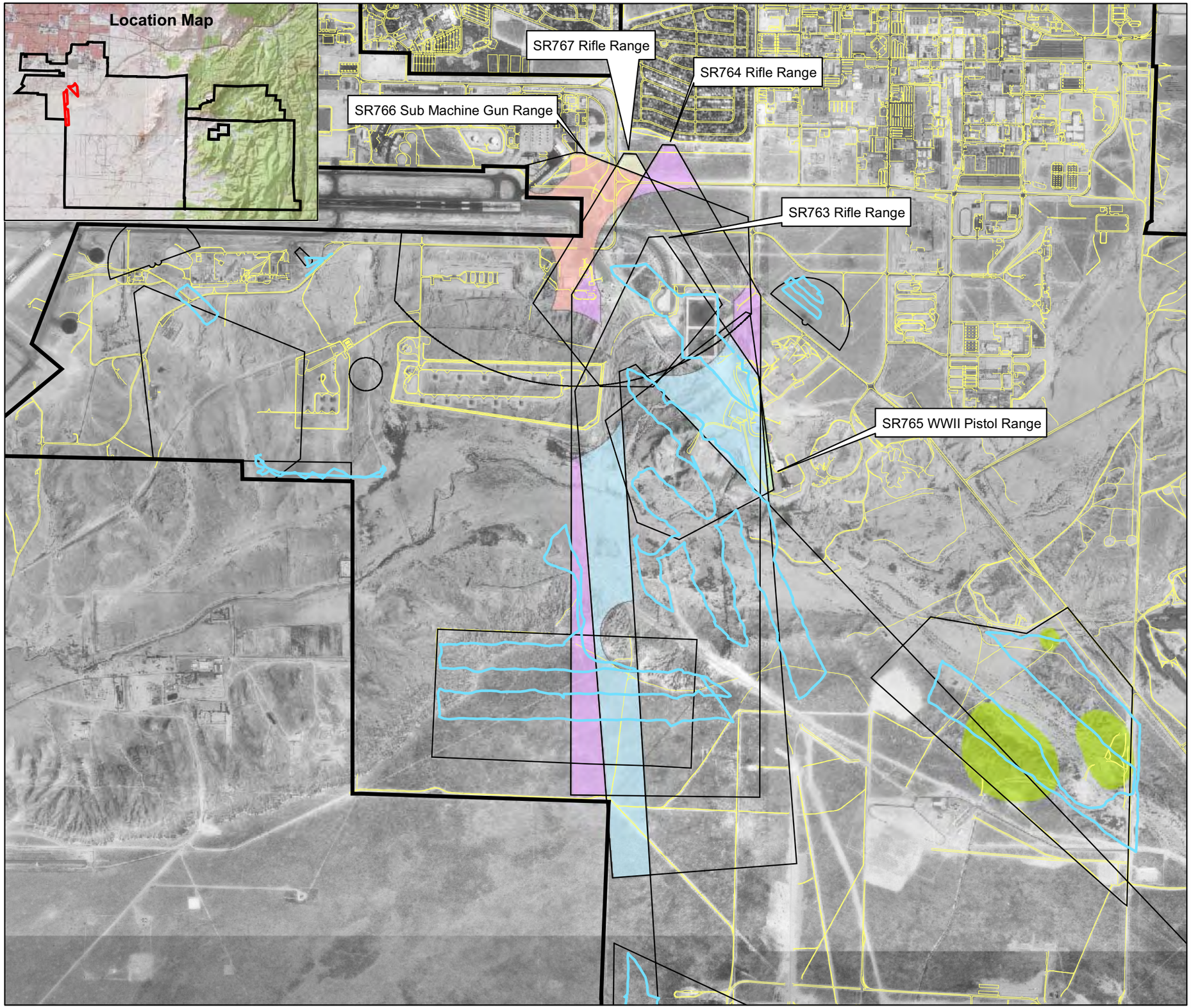

N

600 300 0 600
Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-30

Density of Subsurface Anomalies

SR763, SR764, SR765, SR766, SR767

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Traversed Transects
- Roads
- Historic Ranges
- KAFB Boundary

subsurface Anomalies Per Acre

- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

Range ID

- SR763
- SR764
- SR765
- SR766
- SR767

USA Environmental, Inc.		US Army Corps Of Engineers Omaha District	
Drawn By:	JAL	Scale: 1" = 600 m	Rev: 6
Checked By:		Date Drawn: 1-31-2006	
Submitted By:	DS	Revision Date: 02-02-2007	

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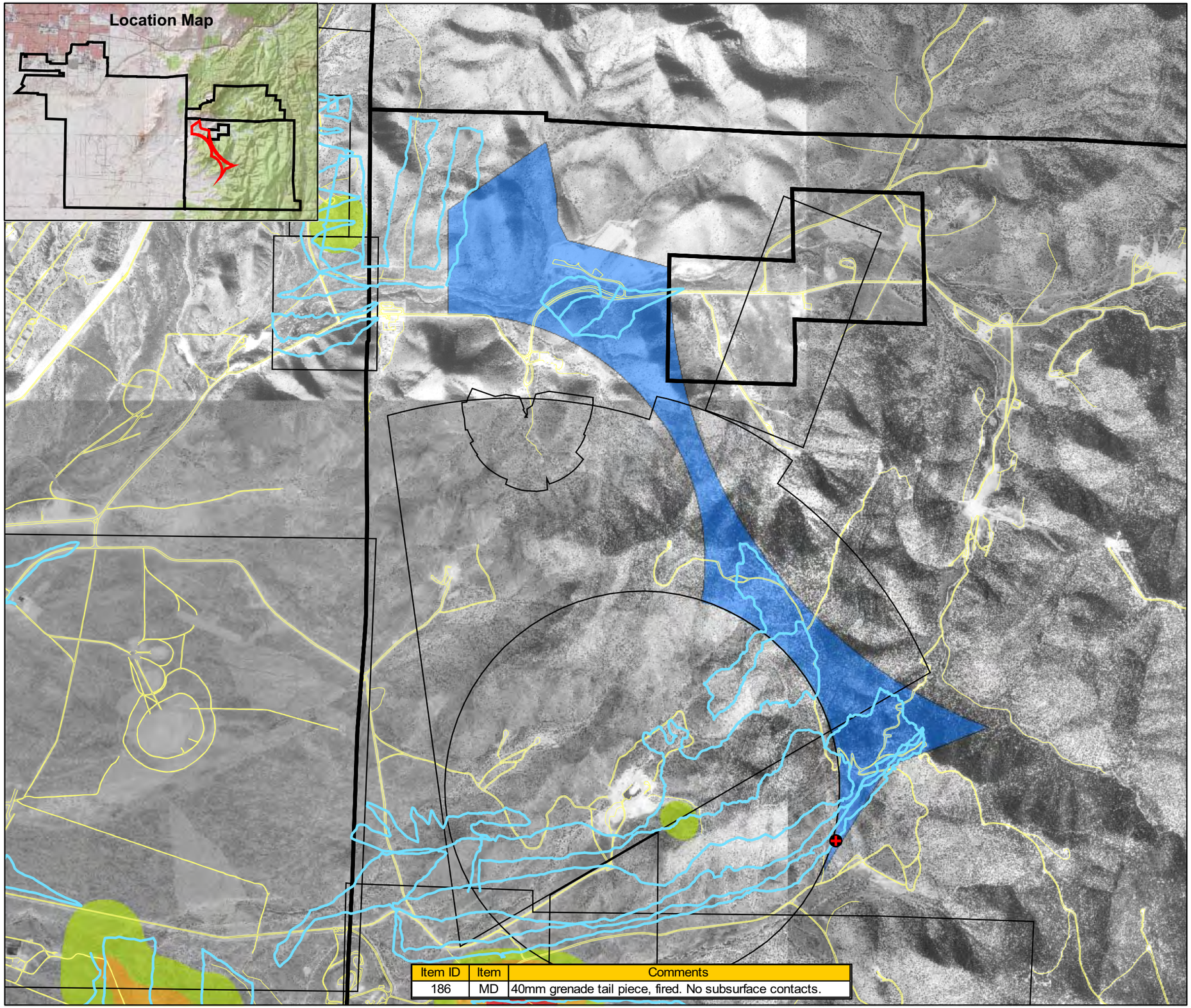

Item ID	Item	Comments
186	MD	40mm grenade tail piece, fired. No subsurface contacts.

N

600 300 0 600

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-31

Density of Surface Anomalies and Locations of MEC

SR768
Close Combat Infiltration Course

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

Recon Data
Label
- UXO
- MPPEH
- MD
- UXO- 5" Round found by Shaw
- Traversed Transects
- Roads
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

ANomalies Per Acre
- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By: JAL	Scale: 1" = 600 m	Rev: 4	
Checked By:	Date Drawn: 1-31-2006		
Submitted By: DS	Revision Date: 01-18-2007		

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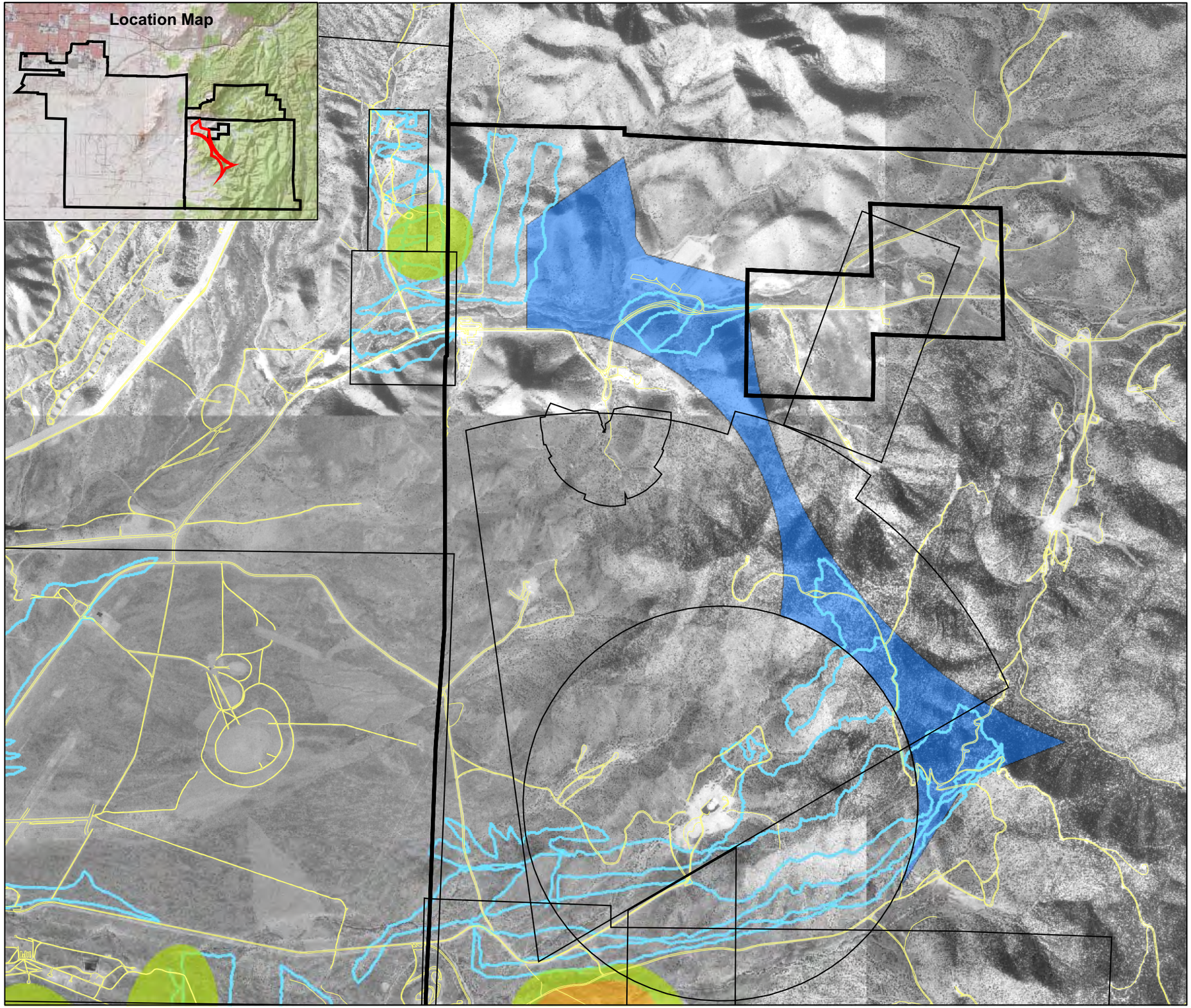

N

600 300 0 600

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-32

Density of Subsurface Anomalies

SR768
Close Combat Inflitration Course

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Traversed Transects
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

Anomalies Per Acre

- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.	**US Army Corps Of Engineers Omaha District**

Drawn By:	JAL	Scale:	1" = 600 m	Rev: 4
Checked By:		Date Drawn:	1-31-2006	
Submitted By:	DS	Revision Date:	01-18-2007	

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5-32 SR768_Subsurface.mxd

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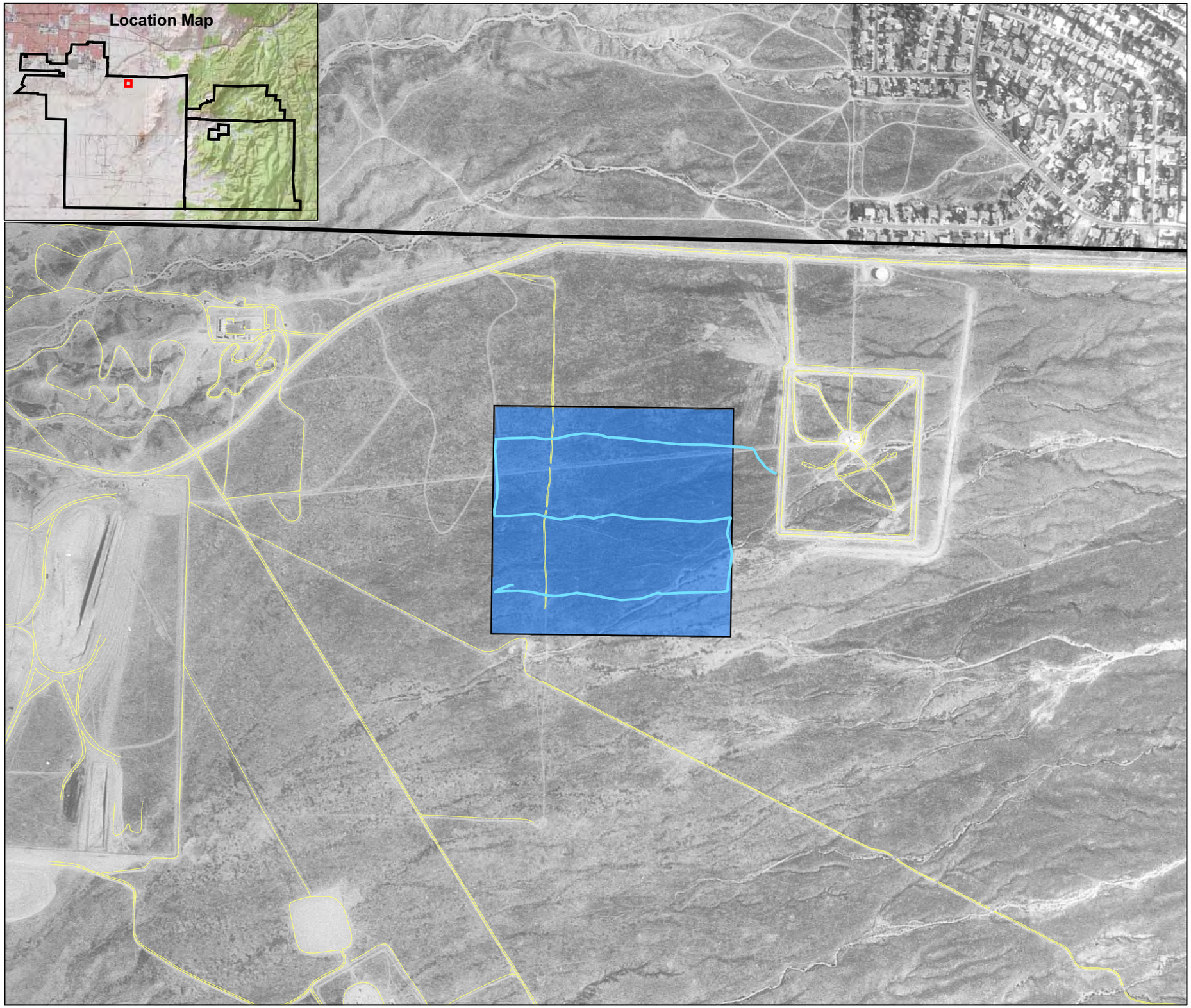

N

200 100 0 200

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-33

Density of Surface Anomalies and Locations of MEC

SR777
Rifle Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

Recon Data
Label
- UXO
- MPPEH
- MD
- UXO- 5" Round found by Shaw
- Traversed Transects
- Roads
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

ANomalies Per Acre
- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1" = 200 m	Rev: 6
Checked By:		Date Drawn: 1-31-2006	
Submitted By:	DS	Revision Date: 02-05-2007	

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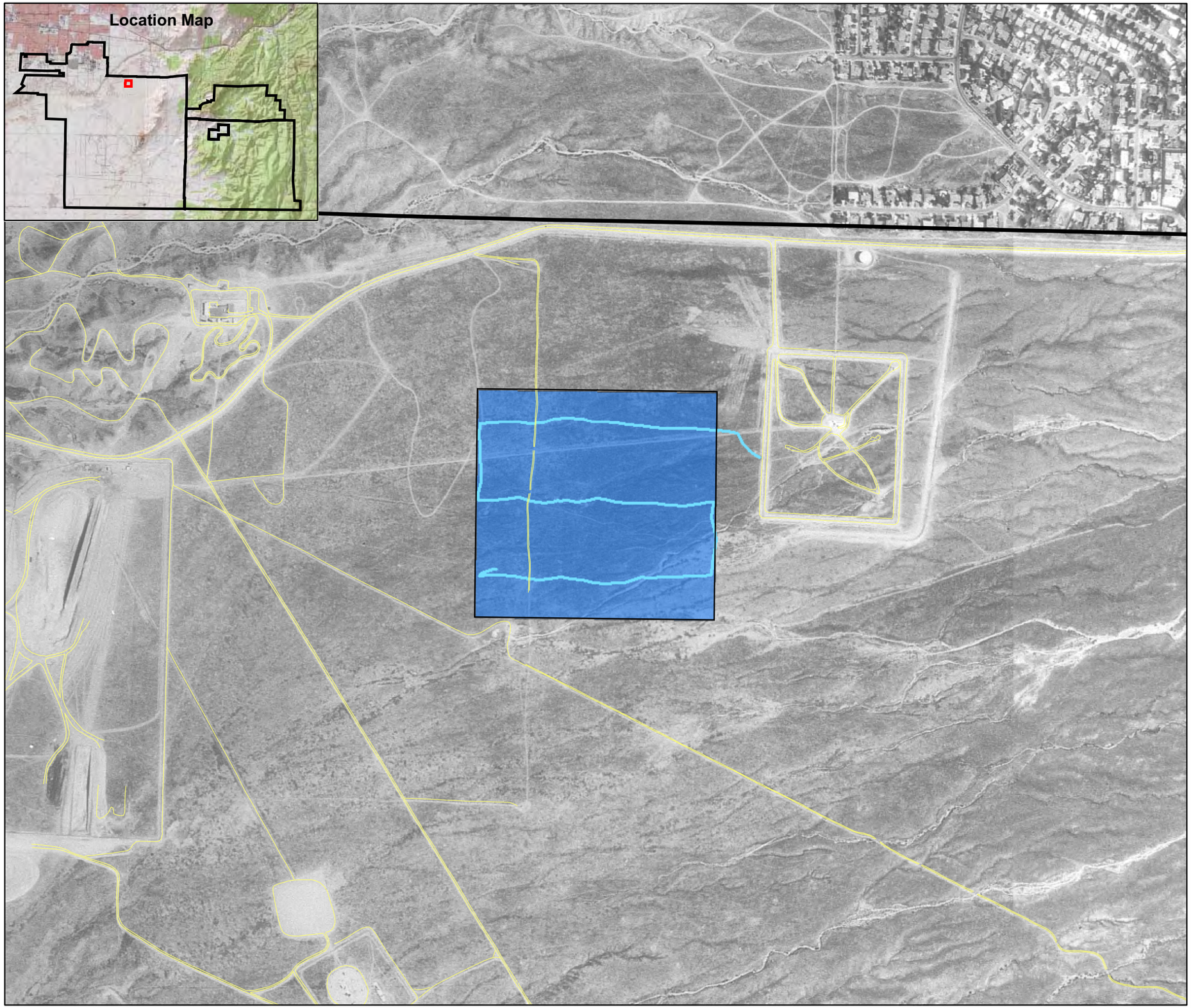

N

200 100 0 200

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-34

Density of Subsurface Anomalies

SR777
Rifle Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Traversed Transects
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

Anomalies Per Acre

- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.	US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale:	1" = 200 m	Rev:	5
Checked By:		Date Drawn:	1-31-2006		
Submitted By:	DS	Revision Date:	02-05-2007		

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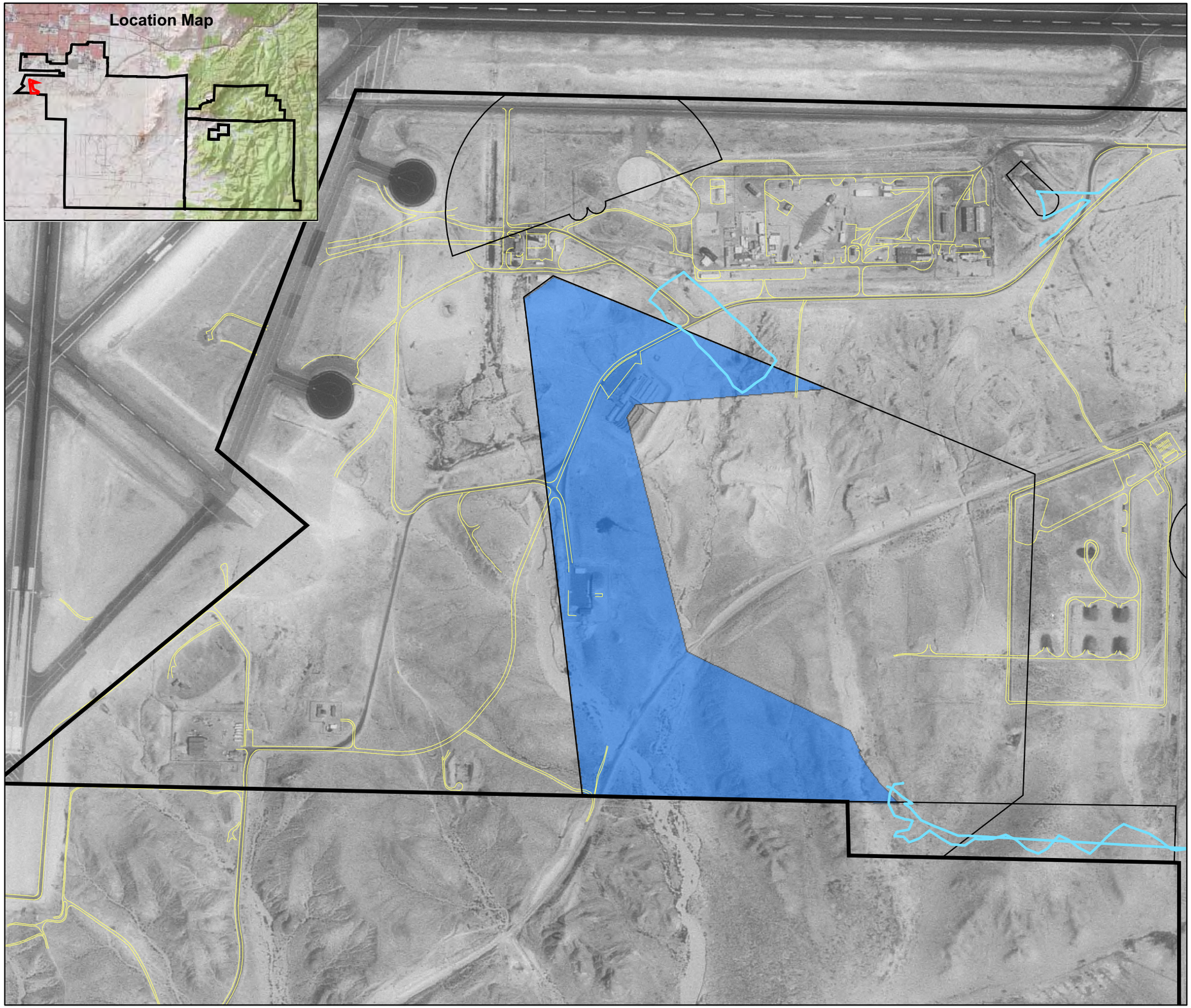

N

200 100 0 200

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-35

Density of Surface Anomalies and Locations of MEC

SR778
Airfield Pistol Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

Recon Data
Label
- UXO
- MPPEH
- MD
- UXO- 5" Round found by Shaw
- Traversed Transects

- Roads
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

Anomalies Per Acre
- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

USA Environmental, Inc.

US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1" = 200 m	Rev: 5
Checked By:		Date Drawn: 1-31-2006	
Submitted By:	DS	Revision Date: 02-05-2007	

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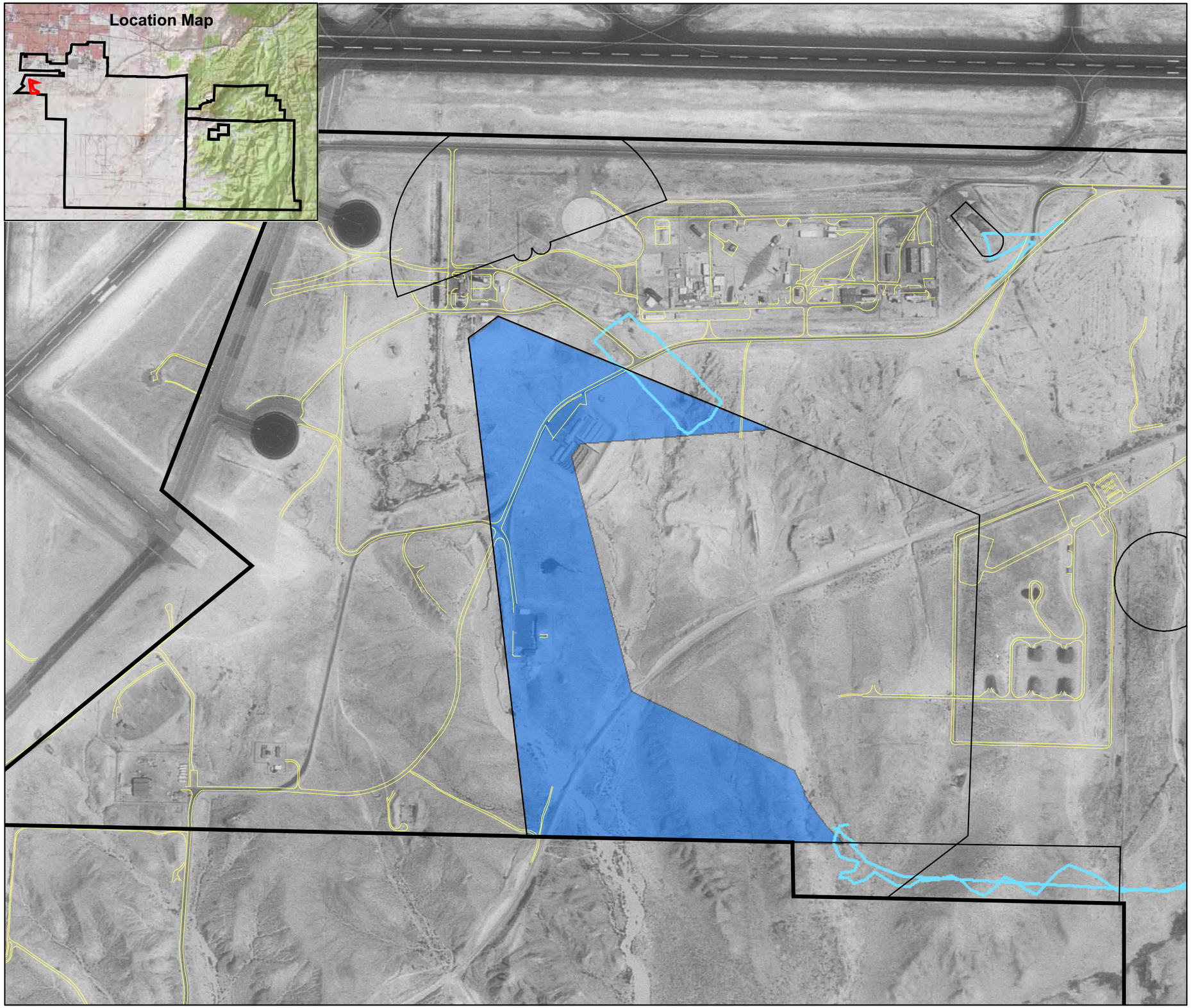

N

200 100 0 200

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-36

Density of Subsurface Anomalies

SR778
Airfield Pistol Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Traversed Transects
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

Anomalies Per Acre

- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

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US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1" = 200 m	Rev: 6
Checked By:		Date Drawn: 1-31-2006	
Submitted By:	DS	Revision Date: 02-05-2007	

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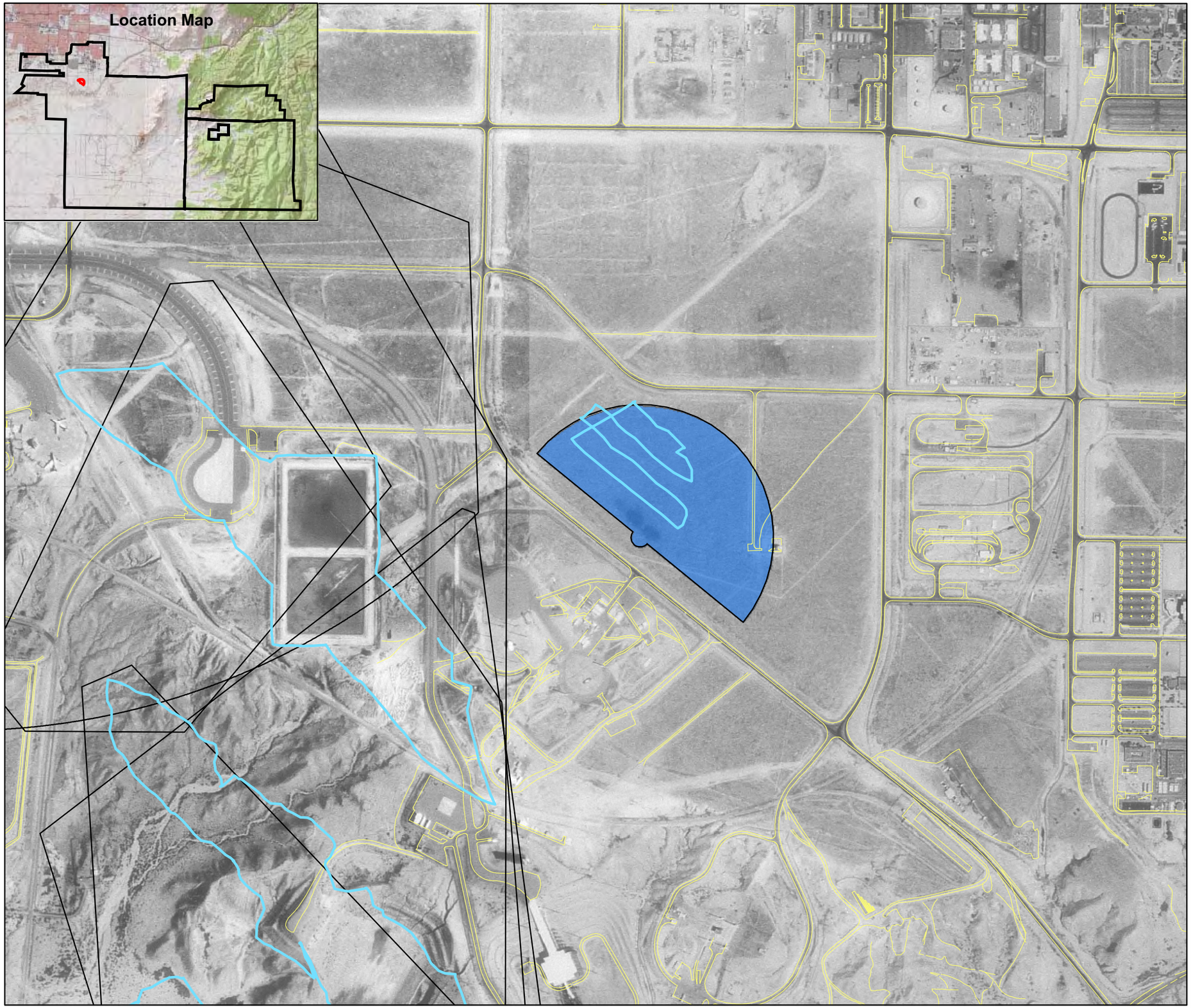

N

200 100 0 200

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-37

Density of Surface Anomalies and Locations of MEC

TS776
Skeet Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

Recon Data
Label
- UXO
- MPPEH
- MD
- UXO- 5" Round found by Shaw
- Traversed Transects
- Roads
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

Anomalies Per Acre
- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

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Drawn By:	JAL	Scale: 1" = 200 m	Rev: 6
Checked By:		Date Drawn: 1-31-2006	
Submitted By:	DS	Revision Date: 02-05-2007	

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5-37 SR776_MEC.mxd

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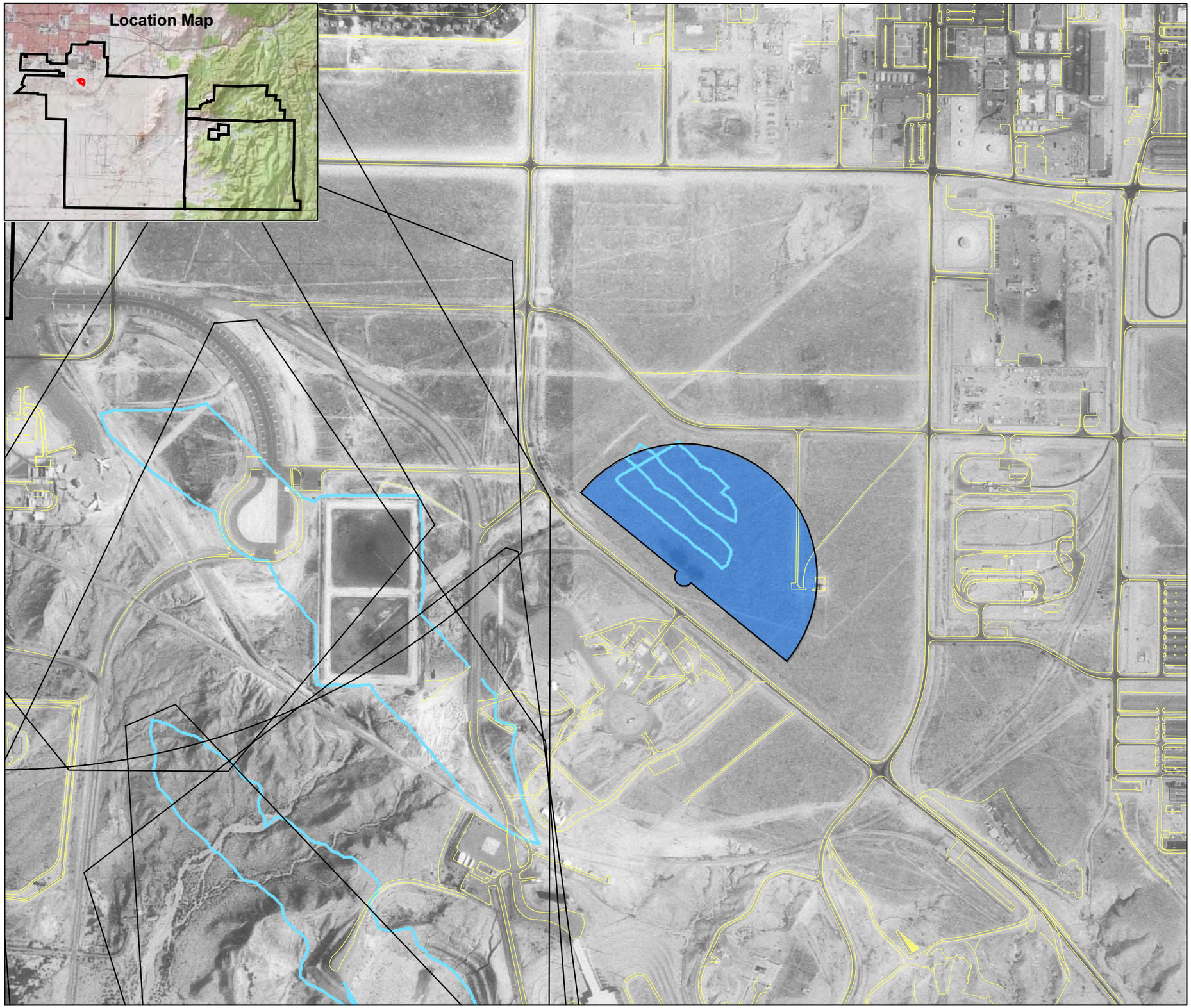

N

200 100 0 200

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-38

Density of Subsurface Anomalies

TS776
Skeet Range

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Traversed Transects
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

Anomalies Per Acre

- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

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Drawn By:	JAL	Scale: 1" = 200 m	Rev: 5
Checked By:		Date Drawn: 1-31-2006	
Submitted By:	DS	Revision Date: 02-05-2007	

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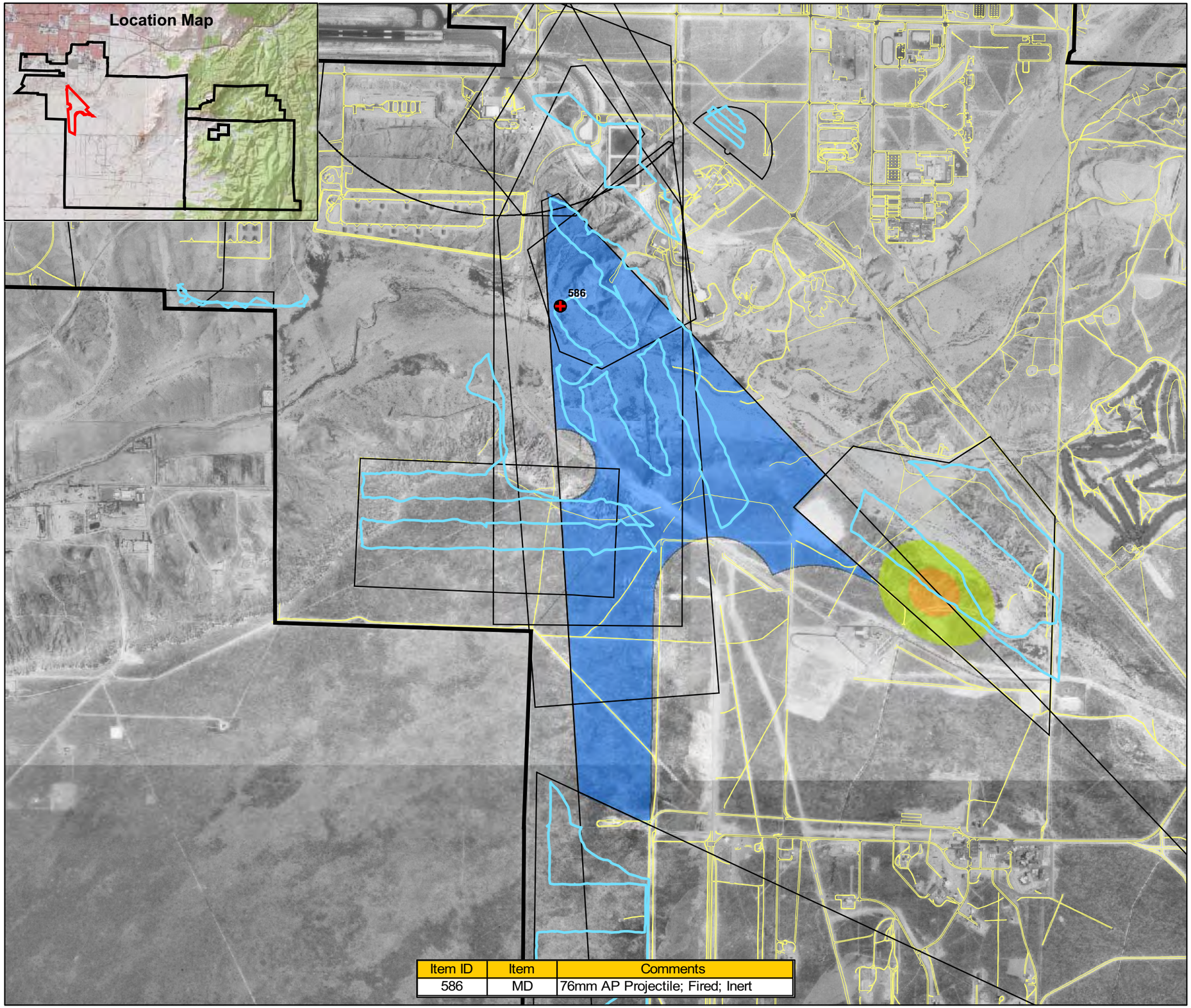

Item ID	Item	Comments
586	MD	76mm AP Projectile; Fired; Inert

N

600 300 0 600

Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-39

Density of Surface Anomalies and Locations of MEC

Sandia Base Howitzer Range (New MRA)

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

Recon Data

Label

- UXO
- MPPEH
- MD
- UXO- 5" Round found by Shaw
- Traversed Transects
- Roads
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

ANomalies Per Acre

- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

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US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale: 1" = 600 m	Rev: 5
Checked By:		Date Drawn: 1-31-2006	
Submitted By:	DS	Revision Date: 02-05-2007	

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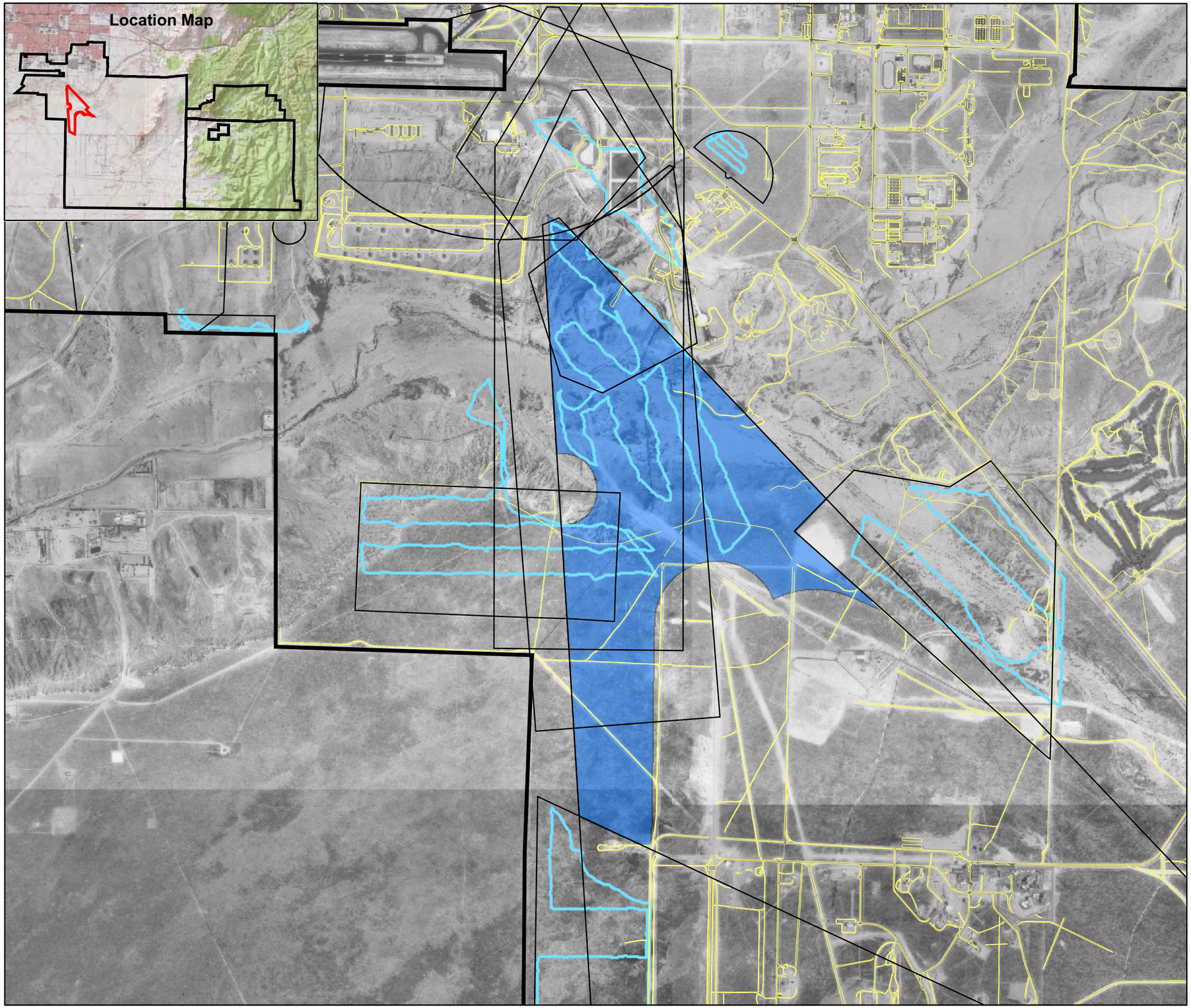

N

600 300 0 600
Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-40

Density of Subsurface Anomalies

Sandia Base Howitzer Range (New MRA)

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Traversed Transects
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

Anomalies Per Acre

- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

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Drawn By:	JAL	Scale:	1" = 600 m	Rev: 5
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Submitted By:	DS	Revision Date:	02-05-2007	

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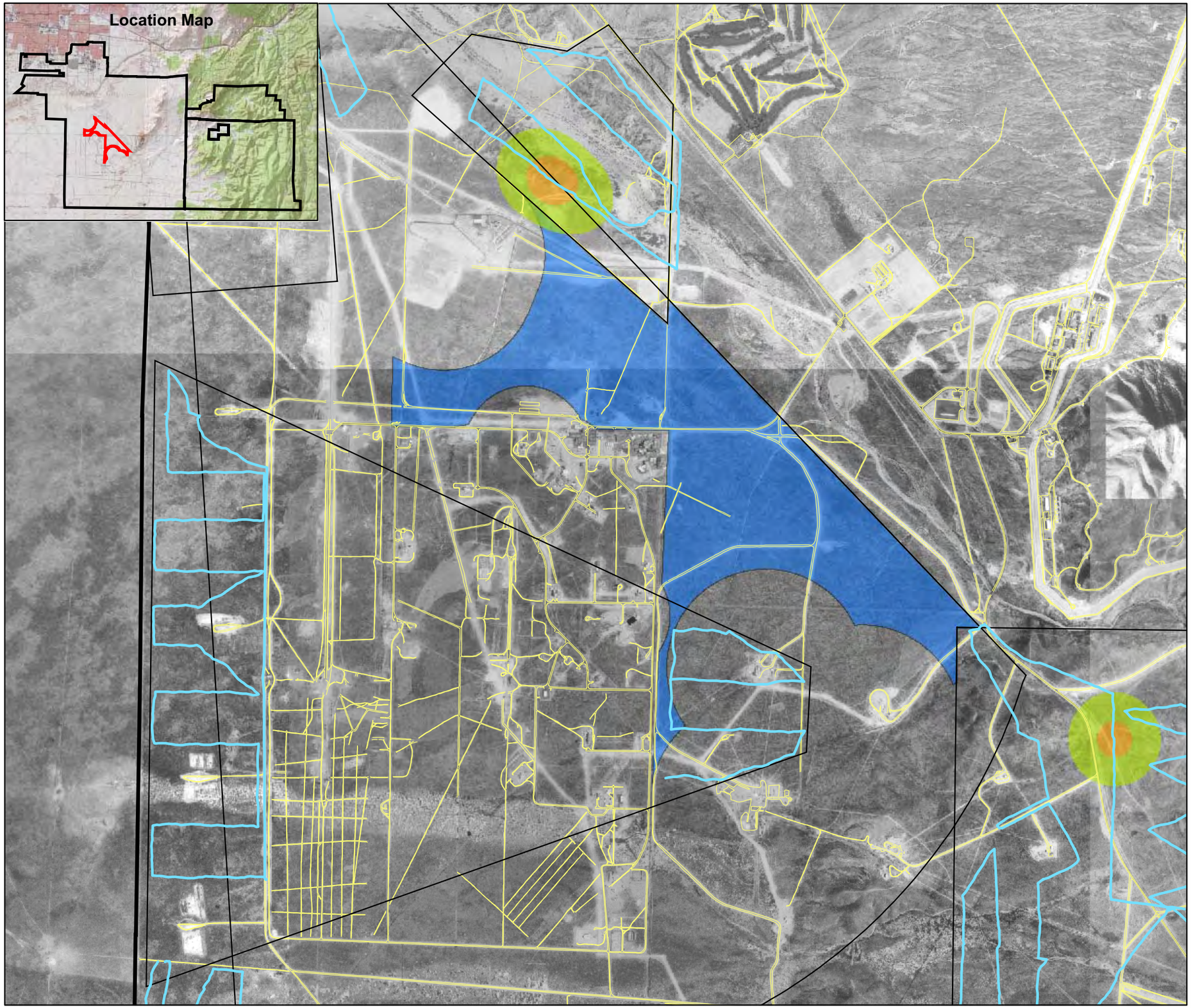

N

600 300 0 600
Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-41

Density of Surface Anomalies and Locations of MEC

Sandia Base Howitzer Range Buffer (New MRA)

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

Recon Data
Label
- UXO
- MPPEH
- MD
- UXO- 5" Round found by Shaw
- Traversed Transects
- Roads
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

ANomalies Per Acre
- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

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US Army Corps Of Engineers Omaha District

Drawn By: JAL	Scale: 1" = 600 m	Rev: 4	
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Submitted By: DS	Revision Date: 02-05-2007		

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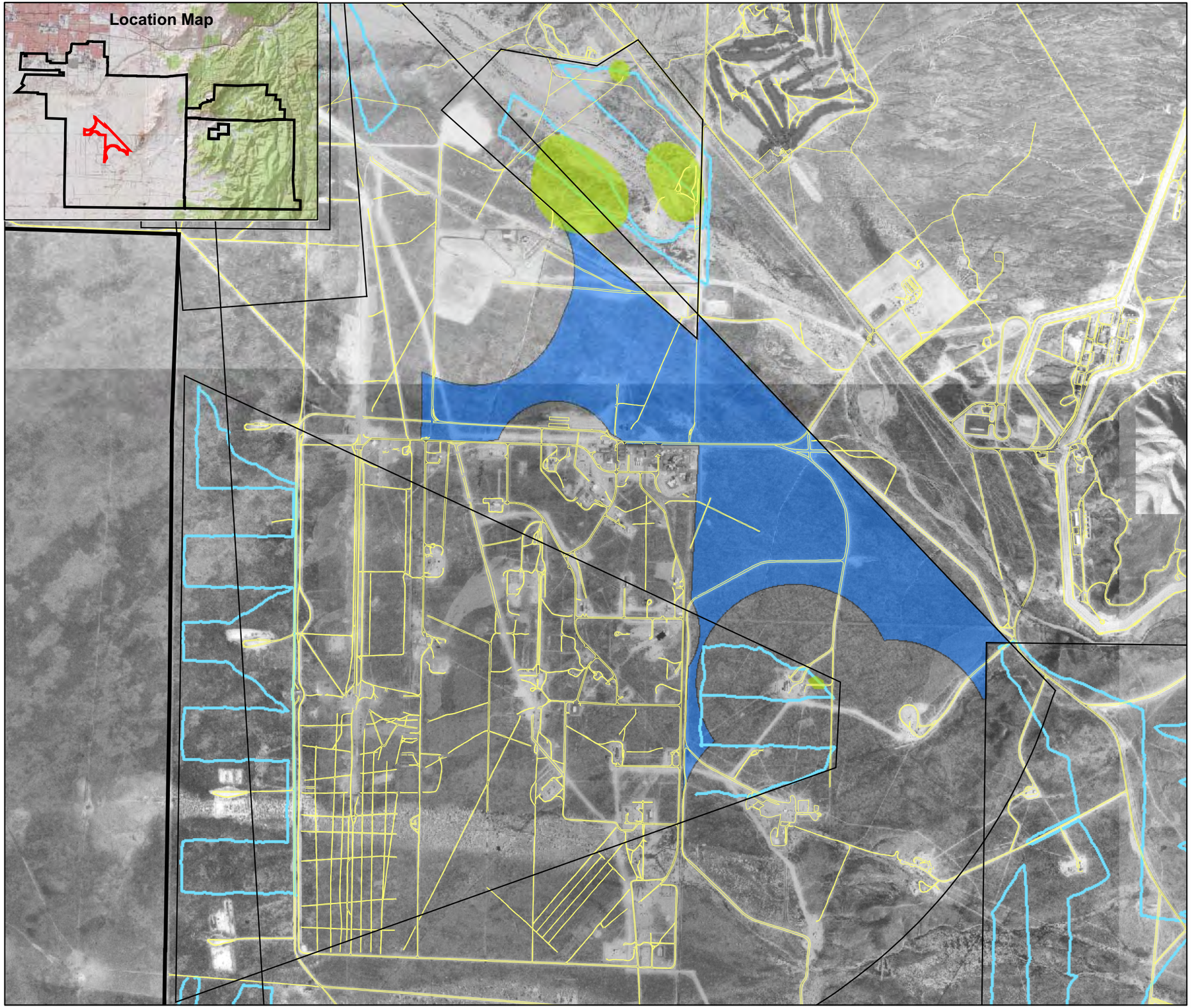

N

600 300 0 600
Meters

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 5-42

Density of Subsurface Anomalies

Sandia Base Howitzer Range Buffer (New MRA)

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- Traversed Transects
- Historic Ranges
- Revised Munitions Response Areas
- KAFB Boundary

Anomalies Per Acre

- Noise (0 - 20)
- Low (20 - 100)
- Medium (100 - 300)
- High (301+)

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US Army Corps Of Engineers Omaha District

Drawn By:	JAL	Scale:	1" = 600 m	Rev:	5
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Submitted By:	DS	Revision Date:	02-05-2007		

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5-42 Howitzer Buffer_Subsurface.mxd

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6. EVALUATION OF KNOWN/SUSPECTED MEC

6.1 MEC Technical Data

Table 6-1 summarizes the suspected munitions use at each MRA (based on historical documentation detailed in Section 5.2) and confirmed munitions use (based on physical evidence from previous UXO survey and the CSE Phase I visual survey as described in Section 5.6).

Table 6-1. Suspected and Confirmed Munitions Use by MRA

MRA ID	MRA Name	Suspected Munitions Use (Based on Documentation)	Confirmed Munitions Use (Based on Physical Data)
AL120	Proximity Fuze Range	Medium/large caliber shells (20mm and larger), 5-inch projectiles, 5-inch rockets, mortars, and grenades	3-inch projectiles, 5-inch projectiles, 5-inch rockets, 57mm projectiles,75mm projectiles (empty and concrete-filled), 76mm projectiles, unknown munitions-related items (HE fragmentations), smoke grenade, VT Fuzes and components.
AL769	Ordnance Drop Zone	Practice grenade	None.
AL771	Old Cable Site	Medium/large caliber shells (20mm and larger), rockets, mortars, and grenades	40mm grenade (riot control), smoke grenade, 5-inch projectiles, 90mm projectiles (concrete-filled), 5-inch rockets, 2.75-inch rockets, rocket propellant (Ballistite), small arms.
DA130	Arroyo del Coyote Demolition Area	Demolition charges and all types of munitions	Unknown munitions-related items (light case fragmentation), 3.5-inch rocket, smoke grenade, small arms.
DA782	Explosive Disposal Area	Demolition charges and all types of munitions	None.
ED770	Experimental Range	Demolition charges and all types of munitions	Bulk explosives, unknown munitions-related items (HE fragmentations), smoke grenades, flares/signal devices, small arms.
ML125	Field Firing Range	Expended small arms and medium/large caliber shells (20mm and larger), rocket	3-inch projectiles, 5-inch projectiles, 57mm projectiles, 75mm projectiles, 90mm projectiles, 3.5-inch rockets, 5-inch rockets, 60mm mortars, projectile and rocket fuzes, smoke grenades.
ML774	Gun Site Fan	Medium/large caliber shells (20mm and larger), rockets, and grenades.	Unknown munitions-related items (HE fragmentations).

MRA ID	MRA Name	Suspected Munitions Use (Based on Documentation)	Confirmed Munitions Use (Based on Physical Data)
ML781	Firing In-Abutment	Small arms, 20mm and 37mm projectiles	20mm projectiles.
ML784	40mm Test and Training Range (Not an eligible MMRP site)	40mm grenade, practice, small arms	40mm M781 grenade (practice), small arms
MU772	H-25 Site	Grenades, and demolition charges	Crystallized explosives, 81mm mortars. Various munitions have been confirmed in surrounding areas.
PT123	Tijeras Small Arms Range	Small arms, medium/large caliber shells (20mm and larger), grenades, signals (other than white phosphorous), practice 75mm projectiles	Smoke grenades, 40mm practice grenades, 3.5-inch rocket motor, flares/signal devices, small arms, unknown munitions-related items (light case fragmentation), and homemade training devices.
PT761	Tijeras Small Arms and Training Range	Small arms, medium/large caliber shells (20mm and larger), grenades, signals (other than white phosphorous), practice 75mm projectiles	Signals (slap flares).
PT773	Coyote Canyon Tech Site	Small arms, medium/large caliber shells (20mm and larger), grenades, signals (other than white phosphorous), practice 75mm projectiles	57mm projectile, 3-inch experimental rockets, flares/signal devices, 5-inch rockets, 20mm projectile, 30mm projectile, bulk HE, bomb fuzes, smoke grenades, 40mm grenade (signal), small arms, unknown munitions-related items (HE fragmentations).
PT783	Bazooka Training Range	Small arms, medium/large caliber shells (20mm and larger), 81mm mortar and 3.5-inch training rounds, explosive rockets, and grenades	Flares/signal devices, 3-inch experimental rockets, 5-inch rockets, 20mm projectile, 30mm projectile, bomb fuzes, bulk explosives, smoke grenades, 40mm grenade (signal), small arms, unknown munitions-related items (HE fragmentations).
SR763	Rifle Range	Small arms	None.
SR764	Rifle Range	Small arms	Small arms.
SR765	WWII Pistol Range	Small arms	None.
SR766	Sub-Machine Gun	Small arms	None.
SR767	Rifle Range	Small arms	None.
SR768	Close Combat Infiltration Course	Small arms, grenades, and rockets	40mm grenade. Various munitions have been confirmed in adjacent area.
SR777	Rifle Range	Small arms	None.

MRA ID	MRA Name	Suspected Munitions Use (Based on Documentation)	Confirmed Munitions Use (Based on Physical Data)
SR778	Airfield Pistol Range	Small arms	None.
SR780	Impact Area (Not an eligible Air Force MMRP site)	Small arms, large caliber shells, grenades, and rockets	No visual survey conducted. Previous response actions have been conducted in this area.
TS775	Airfield Skeet Range	Small arms	Small arms (lead shots & clay pigeons).
TS776	Skeet Range	Small arms	Small arms (lead shots & clay pigeons).
No ID	Bomb Target (Not an eligible Air Force MMRP site)	WWII era bombs, aircraft flares	Practice bombs (debris).
No ID	Sandia Base Howitzer Range	75mm projectiles	76mm projectiles (inert).
No ID	Sandia Base Howitzer Range Buffer	75mm projectiles	None.

Table 6-2 provides an alpha-numeric summary of the munitions used at the Kirtland AFB MRAs in total.

Table 6-2. Potential MEC Summarized Alpha-Numerically

Potential MEC		
20mm projectiles	57mm projectiles	58mm projectiles
75mm projectiles	Practice 75mm projectiles	76mm M1A2
81mm mortar rounds	90mm M1 projectiles	105mm Howitzer
120mm Gun	3-inch/50 Gun	3-inch/70 (VR Only)
3.5-inch training rounds	3.7-inch British	4.5-inch Rocket Launcher
5-inch Rocket (8 Tube)	5-inch/38 (MK30 Mod 48, MK21 Mod 7)	5-inch/54
Navy 6 pounder	Crystallized explosives	Expended small arms
Explosive detonators	Explosive rockets	Expended smoke grenades (with spotting charges)
Demolition charges	Flares	Hand or rifle explosive grenades
Practice grenades (with spotting charges)	Pyrotechnic residues	Signals
Simulators (other than white phosphorous)	Smoke grenades	

Available technical data sheets are presented as Appendix F.

6.2 Primary Sources and Release Mechanisms

The munitions-related activities that have occurred at Kirtland AFB are the primary source and release mechanisms of MEC and MC at the MRAs.

6.3 Secondary Sources Release Mechanisms

Munitions-related activities may have resulted in the presence of MEC and MC on the ground surface and below ground. MEC in the surface and subsurface soil may release MC into the site soils through impact and detonation, corrosion, or leakage.

6.4 MEC Penetration Estimates

The depth at which MEC is located is a primary factor for determining both potential human exposure and the cost of investigation and cleanup. In addition, the DoD Ammunition and Safety Standards require that an estimate of expected depth of MEC be included in the site-specific analysis for determining response depth. A wide variety of factors may affect the depth at which military munitions are found, including penetration depth, which is a function of ammunitions size, shape, propellant charge used, soil characteristics, as well as other factors, such as movement of MEC due to factors listed in Section 6.3.

There are several methods for estimating the ground penetration depths of ordnance. These methods vary in the level of detail required for data input (e.g., ordnance weight, geometry, and angle of entry), the time and level of effort needed to conduct analysis, and the assumptions used to obtain results. Some of the specific soil characteristics that affect ordnance penetration depth include soil type (e.g., sand, loam, and clay), whether vegetation is present, and soil moisture. Other factors affecting penetration depth include munitions geometry, striking velocity and angle, relative location of firing point and striking point, topography between firing point and striking point, and angle of entry.

Table 6-3 provides examples of the potential effects that different soil characteristics can have on penetration depth. These depths do not reflect the variety of other factors (e.g., different striking velocities and angles) that affect the actual depth at which the munitions may be found. The depths provided in Table 6-3 are taken from a controlled study to determine munitions penetration into earth (Crull, 1999). They are presented here to give the reader an understanding of the wide variability in the depths at which individual munitions may be found, based on soil characteristics alone.

While Table 6-3 provides a few examples of penetration depths, it does not illustrate the dramatic differences possible within ordnance categories. For example, rockets can penetrate sand to depths between 0.4 and 8.1 feet, and clay to depths between 0.8 and 16.3 feet, depending on the type of rocket and site-specific conditions.

Table 6-3. Example of Munitions Penetration Depths

Type of Munition	Ordnance Item	Depth of Penetration (ft)			
		Limestone	Sand	Soil Containing Vegetation	Clay
Projectile	57mm, M306A1	Not Indicated	2.7	3.6	5.5
Projectile	75mm, M48	0.7	4.9	6.5	9.8
Projectile	81mm, M43A1	Not Indicated	2.7	3.5	5.4
Projectile	105mm M1	1.1	7.7	10.1	15.4
Projectile	40mm M822	0.5	3.2	4.2	6.4
Rocket	3.5-inch Rocket	Not Indicated	0.8	1.1	1.7

The sources of the munitions penetration depths information are: the USACE, *Ordnance and Explosives Response: Engineering and Design*, Engineer Manual 11101-14; 4009, June 23, 2000; Ordata II, NAVEODTECHDIV, Version 1.0; and Crull Michelle et al., *Estimating Ordnance Penetration Into Earth*, paper presented at UXO Forum 1999, May 1999.

6.5 Special Consideration MEC

In addition to conventional ordnance contamination, the HRR also examined the Kirtland AFB MRAs for the presence of special consideration MEC (e.g., chemical warfare materiel, depleted uranium, etc.). Based upon evidence collected from archives research work performed to date, special consideration MEC was not used at the Kirtland AFB MRAs investigated during the CSE Phase I.

6.6 Known/Suspected MC

MC associated with MEC can dissipate through the soil through infiltration and percolation. MC in the environment may also transfer from one medium to another, such as from soil to groundwater or surface water. Two main factors affect the mobility of MC and thus its ability to spread: the availability of the MC to be released in the environment from the matrix in which it is incorporated and its propensity to react to equilibrium conditions in the environment and transfer between media.

MC can be grouped in four categories: explosives, metals, semi-volatile organic compounds (SVOCs), and polynuclear aromatic hydrocarbons (PAHs). Based on the composition of MEC used at Kirtland AFB, explosives and metals are the main components of the munitions used. Although SVOCs are used in propellants (diphenylamine at less than 1 percent) and in fuzes (diazodinitrophenol at 20 percent), these compounds are expected to have been burned off at detonation. If the projectiles containing these SVOCs did not explode, it is likely that the main hazard posed by the particular munitions is from explosion, rather than exposure to the SVOCs. PAH are semivolatile compounds that are found in the clay matrix of some training targets (i.e., clay pigeons) used at skeet ranges and not as part of the munitions themselves. Although these flying targets contain PAHs at high concentrations, they are not expected to exhibit the characteristics of toxicity as defined by the USEPA toxicity characteristic leaching procedure. Unless directly consumed by sensitive receptors, PAHs in clay pigeons are not generally bioavailable.

As such, only metals and explosives are carried forward as MC and consequently they will be the only ones discussed in Section 8.0, Exposure Pathway and Hazard Analysis. Table 6-4 lists the MC associated with munitions known/suspected to have been used at Kirtland AFB. This information is based on historical information, information obtained from the Munitions Items Disposition Action System (MIDAS) Database, and the technical munitions data sheets provided in Appendix F. The ICSMs, later presented in Section 9, refined the preliminary CSMs based on these MC.

6.7 Explosive Safety Submission Information

No Explosives Safety Submission is required for the CSE Phase I investigation.

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Table 6-4. Potential MC

Potential MEC	Component	Propellents, Explosives, Pyrotechnics	Quantity
20mm	Primer: M36A1 Percussion Primer	Priming composition FA-#90: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (12%) • Pentaerthyrite Tetranitrate (PETN) (10%)	2.1 grains*
	Propellant, Improved Military Rifle	IMR 4895 (Nitrocellulose smokeless powder): • Nitrocellulose (91.18%) • Dinitrotoluene (7.0%) • Diphenylamine (.87%) • Potassium sulfate (.55%) • Graphite (.4%)	.072 pounds (one reference lists 490 grains)
	HEI: Fuze, Percussion, Delay Action, No 253, MK III **AP-T:** Fuze [none]	Detonator: Mercury fulminate Relay charge: Mercury Fulminate Booster: Tetryl —	[unknown] —
20mm, continued	**HEI:** Projectile **AP-T:** Projectile	Main charge: Tetryl OR Main charge: Composition A: • RDX (91%) • Wax (9%) ---------- Incendiary composition (most likely IM-11: • Magnesium-aluminum alloy, 50/50 (50%) • Barium nitrate (50%) Tracer composition [most likely R-256 (red)]: • Strontium nitrate (33.3%) • Strontium peroxide (26.7%) • Magnesium powder (26.7%) • Calcium resinate (8.3%) • Strontium oxalate (5%)	107.75 grains 100.3 grains 66.5 grains Approx. 5 grains
	Projectile	—	—
57mm	Primer, percussion, M1B1A2	Priming composition FA-#70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT (5%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	1 grain 100 grains

Potential MEC	Component	Propellents, Explosives, Pyrotechnics	Quantity
57mm continued	Propellant	M1 Flashless Non-hygroscopic (FNH) [approximate %]: • Nitrocellulose (85%) • Dinitrotoluene (10%) • Dibutylphthalate (5%) • Diphenylamine (1%)	2.25 – 2.43 pounds
	Tracer element	Red tracer mix: [most likely] • Strontium peroxide • Magnesium powder • Zinc stearate ---------- Ignition composition: [most likely] • Barium **or** Strontium peroxide • Calcium resinate	73 grains 20 grains
	Fuze [none]	—	—
	Projectile	—	—
58mm	No technical munitions data was located regarding the 58mm; however, for purposes of this report, it is assumed that the technical munitions data is similar to the 57mm		
75mm	Percussion Primer, M1B1A2 *OR* Percussion Primer, M22A1 *OR* Percussion Primer, M31	Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%) ---------- Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%) ---------- Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	1 grain 100 grains ---------- 1 grain 65-75 grains ---------- 1 grain 150 grains

Potential MEC	Component	Propellents, Explosives, Pyrotechnics	Quantity
75mm, continued	Propellant	Flashless nonhygroscopic smokeless powder: • Nitrocellulose (60%) • Nitroglycerine (39%) • Diphenylamine (.75%) • Graphite (.25%) OR Propellant, M1: • Nitrocellulose (85%) • Dinitrotoluene (9%) • Dibutylphthalate (5%) • Diphenylamine (1%)	2 pounds (up to) 2.6 pounds
	Fuze, Point detonating (PD), M48 ***[one of many fuzes that can be fitted]***	Detonator, M24: Primer mix: • Potassium chlorate (33.4%) • Antimony sulfide (33.3%) • Lead azide (28.3%) • Carborundum (5%) Lower charge: Lead azide Primer, percussion M54 assembly: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Delay holder assembly. Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%) Relay Assembly, M7: Intermediate charge, Lead azide	.86 grains 2.77 grains .17 grains .32 grains 1.43 grains
	Projectile	TNT OR 50/50 Amatol: • TNT (50%) • Ammonium nitrate (50%)	1.37 to1.49 pounds 1.4 pounds
	Booster, M20 & M20A1 ***[if used]*** *OR* Booster, M21 ***[if used]***	Detonator, Lead azide Intermediate charge, Tetryl Booster charge, Tetryl ---------- Detonator, Lead azide Intermediate charge, Tetryl Booster charge, Tetryl	Approx. 4 grains Approx. 5 grains Approx. 300 grains ---------- 4.08 grains 1.23 + 3.78 grains 351 grains
	Supplementary charge ***[if used]***	TNT (98.5%) % Barium stearate (1.5%)	4.8 ounces

Potential MEC	Component	Propellents, Explosives, Pyrotechnics	Quantity
76mm	Percussion Primer, M28 *OR* Percussion Primer, M40	Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%) ---------- Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	1 grain 300 grains ---------- Approx. 1 grain 270 grains
	Propellant	Flashless non-hygroscopic smokeless powder: • Nitrocellulose (60%) • Nitroglycerine (39%) • Diphenylamine (.75%) • Graphite (.25%) OR Propellant, M1: • Nitrocellulose (85%) • Dinitrotoluene (9%) • Dibutylphthalate (5%) • Diphenylamine (<1%)	3.75 pounds 3.75 pounds

Potential MEC	Component	Propellents, Explosives, Pyrotechnics	Quantity
76mm continued	Fuze, Point detonating (PD), M48 ***[one of many fuzes that can be fitted]***	Detonator, M24: Primer mix: • Potassium chlorate (33.4%) • Antimony sulfide (33.3%) • Lead azide (28.3%) • Carborundum (5%) Lower charge: Lead azide Primer, percussion M54 assembly: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Delay holder assembly. Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%) Relay Assembly, M7: Intermediate charge, Lead azide	.86 grains 2.77 grains .17 grains .32 grains 1.43 grains
	Projectile	TNT	.86 pounds
	Booster, M20 & M20A1 ***[if used]*** *OR* Booster, M24 ***[if used]***	Detonator, Lead azide Intermediate charge, Tetryl Booster charge, Tetryl ---------- Detonator, Lead azide Intermediate charge, Tetryl Booster charge, Tetryl	Approx. 4 grains Approx. 5 grains Approx. 300 grains ---------- Approx. 4 grains Approx. 5 grains 340 grains
81mm	Information Pending		
90mm	Primer: Percussion Primer, 300-grain, M28A2	Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	1 grain 300 grains

Potential MEC	Component	Propellents, Explosives, Pyrotechnics	Quantity
90mm continued	**M71 (c 1940 – 1949):** Propellant	Flashless nonhygroscopic smokeless powder: • Nitrocellulose (60%) • Nitroglycerine (39%) • Diphenylamine (.75%) • Graphite (.25%) OR Propellant, M6 (approximate): • Nitrocellulose (87%) • Dinitrotoluene (10%) • Dibutylphthalate (3%) • Diphenylamine (1%) OR Propellant, M15: • Nitroguanidine (54.7%) • Nitrocellulose (20%) • Nitroglycerine (19%) • Ethyl centralite (6.0%) • Cryolite (.3%)	7.31 pounds 7.31 pounds 7.31 pounds
	M7A1 (1950 – present): Propellant	OR Propellant, M1: • Nitrocellulose (85%) • Dinitrotoluene (9%) • Dibutylphthalate (5%) • Diphenylamine (1%)	5.33 pounds

Potential MEC	Component	Propellents, Explosives, Pyrotechnics	Quantity
90mm, continued	**M71 (c 1940 – 1949):** Fuze, Point detonating (PD), M48 ***[one fuze of many that can be fitted]***	Detonator, M24: Primer mix: • Potassium chlorate (33.4%) • Antimony sulfide (33.3%) • Lead azide (28.3%) • Carborundum (5%) Lower charge: Lead azide Primer, percussion M54 assembly: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Delay holder assembly. Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%) Relay Assembly, M7: Intermediate charge, Lead azide Booster, M125A1, Pellet booster: • Tetryl (98%) • Calcium stearate (.75%) • Barium stearate (.75%) • Graphite (.5%) Detonator, M17: • Lead azide • Tetryl Detonator, M24: same as above Primer: same as above Delay holder assembly: same as above Relay Assembly: same as above	.86 grains 2.77 grains .17 grains .32 grains 1.43 grains 351 grains 4.08 grains 1.23 grains
	M7A1 (1950 – present): Fuze, Point detonating, M557 ***[one fuze of many that can be fitted]***		

Potential MEC	Component	Propellents, Explosives, Pyrotechnics	Quantity
90mm, continued	**M71 (c 1940 – 1949):** Projectile	TNT OR Ammonal: • TNT (67%) • Ammonium nitrate (22%) • Aluminum (11%) OR Composition B: • RDX (59.5%) • TNT (39.5%) • Wax (1%) OR 50/50 Amatol: • TNT (50%) • Ammonium nitrate (50%)	2.04 pounds or 1.6 (deep cavity) 1.95 pounds 2.15 pounds or 1.68 (deep cavity) Approx. 2 pounds
	M7A1 (1950 – present): Projectile with Tracer	TNT: same as above OR Ammonal: same as above OR Composition B: same as above	2.06 pounds 1.95 pounds 2.15 pounds
		Tracer ignition composition K029: • Barium peroxide (80.5%) • Magnesium powder (16.5%) • Calcium resinate (2%) • Graphite (1%) Tracer R-45: • Strontium nitrate (56%) • Magnesium powder (18.5%) • Aluminum powder (18.5%) • Polyvinylchloride (7%)	30 grains 35 grains
	Booster, M20 & M20A1 ***[if used]***	Detonator, Lead azide Detonator lead pellet, Lead azide Booster charge, Tetryl	Approx. 2 grains Approx. 1 grain Approx 300 grains
	M71 (c 1940 – 1949): Supplementary charge ***[if used]*** **M7A1 (1950 – present):** Supplementary charge ***[if used]***	TNT (98.5%) % Barium stearate (1.5%) TNT	4.8 ounces 4.8 ounces

Potential MEC	Component	Propellents, Explosives, Pyrotechnics	Quantity
105mm	Primer: Percussion Primer, 100-grain, M1 & M1B1	Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	**1940 – 1949:** [less than 1 grain]* **1950 – present:** 1 grain **1940 – 1949:** 100 grains **1950 – present:** 300 grains
	1940 – 1949: Propellant **1950 – present:** Propellant charge, M67	Flashless nonhygroscopic smokeless powder: • Nitrocellulose (60%) • Nitroglycerine (39%) • Diphenylamine (.75%) • Graphite (.25%) Propellant, M1: • Nitrocellulose (85%) • Dinitrotoluene (9%) • Dibutylphthalate (5%) • Diphenylamine (1%)	Base charge: 11.94 ounces Zones 2 & 3: 1.69 ounces each Zone 4: 2.63 oz Zone 5: 5.00 oz Zone 6: 8.25 oz Zone 7: 13.13 oz [2 pounds 12.32 ounces total] Base charge: 8.6 ounces Zone 2: 1.4 oz Zone 3: 2.5 oz Zone 4: 3.8 oz Zone 5: 5.8 oz Zone 6: 8.8 oz Zone 7: 14.3 oz [2 pounds 13.2 ounces total]

Potential MEC	Component	Propellents, Explosives, Pyrotechnics	Quantity
105mm, continued	**1940 – 1949:** Fuze, Point detonating, M48	Detonator, M24: Primer mix: • Potassium chlorate (33.4%) • Antimony sulfide (33.3%) • Lead azide (28.3%) • Carborundum (5%) Lower charge: Lead azide Primer, percussion M54 assembly: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Delay holder assembly. Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%) Relay Assembly, M7: Intermediate charge, Lead azide Booster, M125A1, Pellet booster: • Tetryl (98%) • Calcium stearate (.75%) • Barium stearate (.75%) • Graphite (.5%) Detonator, M17: • Lead azide • Tetryl Detonator, M24: same as above Primer: same as above Delay holder assembly: same as above Relay Assembly: same as above	.86 grains 2.77 grains .17 grains .32 grains 1.43 grains 351 grains 4.08 grains 1.23 grains
	1940 – 1949: Projectile	Cast TNT OR 50/50 Amatol: • TNT (50%) • Ammonium nitrate (50%)	4.80 pounds 4.84 pounds
	1950 – present: Projectile	Cast TNT OR Composition B: • RDX (60%) • TNT (39%) • Wax (1%)	4.80 pounds (normal cavity) or 4.25 pounds (deep cavity) 5.08 pounds (normal cavity) or 4.60 pounds (deep cavity)

Potential MEC	Component	Propellents, Explosives, Pyrotechnics	Quantity
105mm, continued	**1940 – 1949:** Booster, M20 & M20A1	Detonator, Lead azide Detonator lead pellet, Lead azide Booster charge, Tetryl	Approx. 2 grains Approx. 1 grain Approx 300 grains
	1950 – present: Supplementary charge	TNT	4.8 ounces
120mm	Percussion Primer, M1B1A2 OR Percussion Primer, M40	Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%) ---------- Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	1 grain 100 grains ---------- Approx. 1 grain 270 grains
	Propellant	Igniter, black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%) Flashless non-hygroscopic smokeless powder: • Nitrocellulose (60%) • Nitroglycerine (39%) • Diphenylamine (.75%) • Graphite (.25%) OR Propellant, M1: • Nitrocellulose (85%) • Dinitrotoluene (9%) • Dibutylphthalate (5%) • Diphenylamine (<1%)	8 ounces 23.62 pounds 3.75 pounds

Potential MEC	Component	Propellents, Explosives, Pyrotechnics	Quantity
120mm, continued	Fuze, Mechanical Time, M61	Primer, percussion: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Black powder pellet: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%) Magazine charge, Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	Less than 1 grain* [unknown] [unknown]
	Projectile	TNT OR *50/50 Amatol + TNT booster* OR *Trimonite:* • Picric acid (88%) • Mononitronapthalene (12%)	5.26 pounds 4.8 pounds (Amatol) + .19 pounds TNT 5.42 pounds
	Booster, M20 & M20A1 *OR* Booster, M21 (data is for M21A4)	Detonator, Lead azide Detonator lead pellet, Lead azide Booster charge, Tetryl ---------- Detonator, Lead azide Intermediate charge, Tetryl Booster charge, Tetryl	Approx. 2 grains Approx. 1 grain Approx. 300 grains ---------- 4.08 grains 1.23 + 3.78 grains 351 grains
	Supplementary charge	TNT	4.2 ounces
3-inch/50	Primer, percussion, MK14	Priming composition: • Mercury fulminate (35%) • Potassium chlorate (35%) • Antimony sulfide (30%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	.4 grain* 113.5 grains

Potential MEC	Component	Propellents, Explosives, Pyrotechnics	Quantity
3-inch/50, continued	Propellant	M1 Flashless Non-hygroscopic (FNH) [approximate %]: • Nitrocellulose (85%) • Dinitrotoluene (10%) • Dibutylphthalate (5%) • Diphenylamine (1%)	4 pounds
	Fuze, VT, Mark 45 OR Fuze, VT, Mark 58	Electric squib [most likely containing]: • Potassium chlorate (60%) • Diazodinitrophenol (20%) • Charcoal (15%) • Nitrostarch (5%) Electric squib [most likely containing]: • Potassium chlorate (60%) • Diazodinitrophenol (20%) • Charcoal (15%) • Nitrostarch (5%)	Approx. 2.5 grains Approx. 2.5 grains
	Auxiliary Detonating Fuze, Mark 44	Detonator: Lead azide & Tetryl Booster lead-in: Tetryl Booster: Tetryl	1.6 grains & .46 grains 2.3 grains 385 grains
	Projectile	Explosive charge: TNT OR Composition A: • RDX (91%) • Beeswax (9%)	.54 pounds .54 pounds
3-inch/70 (Vertical Recovery)	No HE/Black Powder (BP) loaded projectiles		
3.5-inch Training Rounds	Information Pending		
3.7-inch British[1]	Primer	lead styphnate, lead thiocyanate, barium nitrate, antimony sulfide, aluminum powder, PETN, tetryl, black powder	
	Propellant	nitrocellulose, nitroglycerine, ethylcentralite, cryolite	

[1] Data provided by TechLaw's ordnance specialist using the Munitions Items Disposition Action System (MIDAS) Database. Technical Munitions Data pending from the USACE St. Louis District.

Potential MEC	Component	Propellents, Explosives, Pyrotechnics	Quantity
3.7-inch British[2], continued	Projectile	TNT, black powder	—
	Fuze	iron, manganese, carbon, silicon, sulfur, phosphorous, chromium, nickel, lead, antimony, polyethylene, tin, copper, silver, nylon, magnesium, aluminum, hexavalent chromium, sodium, potassium, molybdenum bismuth, titanium, cadmium, polyamid plastic	
4.5-inch Rocket	Warhead	TNT	4.3 – 4.5 pounds
	Fuze, Point Detonating M4A2	No. 26 Primer: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT (5%) Relay charge: Lead azide Delay charge: Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%) Delay-relay assembly: Lead azide M17 Detonator: Intermediate charge, Lead azide + Tetryl Booster, Tetryl	Less than 1 grain* 1.54 grains 1.23 grains .77 grains 4.08 grains + 1.23 grains 329 grains
	M1 Auxiliary Booster	TNT	.84 - .87 pounds
	Igniter	Percussion primer No. 28: • Potassium chlorate (50.5%) • Lead thiocyanate (23.8%) • PETN, Class B (14.2%) • Antimony sulfide (11.4%) • [remainder is gum solution] Electric squib: Flash charge composition: • Potassium chlorate (40%) • Lead thiocyanate (32%) • Charcoal (18%) • Egyptian lacquer (10%) Igniter charge, Black powder, Class 7: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	1.9 grains 3.5 grams 648 grains

[2] Data provided by TechLaw's ordnance specialist using the Munitions Items Disposition Action System (MIDAS) Database. Technical Munitions Data pending from the USACE St. Louis District.

Potential MEC	Component	Propellents, Explosives, Pyrotechnics	Quantity
4.5-inch Rocket continued	Rocket motor	Ballistite: • Nitrocellulose (60%) • Nitroglycerine (39%) • Diphenylamine (.75%) • Graphite (.25%)	4.65 pounds
5-inch/38	Primer, percussion, MK13	Priming composition: • Mercury fulminate (35%) • Potassium chlorate (35%) • Antimony sulfide (30%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	.4 grain* 4,081 grains (9.33 ounces)
	Propellant	M1 Flashless Non-hygroscopic (FNH) [approximate %]: • Nitrocellulose (85%) • Dinitrotoluene (10%) • Dibutylphthalate (5%) • Diphenylamine (1%)	15 pounds
	Fuze, VT, Mark 32 OR Fuze, VT, Mark 40 OR Fuze, VT, Mark 53	Electric squib [most likely containing]: • Potassium chlorate (60%) • Diazodinitrophenol (20%) • Charcoal (15%) • Nitrostarch (5%) Electric squib [most likely containing]: • Potassium chlorate (60%) • Diazodinitrophenol (20%) • Charcoal (15%) • Nitrostarch (5%)	Approx. 2.5 grains Approx. 2.5 grains

Potential MEC	Component	Propellents, Explosives, Pyrotechnics	Quantity
5-inch/38, continued	Auxiliary Detonating Fuze, Mark 17	Primer cap, Mercury fulminate Detonator: Mercury fulminate & Tetryl Booster lead-in: Tetryl Booster: Tetryl	[less than 1 grain *] [unknown] Appr. 15 grains Appr. 375 grains
	OR	----------	----------
	Auxiliary Detonating Fuze, Mark 44	Detonator: Lead azide & Tetryl Booster lead-in: Tetryl Booster: Tetryl	1.6/.46 grains 2.3 grains 385 grains
	OR	----------	----------
	Auxiliary Detonating Fuze, Mark 54	Primer mixture: • Lead styphnate (40%) • Lead azide (20%) • Barium nitrate (20%) • Antimony sulfide (15%) • Tetracene (5%) Detonator: Lead azide & Tetryl Booster lead-in: Tetryl Booster lead-out: Tetryl Booster: Tetryl	1.15 grains 5.6/.46 grains 1.04 grains .272 grains Appr. 467 grains
	Projectile	Explosive charge: Explosive D (Ammonium picrate) OR Composition A: • RDX (91%) • Beeswax (9%)	7.25 pounds 7.25 pounds
5-inch/54	For purposes of this report, it is assumed that the technical munitions data is similar to the 5-inch/38 identified above.		
5-inch Rocket	Warhead	TNT	13.5 pounds
	Fuze, Point Detonating MK 30	Detonator Relay detonator	[unknown] [unknown]
	Auxiliary Detonating Fuze, Mark 52	Detonator: Lead azide & Tetryl Booster lead-in: Tetryl Booster: Tetryl	Approx. 2.0 grains & .5 grains * Approx. 2.5 grains Approx. 385 grains

Potential MEC	Component	Propellents, Explosives, Pyrotechnics	Quantity
5-inch Rocket, continued	Igniter	Electric squib: Flash charge composition: • Potassium chlorate (40%) • Lead thiocyanate (32%) • Charcoal (18%) • Egyptian lacquer (10%) Igniter charge, Black powder, Class 7: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	Approx. 3.5 grams Approx. 600 grains
	Rocket motor	Ballistite: • Nitrocellulose (60%) • Nitroglycerine (39%) • Diphenylamine (.75%) • Graphite (.25%)	3.24 pounds
Navy 6 pounder	Primer	mercury fulminate, potassium chlorate, lead styphnate, BP	
	Propellant	nitrocellulose, nitroglycerine, carbamite, diphenylamine, BP	
	Projectile	Explosive D (ammonium picrate)	
	Fuze	iron, manganese, carbon, silicon, sulfur, phosphorous, chromium, nickel, lead, antimony, polyethylene, tin, copper, silver, nylon, magnesium, aluminum, hexavalent chromium, sodium, potassium, molybdenum bismuth, titanium, cadmium, polyamid plastic	

NOTE: In addition to the above constituents, some metal parts contain aluminum, copper, cadmium, chromium and lead.

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7. EVALUATION OF HAZARDOUS WASTE/SUBSTANCE

The information in this section has been compiled from the Kirtland AFB *Management Action Plan* (Kirtland AFB, 2005a) and the current Administrative Record. For purposes of this report, the DOE/SNL sites are not included in the evaluation of hazardous waste since DOE/SNL has responsibility for those sites. Research to evaluate the completeness of this information was not performed as part of the CSE Phase I activities (i.e., the CSE Phase I goal was to collect MMRP data only).

7.1 Hazardous Waste Activities

Some of the Kirtland AFB MRAs either contains portions of, or entire ERP/ECP sites. The ERP/ECP sites have been investigated and in some case have been approved for NFA by NMED. Refer to subsection 2.5.1.3 for the list of ERP/ECP sites. No other hazardous waste activities are known to be associated with the MRA sites.

7.2 Hazardous Waste Characteristics

Table 7-1 summarizes the types of wastes and status of the Kirtland AFB ERP sites within MRAs that have not yet been approved for NFA.

Table 7-1. Kirtland AFB ERP/ECP Site Summary

MRA ID	MRA Name	ERP/ECP Site Within MRA	ERP/ECP Description	Material Stored, Managed, Used at ERP/ECP Site	Dates of Operation	Status
ED770	Experimental Range	OT-029	EOD Range	Magnesium flares, percussion grenades, explosive waste, ammunition boxes, fire arms, gas cylinders, and chemical wastes	1972-present	Active Site
SR764	Rifle Range	LF-002	Landfill No. 2	General refuse, chemical wastes, plastics, hard fill, 55-gallon drums, etc.	1943-1967	Corrective Action in Progress
		ST-346	Trestle Site Septic Tank	Not Indicated	Not Indicated	Request for Supplemental Information
		WP-026	Sewage Lagoons and Golf Course Ponds	Nitrates, metals, VOCs	1962-1987	RCRA Facility Investigation
SR765	WWII Pistol Range	ST-346	Trestle Site Septic Tank	Not Indicated	Not Indicated	Request for Supplemental Information
		WP-026	Sewage Lagoons and Golf Course Ponds	Nitrates, metals, VOCs	1962-1987	RCRA Facility Investigation

MRA ID	MRA Name	ERP/ECP Site Within MRA	ERP/ECP Description	Material Stored, Managed, Used at ERP/ECP Site	Dates of Operation	Status
SR766	Sub-Machine Gun	LF-001	Landfill No. 1	General refuse, chemical wastes, oils-soaked, insulation, hard fill, 55-gallon drums, etc.	1965-1975	Corrective Action in Progress
		WP-026	Sewage Lagoons and Golf Course Ponds	Nitrates, metals, VOCs	1962-1987	RCRA Facility Investigation
SR767	Rifle Range	WP-026	Sewage Lagoons and Golf Course Ponds	Nitrates, metals, VOCs	1962-1987	RCRA Facility Investigation
SR778	Airfield Pistol Range	ST-296	Building 702 Septic System,	Nitrates, metals	1950s-1990s	Request for Supplemental Information

7.3 Source Areas

There are no remaining source areas associated with the MRAs at Kirtland AFB.

7.4 Contaminants of Concern and Known/Suspected Releases (include sampling, field and lab analysis recommendations)

Various degrees of investigation have occurred at the Kirtland AFB ERP/ECP sites. Analytical (or other) data generated from these investigations will be used to supplement the data collected during the CSE process. Analytical data from ERP/ECP investigations have not been included in this CSE Phase I report, but where applicable, may be included in future submittals during later stages of the CSE process.

7.5 Special Considerations

No known special consideration waste (i.e., non-MEC biological, radiological, and perchlorate) compounds are known to be associated with current or historical activities at the ERP/ECR sites within the MRAs. Therefore, if these types of wastes are encountered, they will be addressed under the the Air Force MMRP.

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8. EXPOSURE PATHWAY AND HAZARD ASSESSMENT

An exposure pathway is the course along which human or ecological receptors may come in contact with chemical or physical hazards. The exposure pathway for chemical hazards generally varies by the environmental medium through which the chemical contaminant migrates or makes contact with the receptor. However, there are fundamental differences between chemical hazards and the explosive hazards associated with MEC.

For MEC, explosive hazards tend to be constrained to the source area (i.e., locations at or near where the munitions activity occurred), the migration potential is low, and receptors will generally need to gain access to the source area to be exposed to MEC. It is also important to note that exposure to MEC does not necessarily indicate that an incident or injury will occur. Some level of external heat, friction, or shock must be applied to the MEC item to cause an explosive event. Human activities and natural phenomena that could result in an explosive event include excavation, grading, treading on, kicking or picking up an item, and fires.

For MC, the pathway typically corresponds to media where the chemical release occurred, and the fate and transport processes following the release. MC can undergo various processes (e.g., degradation and migration) such that media other than the source area can become contaminated. The predominant pathway for introducing MC to the environment at Kirtland AFB is from a source area to the terrestrial soil environment.

The fate and transport of MC are dependent on a wide variety of factors. Contaminant "fate" refers to the expected final state that an element, compound, or group of compounds will achieve following release to the environment. Contaminant “transport” refers to the mechanisms and rates of movement (i.e., migration) of contaminants away from the source area. Migration pathways often include air, water, soil, and the interfaces between the phases of the contaminant (i.e., solid, liquid, or gas). The fate and transport of contaminants can occur in all three environmental media: terrestrial, aquatic, and atmospheric. Terrestrial environments are comprised of soil and groundwater. The aquatic environments include surface water and sediment transported in the arroyo drainage systems, incidental ponds, and wetlands. The air environment includes only one component, the atmosphere.

In the terrestrial environment, if the contaminant is released to soil, the contaminant may volatilize, adhere to the soil by sorption, leach into the groundwater, or degrade due to chemical (abiotic) or biological (biotic) processes. The biological process may include chemical transformations due to microbial actions or by internal biochemical processes in plants and animals. If the contaminant is volatilized, the compound is typically released to the atmosphere. If volatilization occurs in the subsurface environment, the contaminated vapor may migrate and sorb to previously uncontaminated soil, dissolve in groundwater, or potentially dissolve in surface water. Typically, contaminant concentrations are significantly reduced by dilution as they dissolve or flow/merge into other previously unimpacted media.

Dissolved constituents may be transported to an aquatic environment. Once a contaminant is released to the aquatic environment, it can either volatilize or remain in the aquatic environment. In the aquatic environment, contaminants may dissolve in the surface water or sorb to sediment. Contaminants may move between dissolved and sorbed states depending on a variety of physical and chemical factors. However, in the arid environment of Kirtland AFB, surface water and sediment contamination would likely have minimum significance.

In the atmospheric environment, contaminants may exist as vapors or as particulate matter. The transport of contaminants relies mostly on wind currents, and continues until the contaminants are returned to the earth by wet or dry deposition. Degradation of organic compounds in the atmosphere can occur due to direct photolysis, reaction with other chemicals, or reaction with photochemically-generated hydroxyl radicals.

The fate and transport of contaminants are strongly influenced by their physical and chemical properties, as well as by environmental factors such as soil characteristics, groundwater flow, and water quality conditions, especially concentrations of alkalinity, hardness, and natural organic materials, all of which can affect the availability and toxicity of metals to organisms.

MC of interest for the MRAs associated with Kirtland AFB are presented in Section 6.6. The properties of these primary compounds are as follows:

- Explosives include predominately nitrogen containing organic compounds, such as HMX, PETN, RDX, Tetryl, and TNT. TNT and tetryl are the least mobile of the explosives and most frequently occurring soil contamination problem. Leaching of these explosives into groundwater is not likely. RDX and HMX are the most mobile explosives and present the greatest groundwater contamination concern. Under ambient environmental conditions, explosives are persistent in soils and groundwater, exhibiting a resistance to naturally occurring volatilization, degradation, and hydrolysis. Where decomposition does occur, explosives degradation products include intermediates of the parent explosive, acids, aldehydes, ketones, nitric oxide, nitrogen dioxide, water, and nitrogen gas. The following lists the intermediates and degradation products for the explosives of concern at Kirtland AFB.
    - Tetryl may degrade to 2,4,6-trinitrophenol (2,4,6-TNP), 2,4-dinitrophenol (2,4-DNP), 4,6-dinitrohexanoate (4,6-DNH), ammonium (NH_4), nitrate (NO_3), and nitrite (NO_2).
    - HMX and RDX may degrade to hexahydro-1,3-dinitroso-5-nitro-1,3,5-triazine (DNX), hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine (MNX), and hexahydro-1,3,5-trinitroso-1,3,5-triazine (TNX). These intermediates may further degrade to 1,1-dimethylhydrazine, 1,2-dimethylhydrazine, hydrazine (N_2H_4), ammonium (NH_4), nitrate (NO_3), nitrite (NO_2), nitrous oxide (N_2O), methanol (CH_3OH), formaldehyde (HCHO), methane (CH4), and carbon dioxide (CO_2).
    - PETN may degrade to pentaerythritol dinitrate, which is degraded further to unknown products.
    - TNT may degrade to 4-amino-2,6-dinitrotoluene (4-ADNT), 2-amino-4,6- dinitrotoluene (2-ADNT), 2,4-diamino-6-nitrotoluene (2,4-DANT), and 2,6-diamino-4-nitrotoluene (2,6-DANT). Photochemical decomposition of TNT to 1,3,5-trinitrobenzene (TNB) occurs in the presence of sunlight and water, with TNB being generally resistant to further photodegradation. TNB is subject to biotransformation to 3,5-dinitroaniline. These intermediates may further degrade into 2,4-dinitrotoluene (2,4-DNT), 2,6-dinitrotoluene (2,6-DNT), 1,3-dinitrobenzene (DNB), 2- nitrotoluene, 3- nitrotoluene, and 4-nitrotoluene.
- Metal contaminants can be immobilized by adsorption, ion exchange, complexation, and precipitation, to prevent the movement of metal contaminants to groundwater or surface water. Changes in soil conditions (i.e., degradation of organic matrices and changes in pH, redox potential, or soil solution composition) due to various remediation schemes or natural weathering processes may also change metal mobility in soil. Metals are primarily found as cations in the aqueous environment, with their form of depending on the oxygenated state of the water. For example, hexavalent chromium usually predominates in shallow aquifers where aerobic conditions exist.

However, trivalent chromium is mostly found in deep aquifers where anaerobic conditions exist. Metal cations can complex with organic matter and precipitate. These organic-metal complexes usually have low solubility. Surface water runoff can transport soil particles containing adsorbed metals, facilitates migration and subsequent desorption from contaminated soils. Transportation of solid particles is more likely in surface water than groundwater because of the limitation of the quantity and size of solid particles that can be transported in most aquifers. Metal sorption to soil and sediment tends to increase with increasing pH. Organic matter, clay minerals, and oxides of manganese and iron are important sorbents of metals in soils.

The ICSMs presented in Section 9.0 graphically represent the potential exposure pathways and interactions between source and receptor for both MEC and MC.

8.1 MEC Exposure Pathway Analysis

8.1.1 Transport Processes

Although the migration potential is low, MEC on the surface and subsurface may migrate as a result of human activity or natural processes.

There are a variety of natural processes that could result in the migration of MEC from the subsurface to the surface and from the surface to the subsurface. The most prevalent transport process at Kirtland AFB is through erosion of soil from rain, flood, and wind events. For example, flooding may cause MEC items to be dislodged and transported to other locations by flood-induced runoff. Due to the arid nature and moderate temperatures at Kirtland AFB, it is unlikely that effects of frost heaving would result in the migration of MEC. The result of a subsurface to surface MEC migration is the increased potential for human exposure to MEC.

Human activities that could result in migration of MEC from the source area includes manual collection and transport (e.g., artifact hunting), as well as construction-related ground disturbances (i.e, grading, excavation, and filling).

8.1.2 Exposure Media and Accessibility

The exposure media for explosive hazards are the MEC items or MC at high concentrations in soil that pose an explosive hazard. However, natural events and human activities could result in subsurface to surface migration of MEC that would increase the potential for exposure to explosive hazards. Exposure is projected to be limited by access and activity.

8.1.3 MEC Exposure Receptors

Two categories of receptors have exposure potentials for explosive hazards at the MRAs associated with Kirtland AFB. These include (1) Authorized Personnel and (2) Trespassers. Authorized personnel include military personnel and dependents, as well as authorized civilian contractors. Trespassers include those individuals that have gained access to the MRAs without proper authorization.

8.1.4 MEC Exposure Conclusions

The potential for human exposure to MEC should be further evaluated during later phases of this investigation at sites where MEC is documented to exist and/or at sites where historical data indicates a realistic potential for MEC presence.

Based on historical and visual survey data, the potential for human exposure to MEC exists within AL771, ED770, ML125, McCormick Ranch Impact Area, Isleta Drop Zone, Workman Site, NMPG Buffer Zone South, DA130, ML781, PT123, PT773, and PT783.

Although not confirmed visually, other types of information (i.e., historical data, proximity to the MRAs with confirmed MEC presence, etc.) indicate a reasonable potential for human exposure to MEC within MU772, SR768, and the Sandia Base Howitzer Range.

Although ML784, SR780, and the Bomb Target are ineligible for munitions response under the Air Force MMRP and were not surveyed during the CSE Phase I, historical data indicates that there is a potential for human exposure to MEC at these sites.

8.2 Groundwater Migration Pathway Analysis

8.2.1 Groundwater Receptors

Two categories of receptors have exposure potentials for MC in groundwater at the MRAs associated with Kirtland AFB. These include current and future (1) Authorized Personnel and (2) Trespassers. Only human receptors were selected for the groundwater migration pathway analysis, as ecological receptors are not likely to come into contact with the groundwater medium at Kirtland AFB due to its substantial depth.

8.2.2 Groundwater Conclusions

A groundwater investigation has not been performed for the MRAs. However, the physical properties of MC associated with the items used at Kirtland AFB (metals, explosives, PAHs) make them relatively immobile and promote their binding to organic matter (metals, PAHs) or biodegradation (explosives). Additionally, the relatively low precipitation rates and significant depths to groundwater at Kirtland AFB (which range from approximately 200 to over 500 feet below land surface) further reduce the potential for surface accumulations of MC to leach and migrate downward to groundwater. As a result, it is highly unlikely that groundwater has been impacted by munitions-related site activities. Based on this information, the groundwater pathway is considered invalid for all MRA sites at Kirtland AFB at this time.

The CSE Phase II will further evaluate surface impacts from past munitions-related activities. In the event that significant MC contamination is detected during the CSE Phase II, it is expected that an evaluation of subsurface contamination will be performed. Based on these results, a determination will be made at a later date if there is a reasonable likelihood of groundwater contamination. Perchlorate has not been linked to past munitions-related activities and is not a potential MC under the Kirtland AFB MMRP.

8.3 Surface Water and Sediment Migration Pathway Analysis

Due to the typical associated nature of surface water and sediment, these media are discussed together.

8.3.1 Surface Water and Sediment Receptors

Three categories of receptors have exposure potentials for MC in surface water at the MRAs associated with Kirtland AFB. These include current and future (1) Authorized Personnel, (2) Trespassers, and (3) Plants and Animals. Ecological receptors (plants and animals) were also considered given the viable habitat that exists and the potential for rare, threatened, or endangered species in some portions of the Installation.

8.3.2 Surface Water and Sediment Conclusions

Surface water, sediment, and wetland resources on Kirtland AFB are of limited distribution. All arroyos on Kirtland AFB hold ephemeral flows only at times of significant rain events (predominately summer monsoon events) and rarely at times of snowmelt. Therefore, the potential for appreciable impact to these media from MC is considered to relatively low, and the potential for exposure to site receptors is also considered to be low or insignificant. However, surface water and/or sediment media found to be in proximity to MEC that are associated with valid contaminant migration pathways should be should be further evaluated during the CSE Phase II.

8.4 Soil Exposure Pathway Analysis

8.4.1 Soil Exposure Receptors

Three categories of receptors have exposure potentials for MC in soils at the MRAs associated with Kirtland AFB. These include current and future (1) Authorized Personnel, (2) Trespassers, and (3) Plants and Animals. Ecological receptors (plants and animals) were considered given local ecological concerns focused on prairie dog colonies and burrowing owl populations at the Installation.

8.4.2 Soil Exposure Conclusions

Soil sampling has not been performed for the MRAs as part of the CSE Phase I. Due to the presence of MEC and munitions debris at several MRAs, soil investigation (i.e. soil sampling activities) during the CSE Phase II is warranted to evaluate for potential MC impacts where this media is found to be in proximity to MEC or munitions debris.

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9. INTERIM CONCEPTUAL SITE MODELS

The Air Force 2005 guidance for the CSE states that CSMs serve as planning and organizational tools to aid in project organization and data interpretation. The CSMs also serves as a communication device among the decision-makers, the stakeholders, and the field personnel. A CSM is a qualitative and graphical model that illustrates actual and potential relationships among sources, pathways, and receptors for both explosive and chemical hazards. Air Force guidance is consistent with USEPA guidance (USEPA, 1987), which points out that in the early stages of site evaluation, CSMs should be used to describe suspected sources, contaminant pathways, and potential receptors, with a goal of defining the investigation objectives and identifying data gaps.

Phase I of the CSE is primarily an observational and research-based data collection process that is used to direct future phases of investigation (where warranted). As a result, the ICSMs that are developed at this point of investigation are conservative and relatively general to aid in visualizing all potential pathways and receptors that may be exposed to munitions-related materials (MEC or MC).

The ICSMs presented in the following sections are based on the information gained during this initial site evaluation. The models describe potential MEC and MC sources, exposure pathways, and receptors, and the interactions that may link them. The ICSMs will be revised in coordination with the Kirtland AFB MMRP Project Team as new information becomes available during the CSE Phase II investigation.

9.1 MEC Interim Conceptual Site Models

As discussed in Section 8, there are fundamental differences between chemical or contaminant-related risks and the explosive hazards associated with MEC. MEC generally have low migration potentials and receptors generally need to gain access to the source area to be exposed to explosive hazards. An explosive hazard can result in immediate injury or death and there is no established level below which the explosive hazard is considered acceptable. Additionally, there is no accepted method for establishing the probability that a single encounter will result in the potential for death or injury. Therefore, the ICSMs for MEC evaluate explosive hazards and the steps toward MEC exposure in a binary manner: either the potential exists or the potential does not exist. If the potential for an encounter with MEC exists, the potential that the encounter will result in injury or death also exists.

The ICSMs for MEC exposure at Kirtland AFB are presented in Figures 9-1 through 9-29. The MEC exposure pathway analysis is detailed in Section 8. Although ML784, SR780, and the Bomb Target are not eligible for munitions response under the Air Force MMRP, MEC may exists at these sites. Therefore, MEC ICSMs for these sites are provided to support the management of these sites under other programs (e.g., ERP or the Operational Range Sustainment Program).

9.2 MC Interim Conceptual Site Models

Potential MC source areas are associated with the MEC source areas within the MRAs under investigation (with the exception of sites where the only munitions activity was small arm fire and only projectile and skeet target materials remain). The ICSMs for MC pathways and exposure are presented in Figures 9-30 through 9-58. The MC exposure pathway analysis is detailed in Section 8. Although ML784, SR780, and the Bomb Target are not eligible for munitions response under the Air Force MMRP, MC contamination may exists at these sites. Therefore, MC ICSMs for these sites are provided to support the management of these sites under other programs (e.g., ERP or the Operational Range Sustainment Program).

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Figure 9-1. MEC ICSM for AL120 Proximity Fuze Range

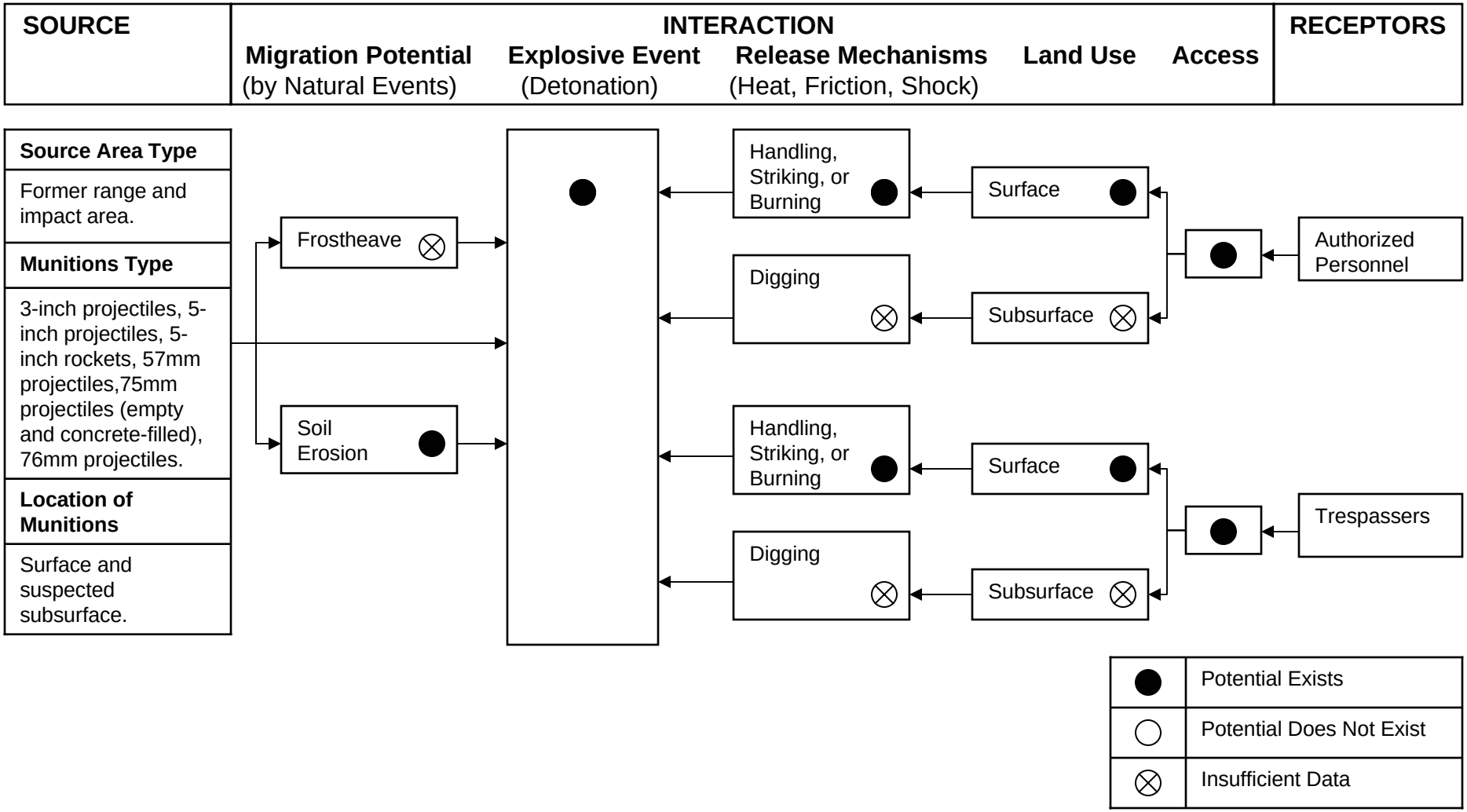

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Figure 9-2. MEC ICSM for AL769 Ordnance Drop Zone

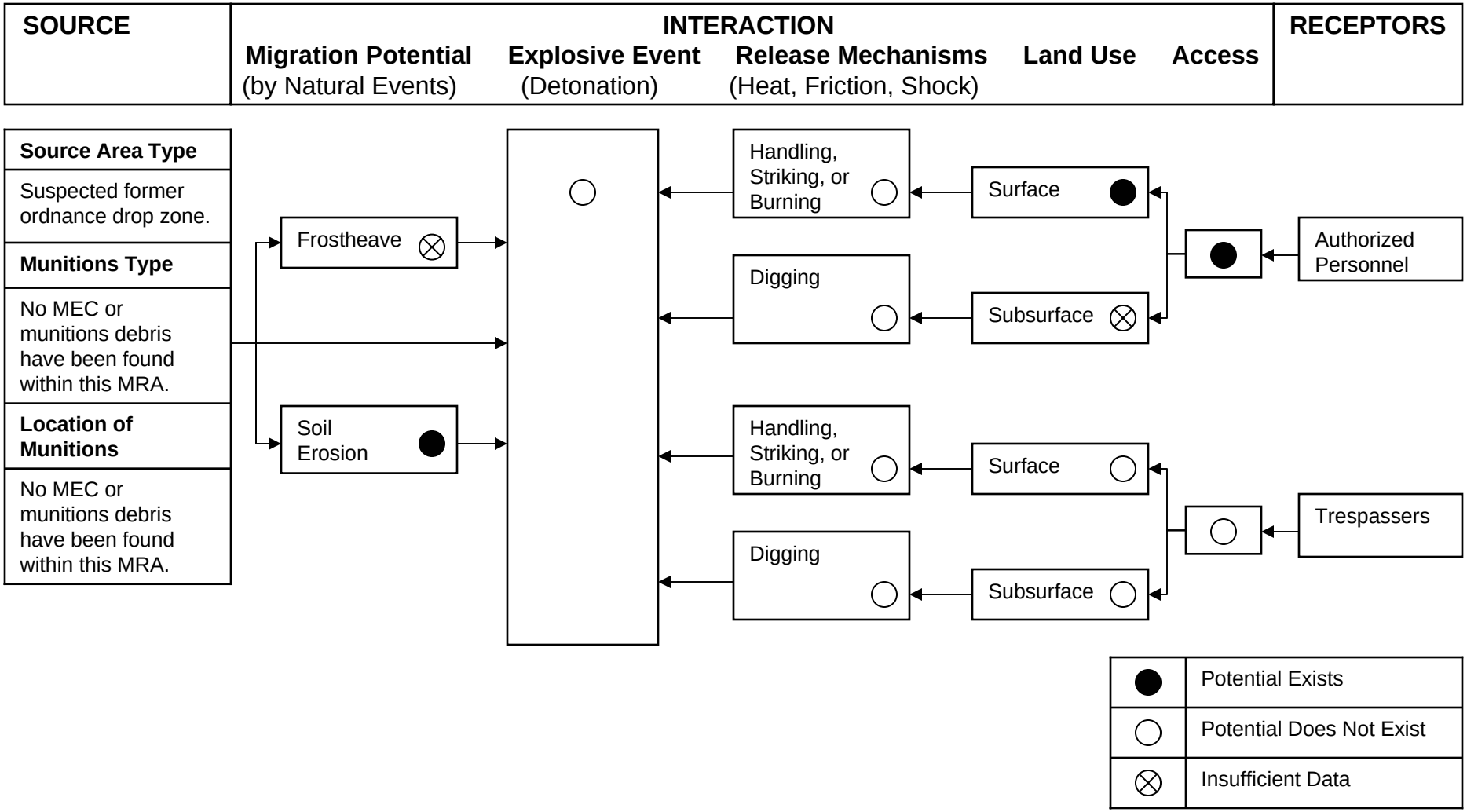

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Figure 9-3. MEC ICSM for AL771 Old Cable Site

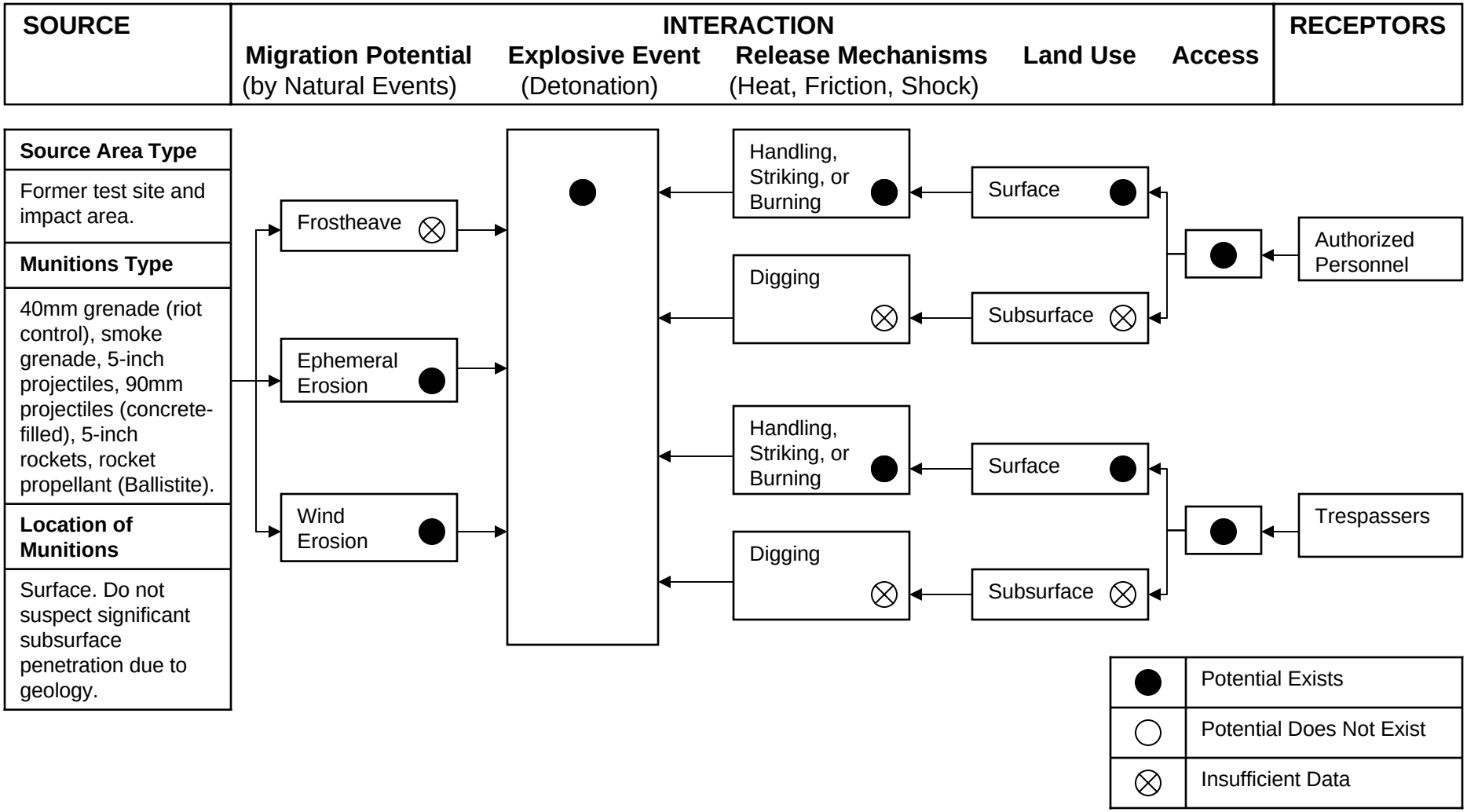

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Figure 9-4. MEC ICSM for DA130 Arroyo del Coyote Demolition Area

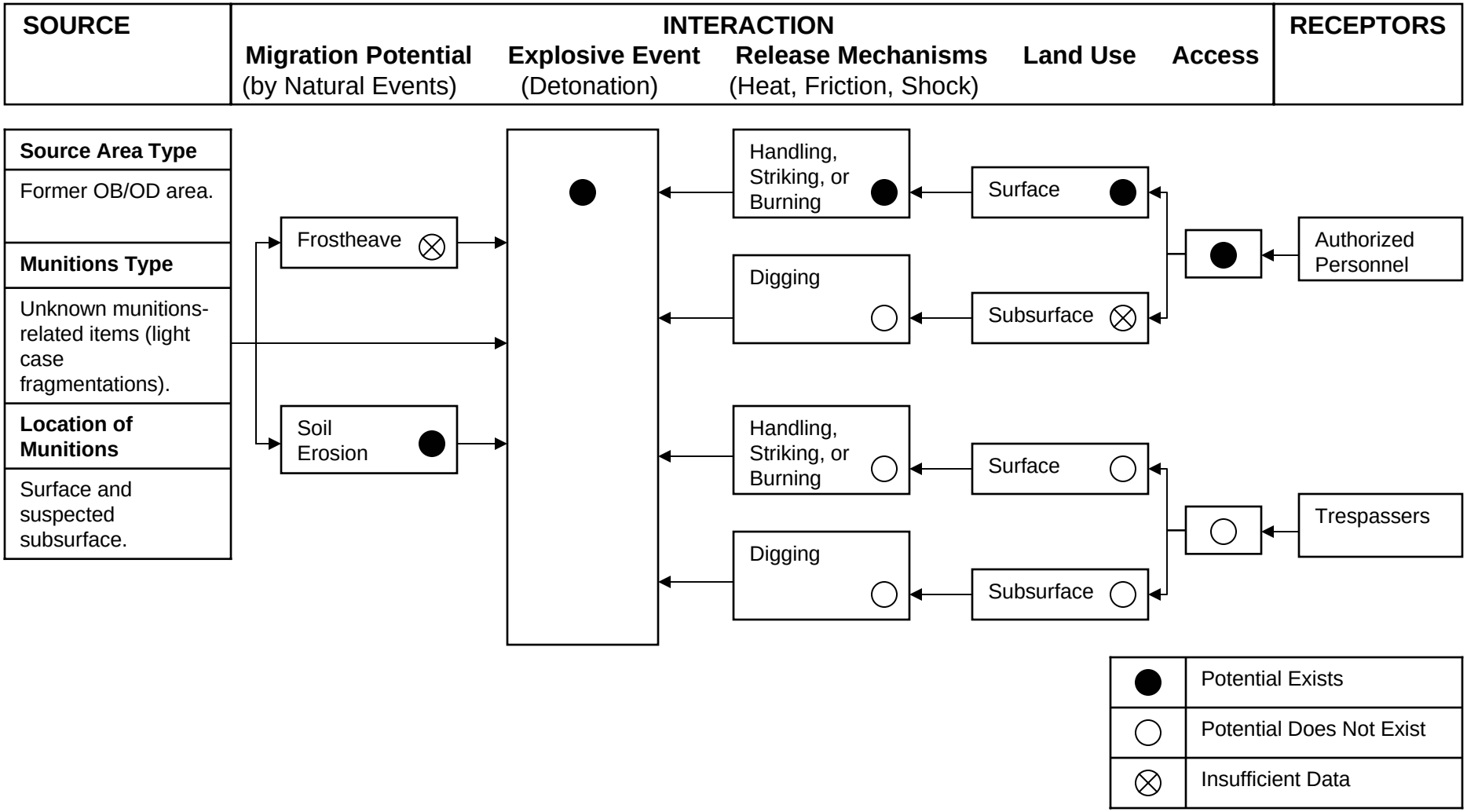

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Figure 9-5. MEC ICSM for DA782 Explosive Disposal Area

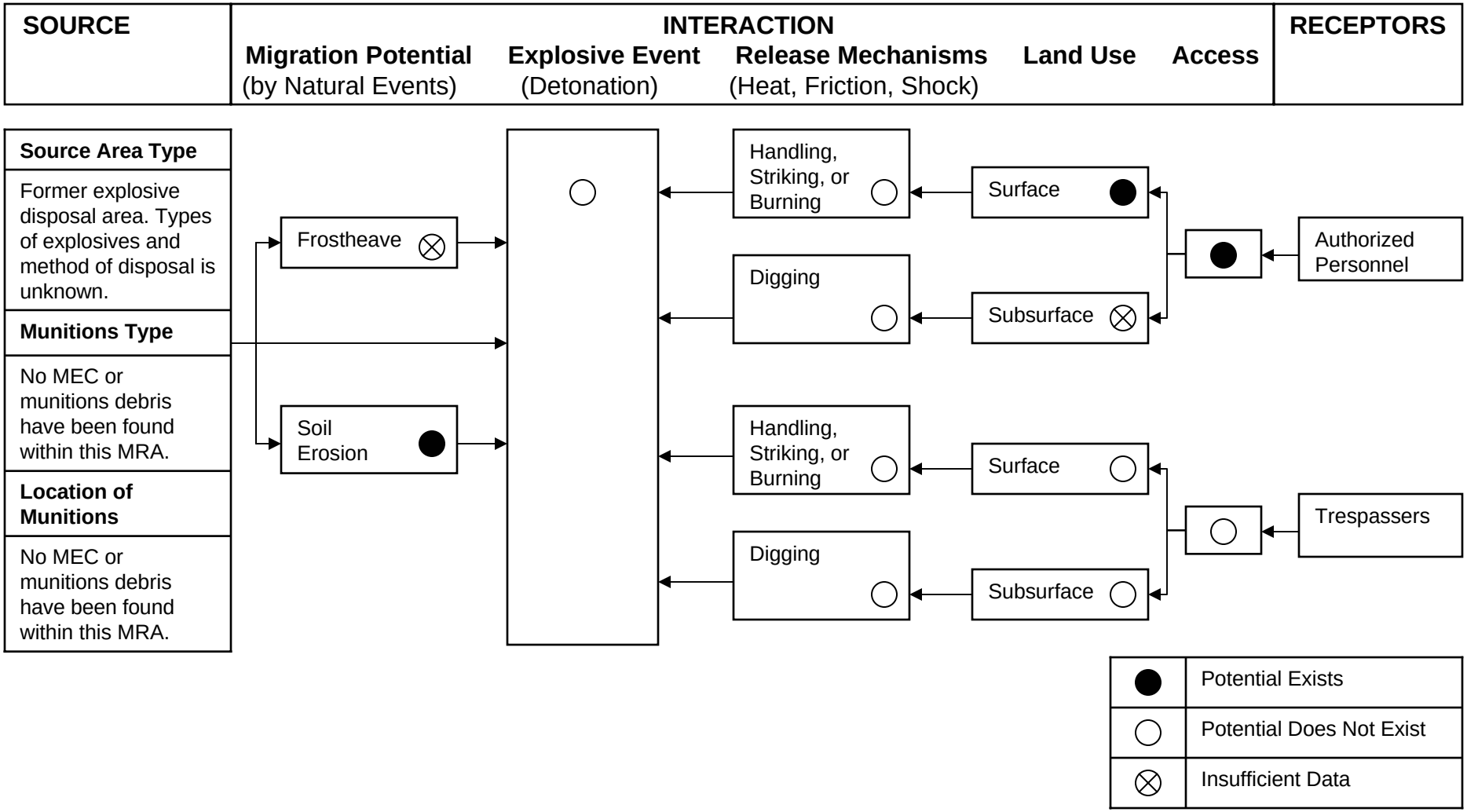

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Figure 9-6. MEC ICSM for ED770 Experimental Range

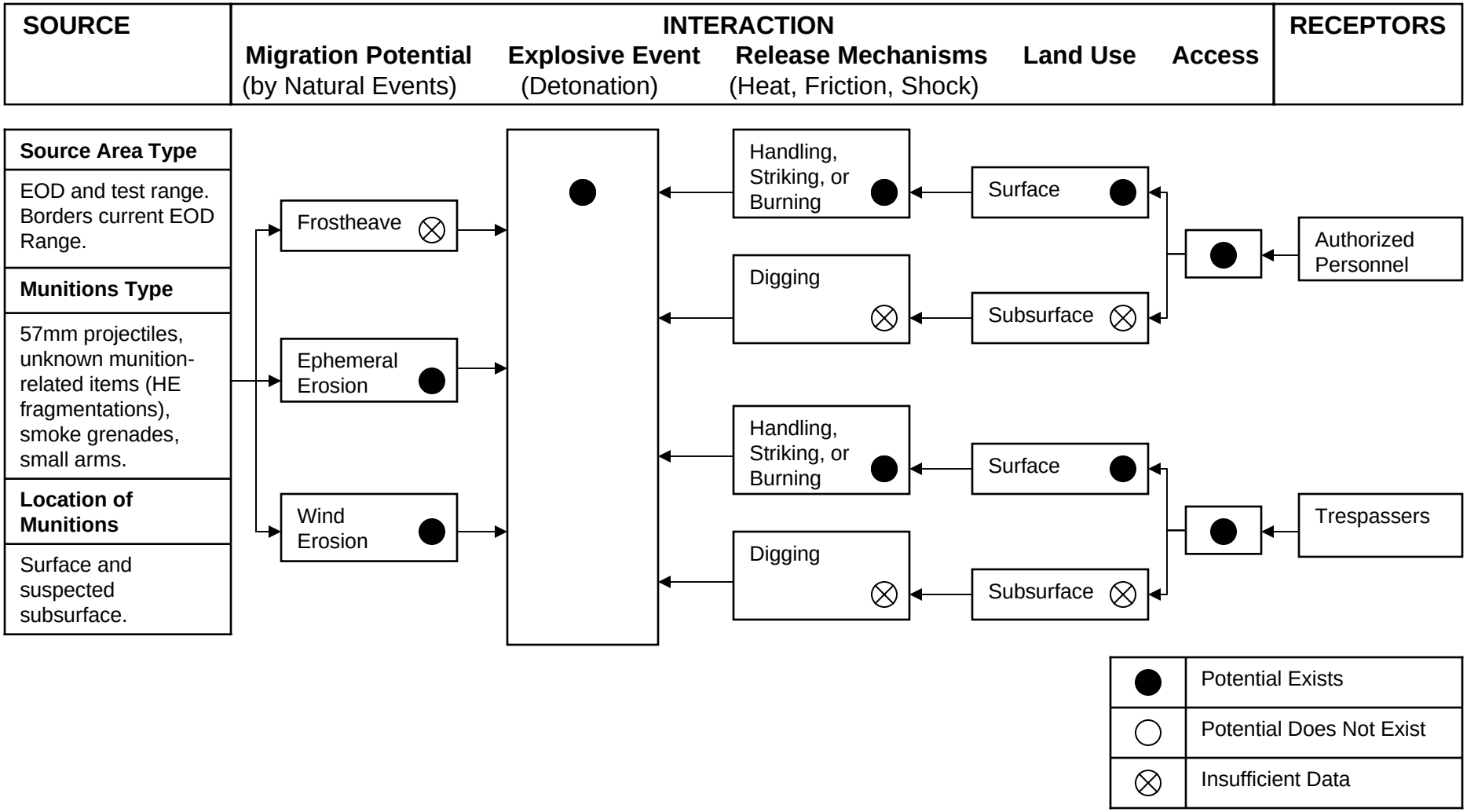

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Figure 9-7. MEC ICSM for ML125 Field Firing Range

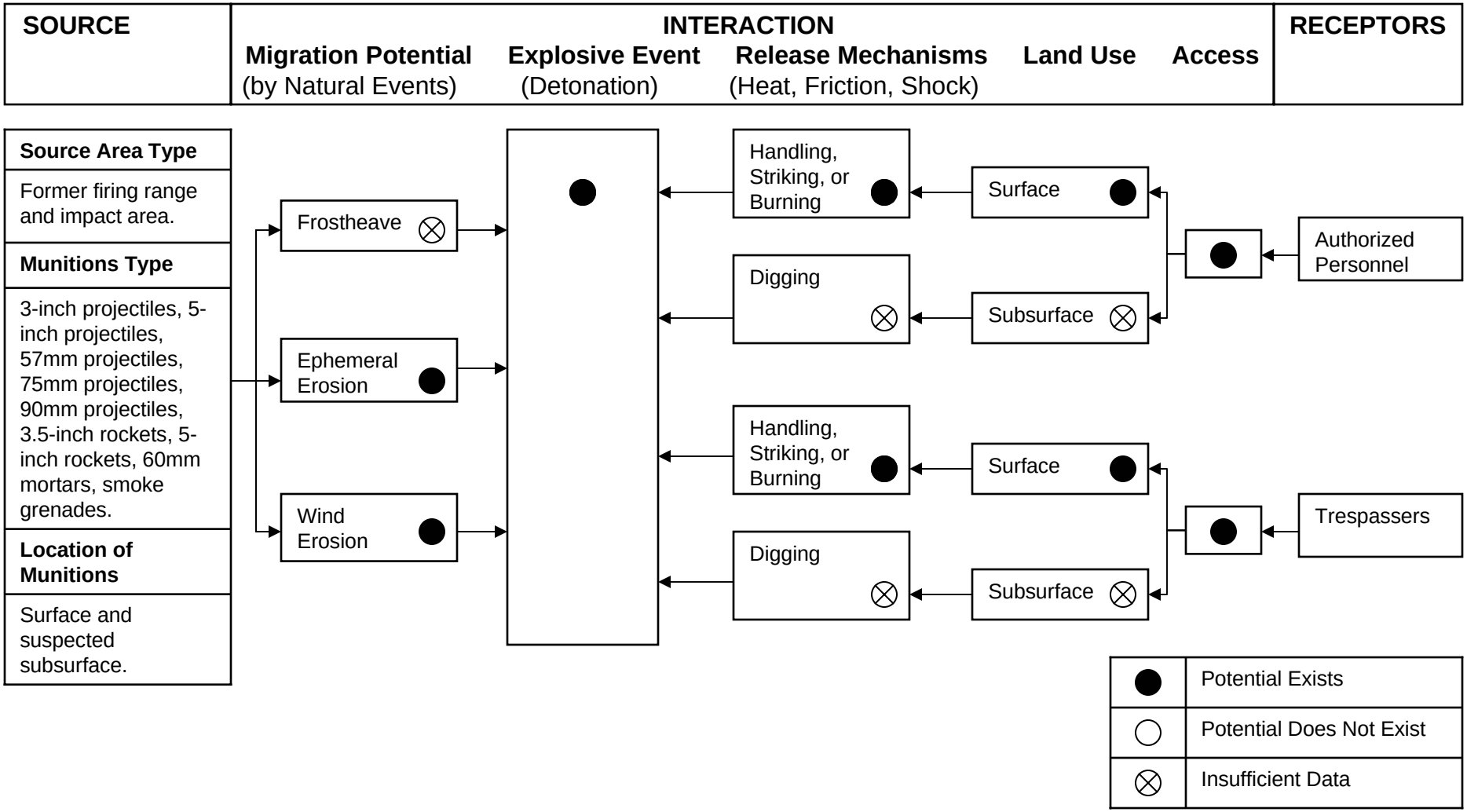

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Figure 9-8. MEC ICSM for ML774 Gun Site Fan

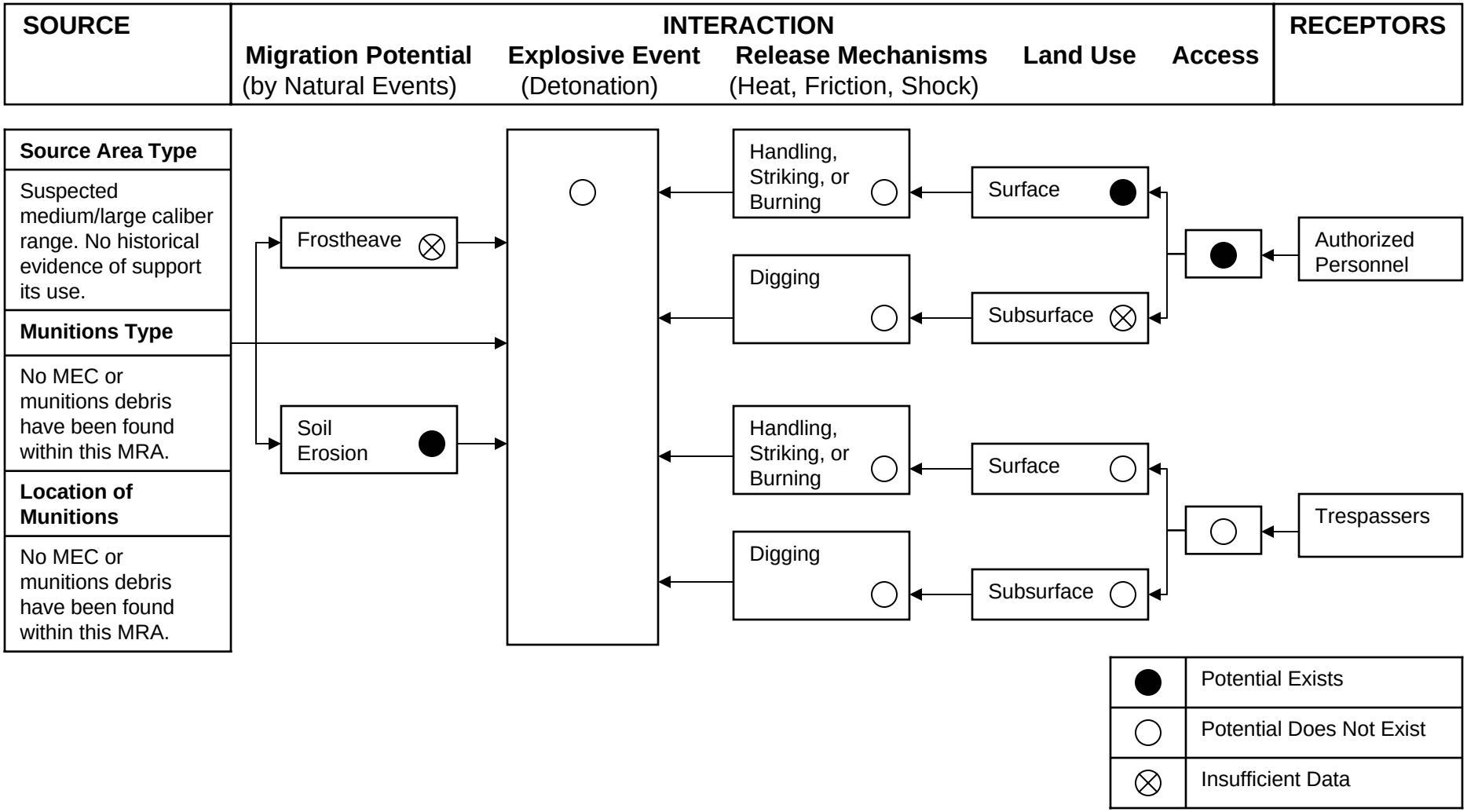

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Figure 9-9. MEC ICSM for ML781 Firing In-Abutment

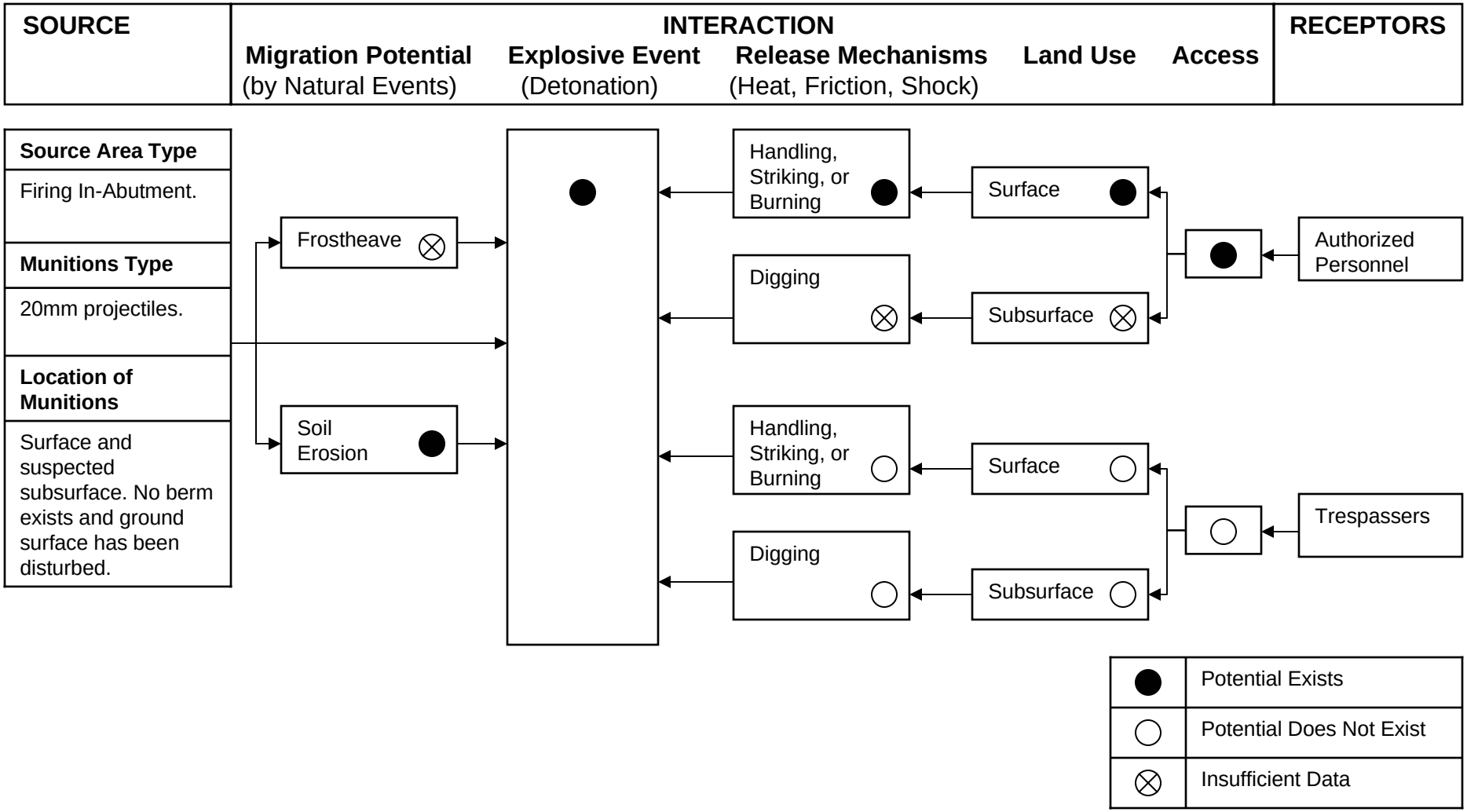

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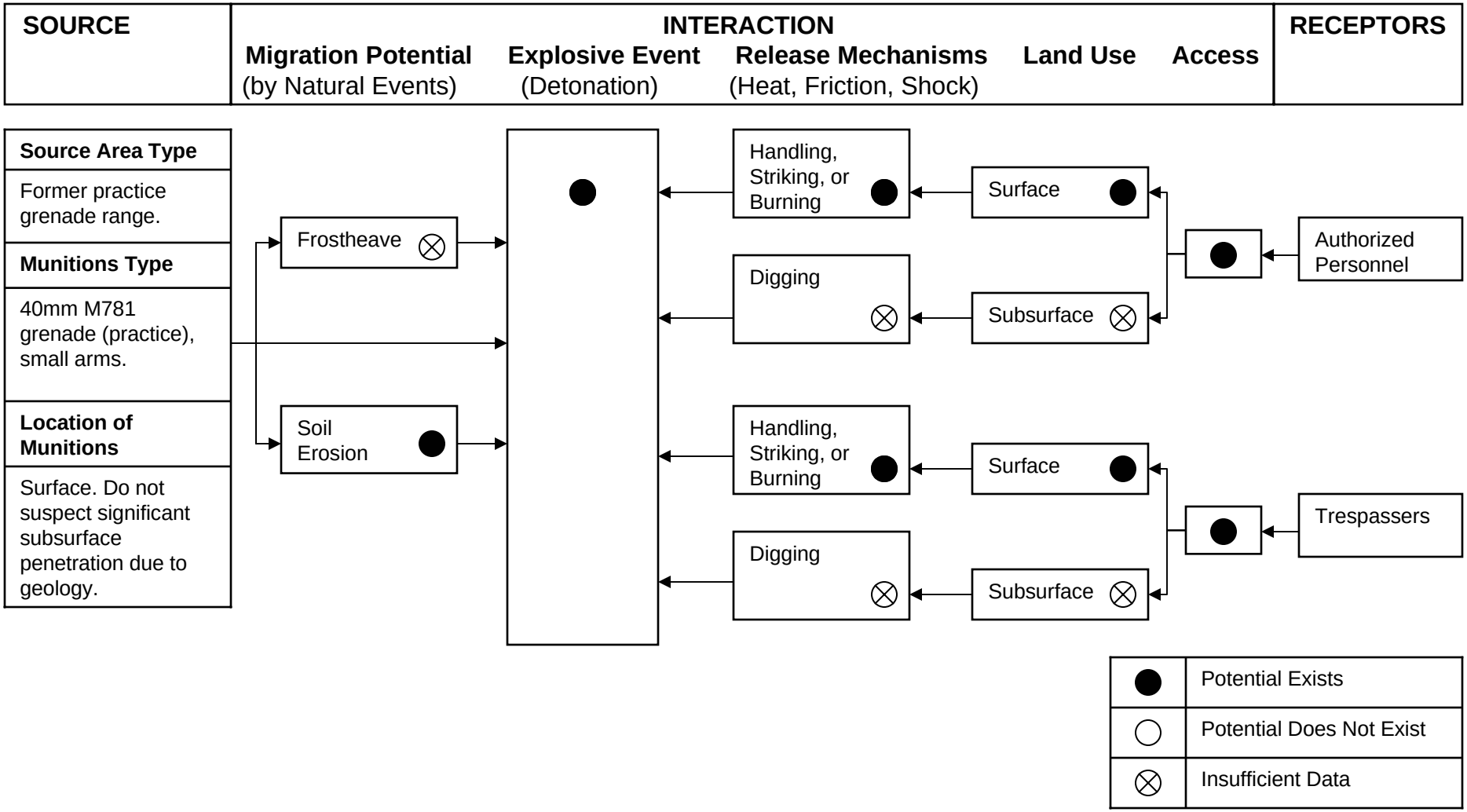
Figure 9-10. MEC ICSM for ML784 40mm Test and Training Range



Note: This site is not eligible for munitions response under MMRP

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Figure 9-11. MEC ICSM for MU772 H-25 Site

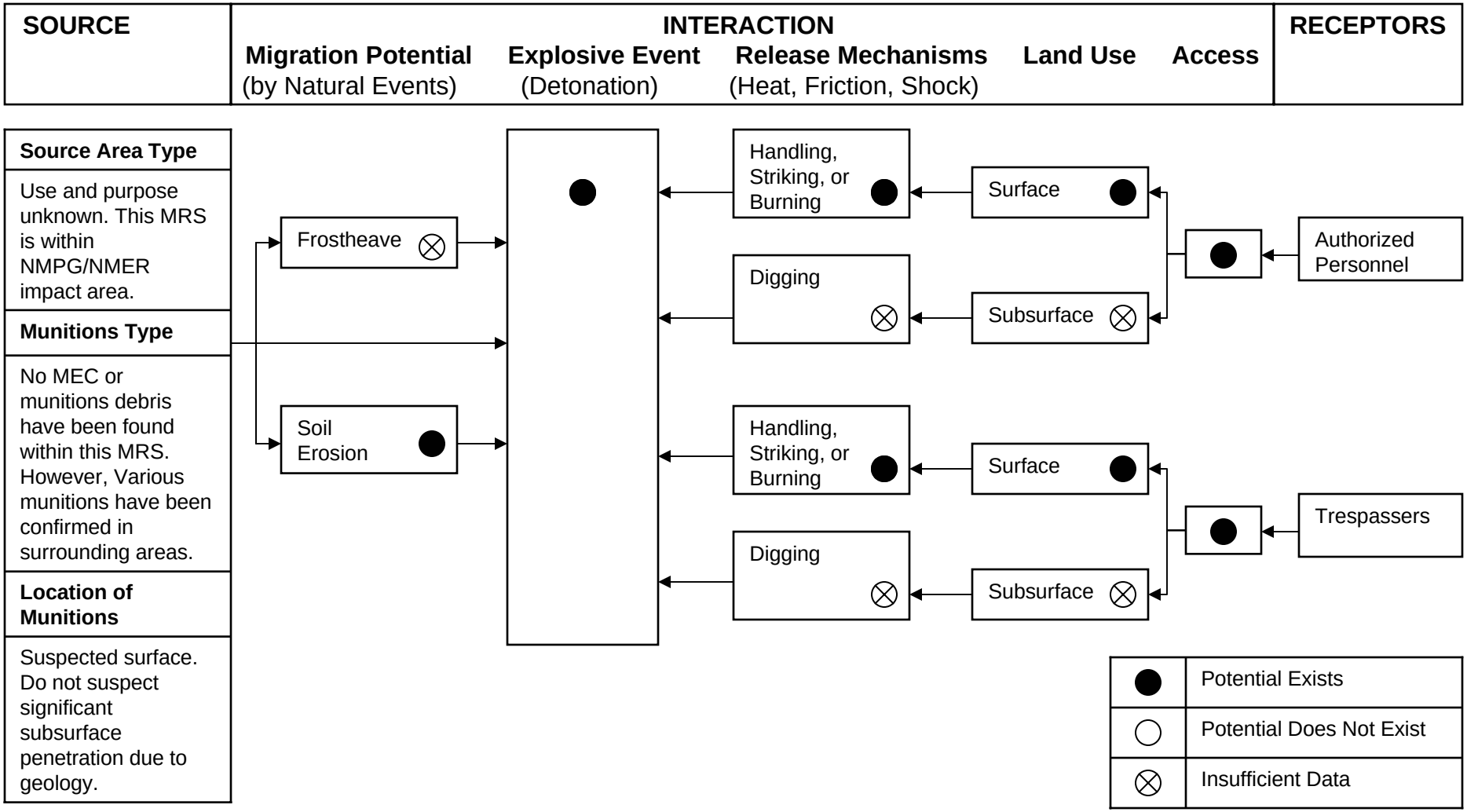

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Figure 9-12. MEC ICSM for PT123 Tijeras Small Arms Range

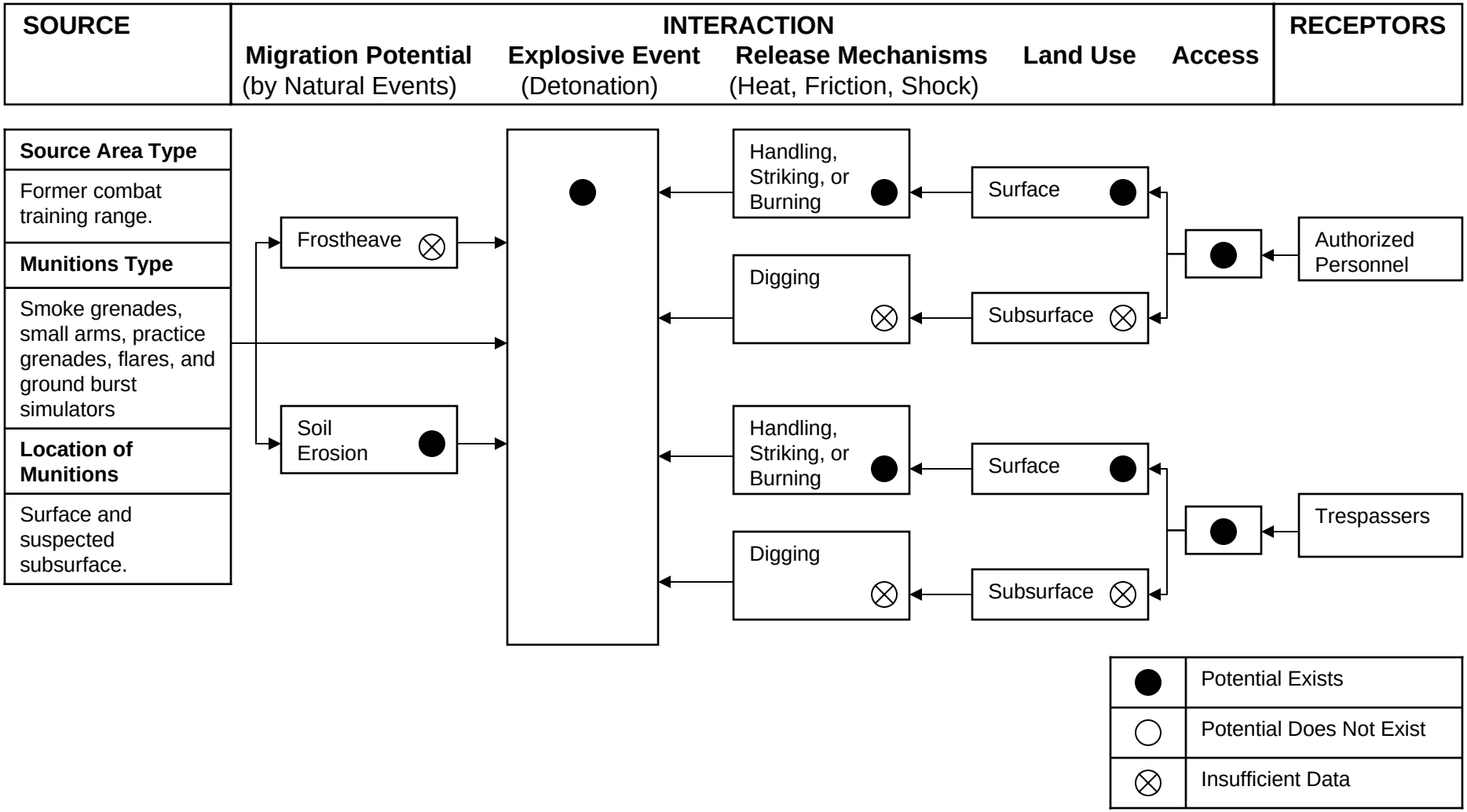

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Figure 9-13. MEC ICSM for PT761 Tijeras Small Arms and Training Range

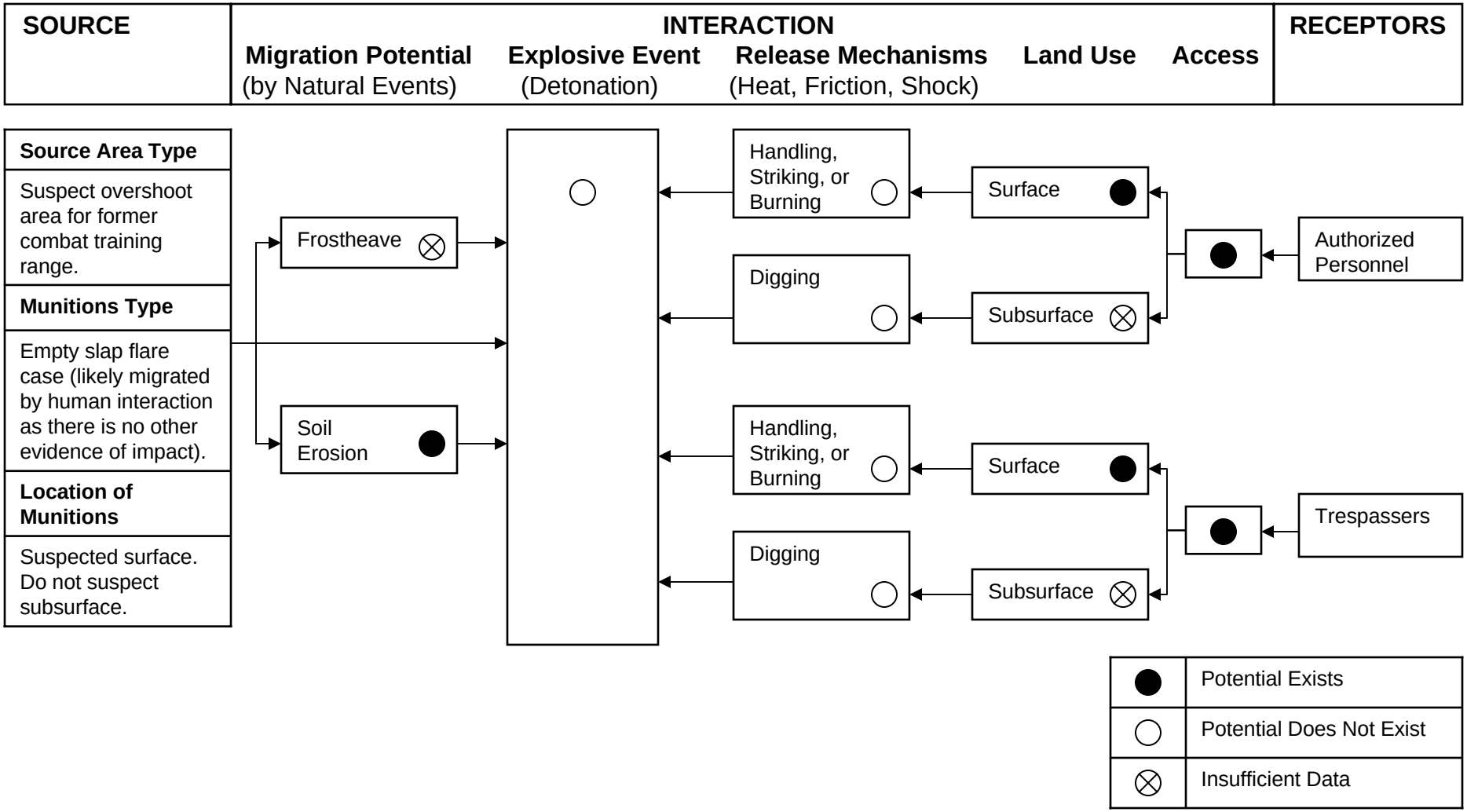

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Figure 9-14. MEC ICSM for PT773 Coyote Canyon Tech Site

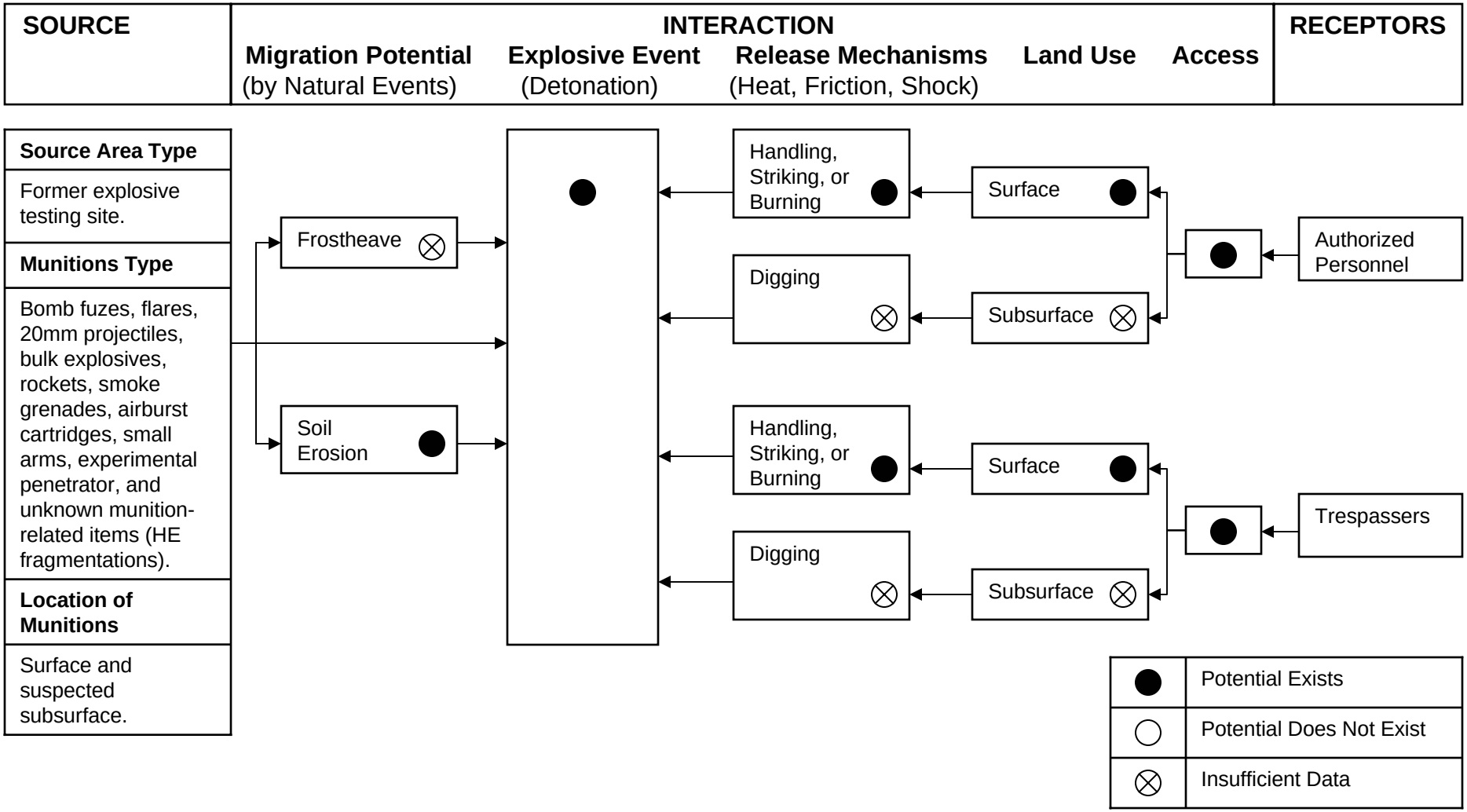

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Figure 9-15. MEC ICSM for PT783 Bazooka Training Range

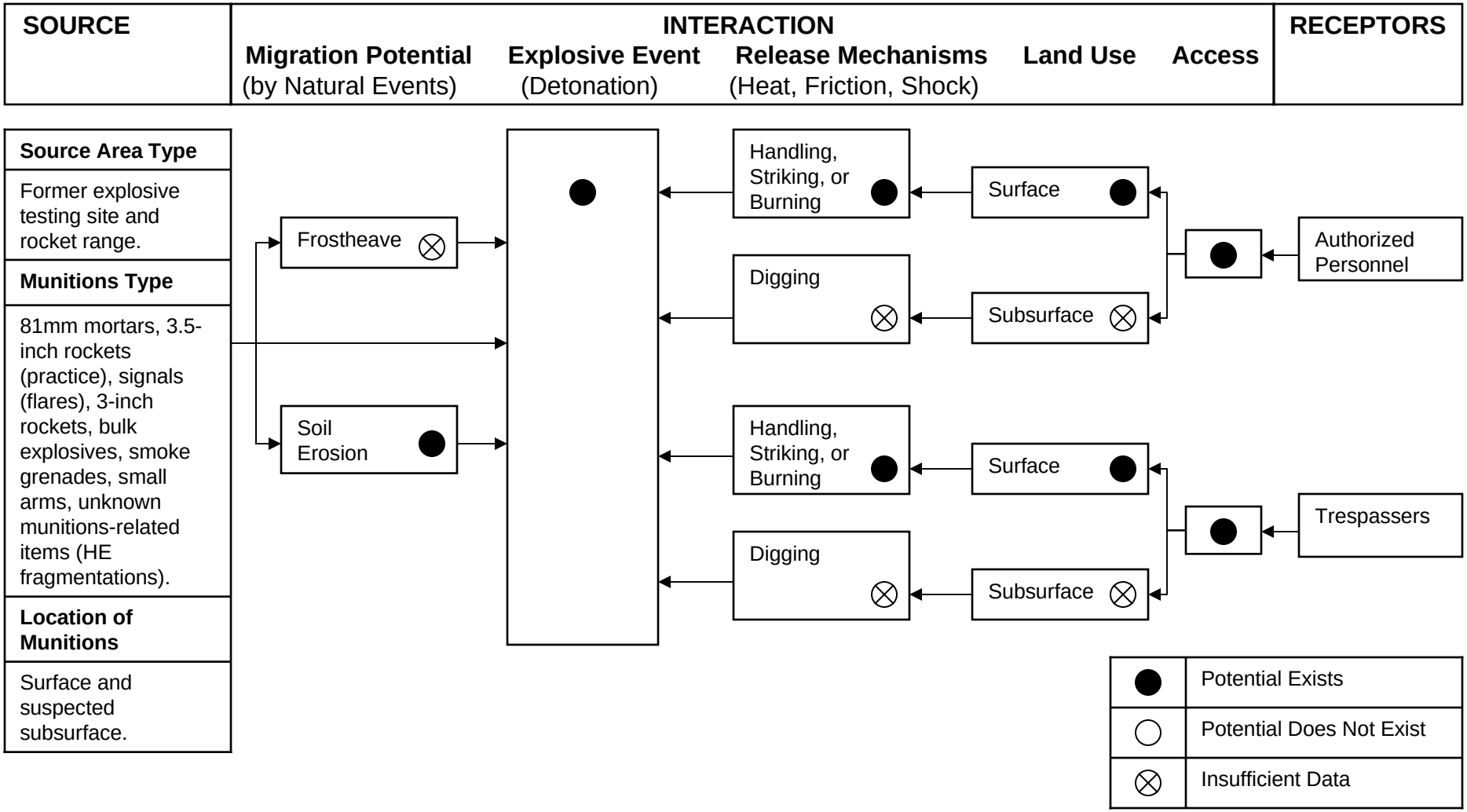

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Figure 9-16. MEC ICSM for SR763 Rifle Range

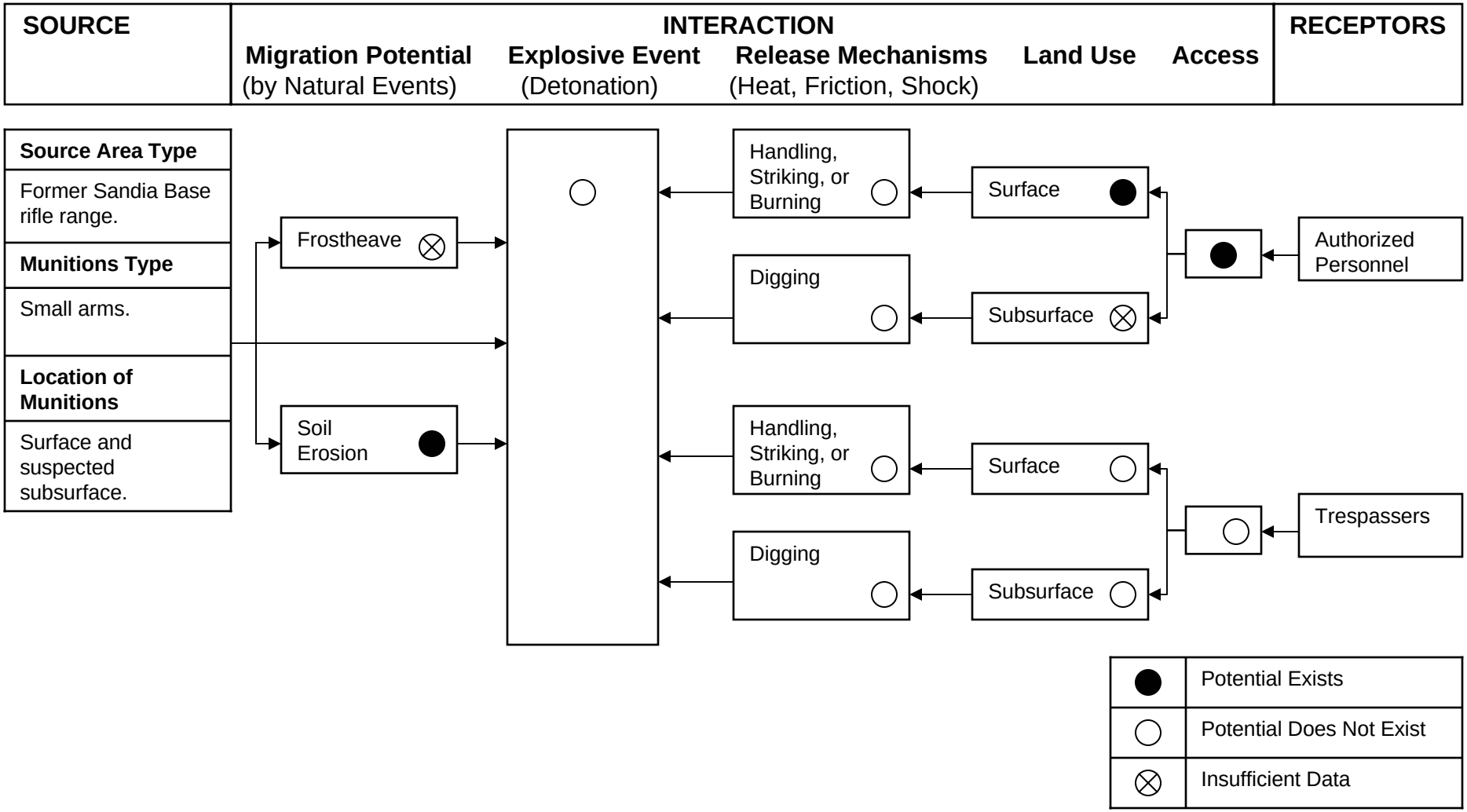

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Figure 9-17. MEC ICSM for SR764 Rifle Range

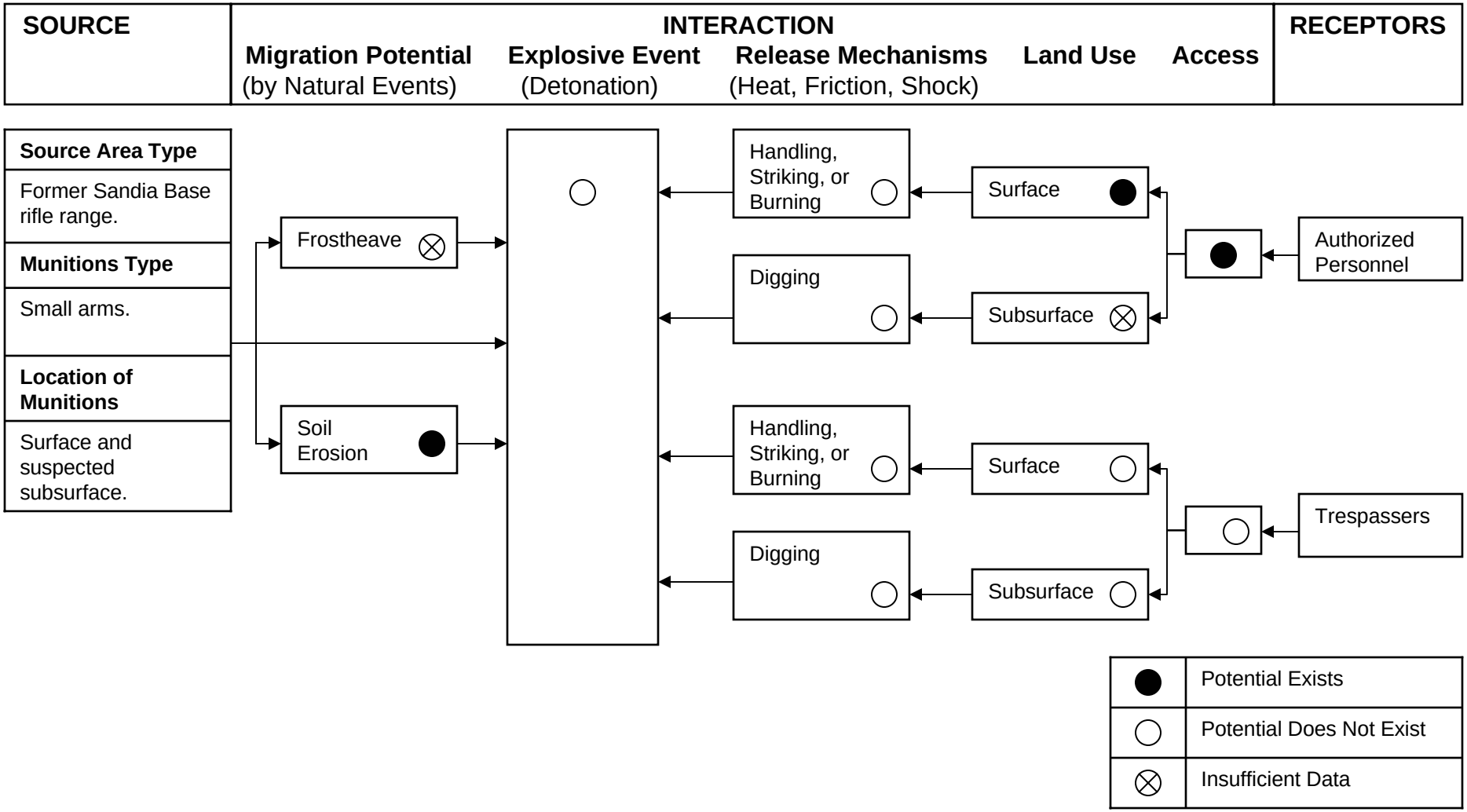

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Figure 9-18. MEC ICSM for SR765 WWII Pistol Range

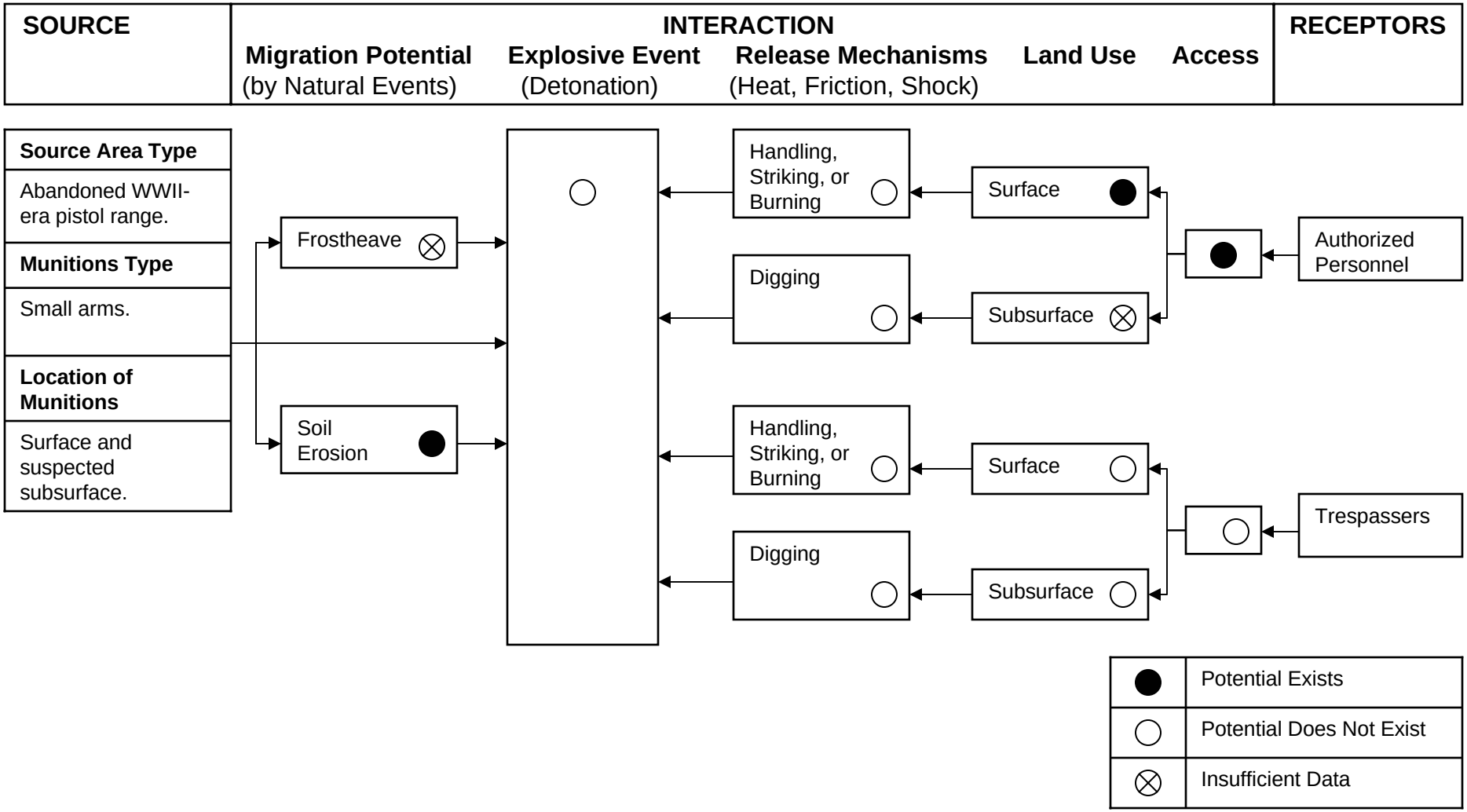

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Figure 9-19. MEC ICSM for SR766 Sub-Machine Gun

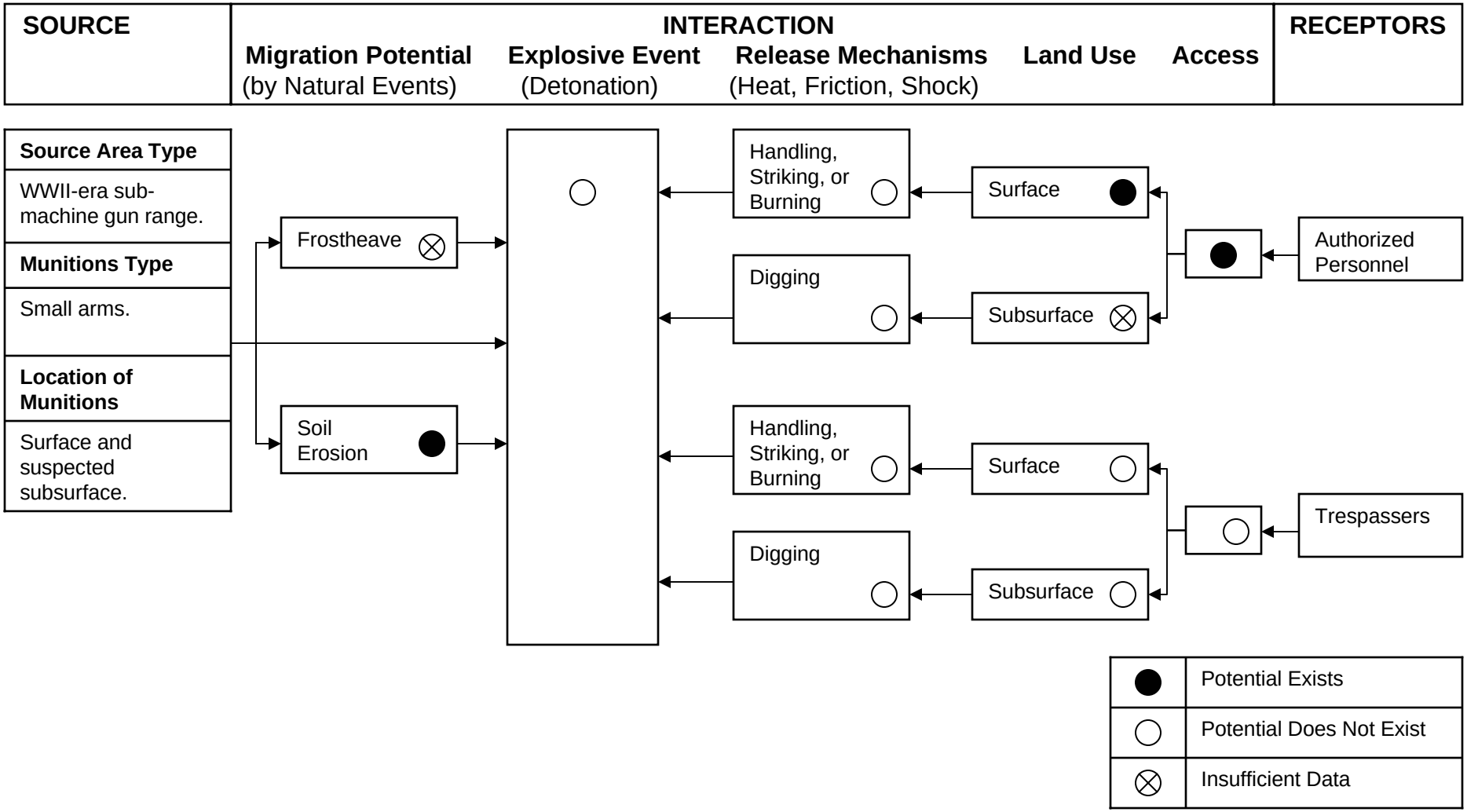

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Figure 9-20. MEC ICSM for SR767 Rifle Range

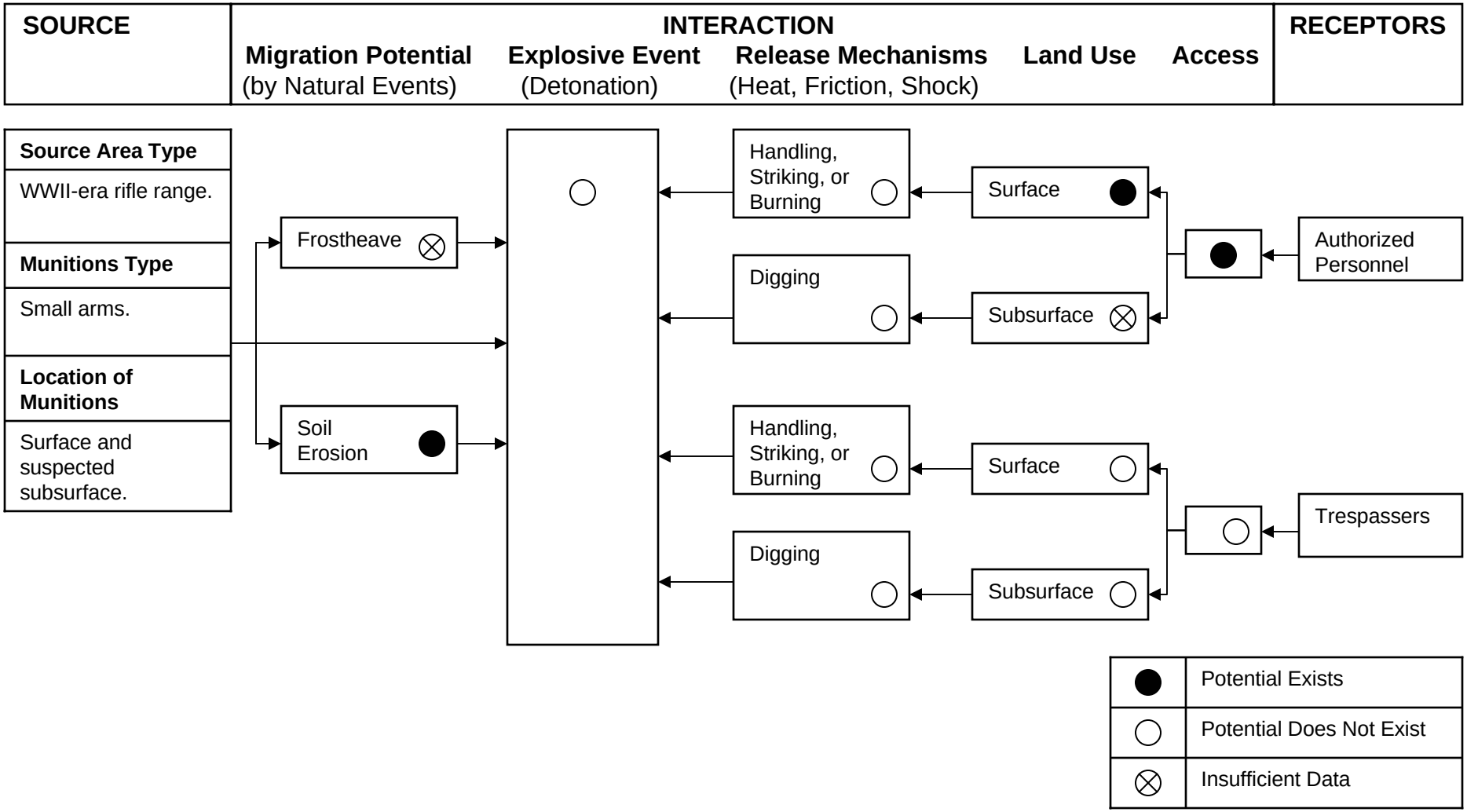

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Figure 9-21. MEC ICSM for SR768 Close Combat Infiltration Course

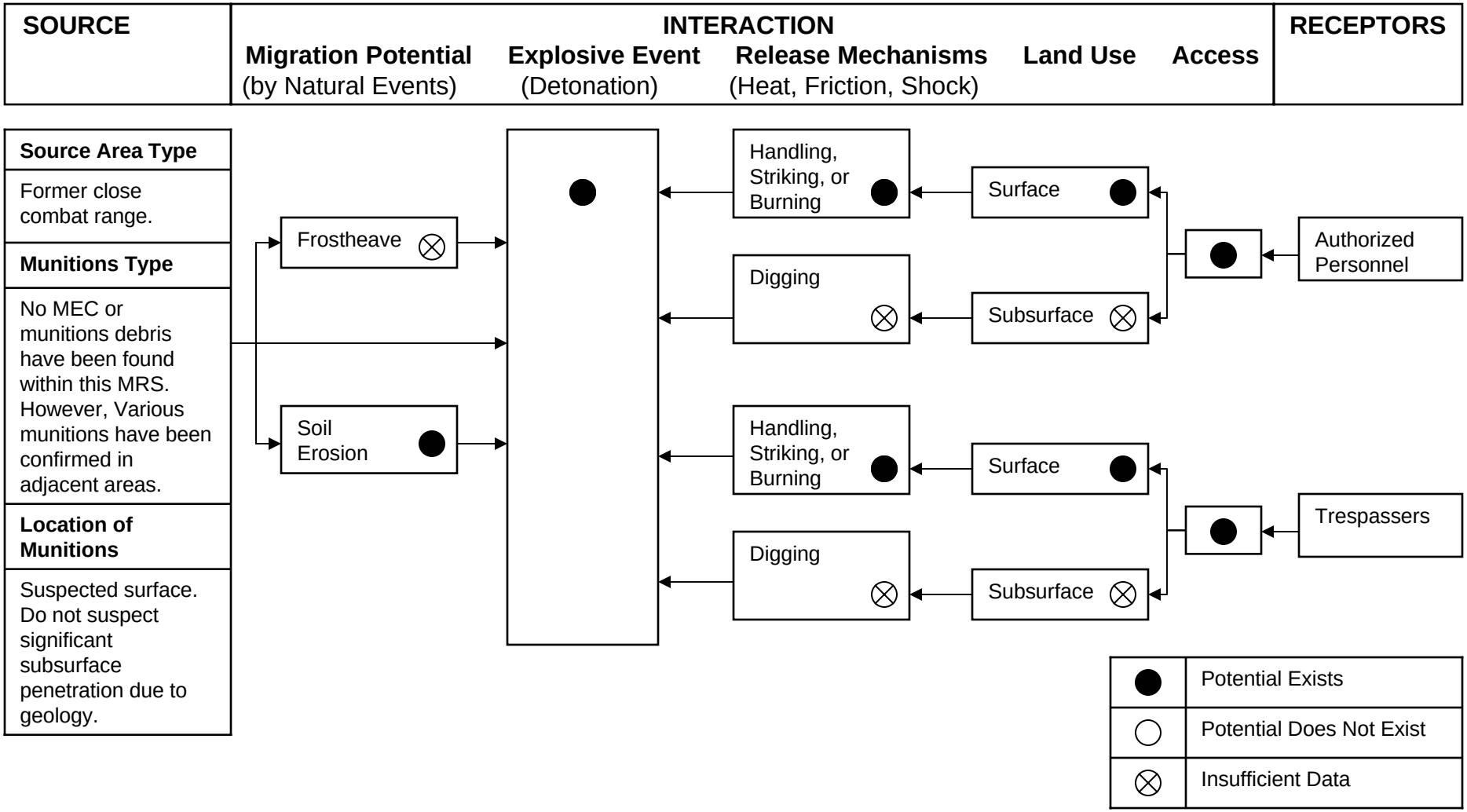

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Figure 9-22. MEC ICSM for SR777 Rifle Range

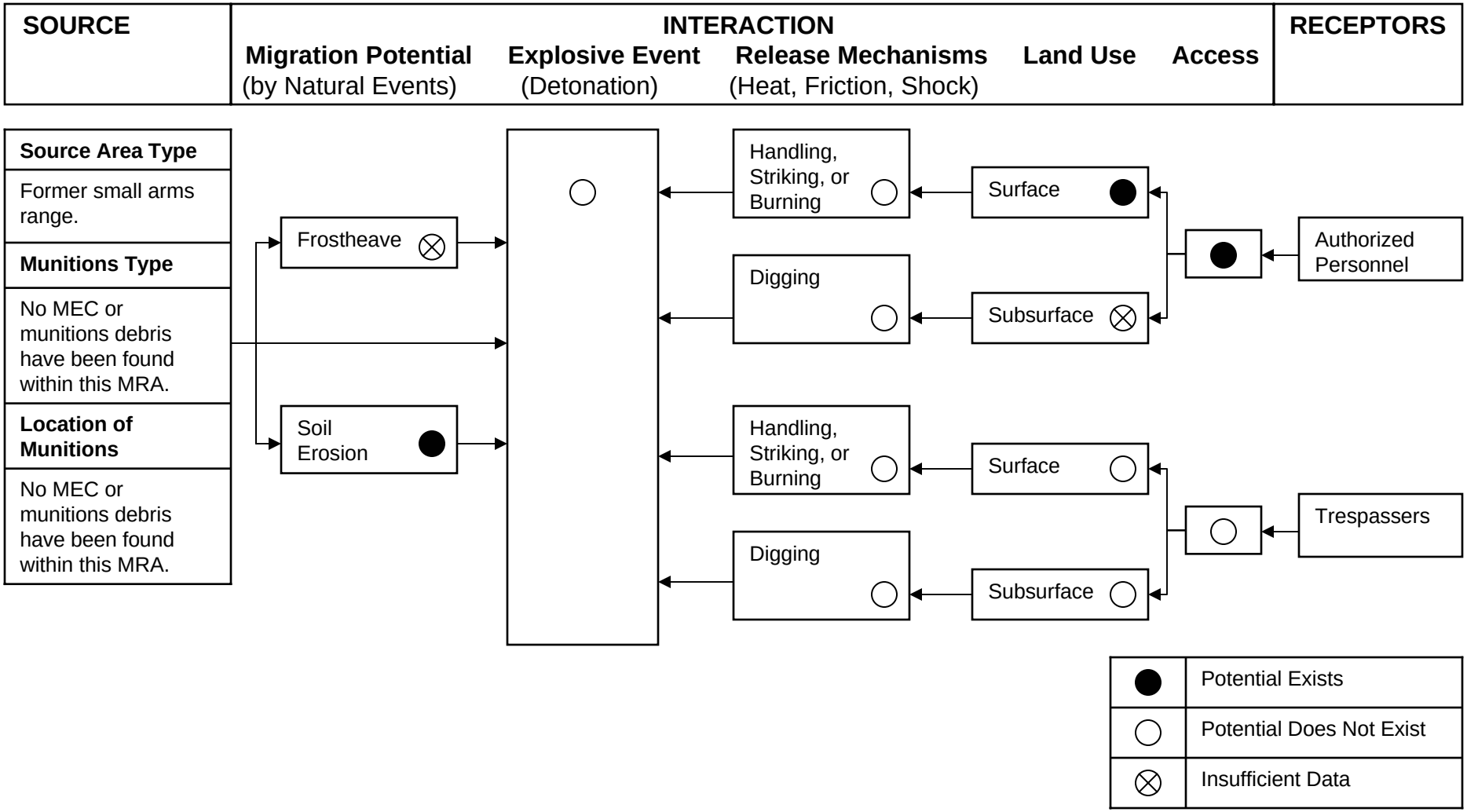

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Figure 9-23. MEC ICSM for SR778 Airfield Pistol Range

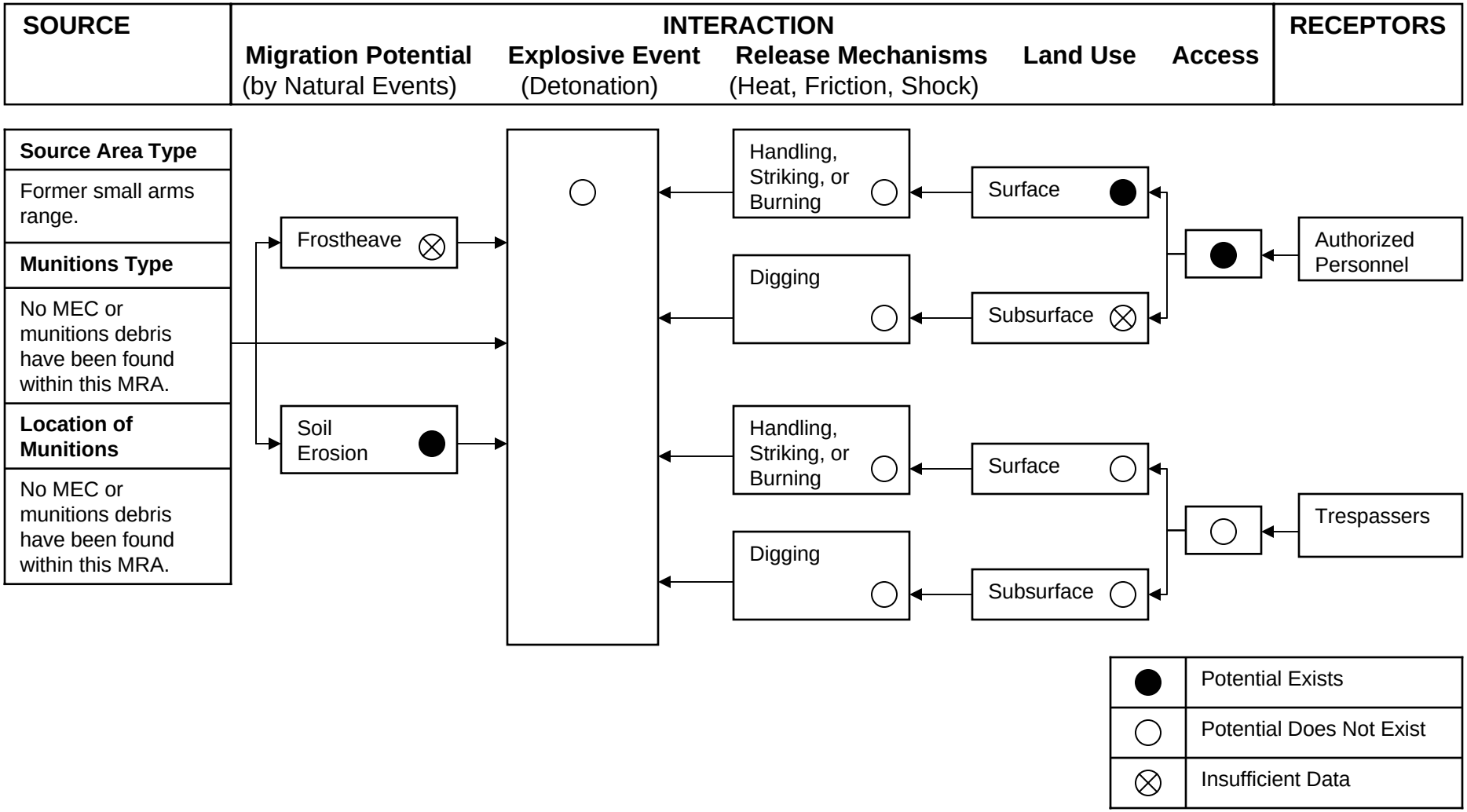

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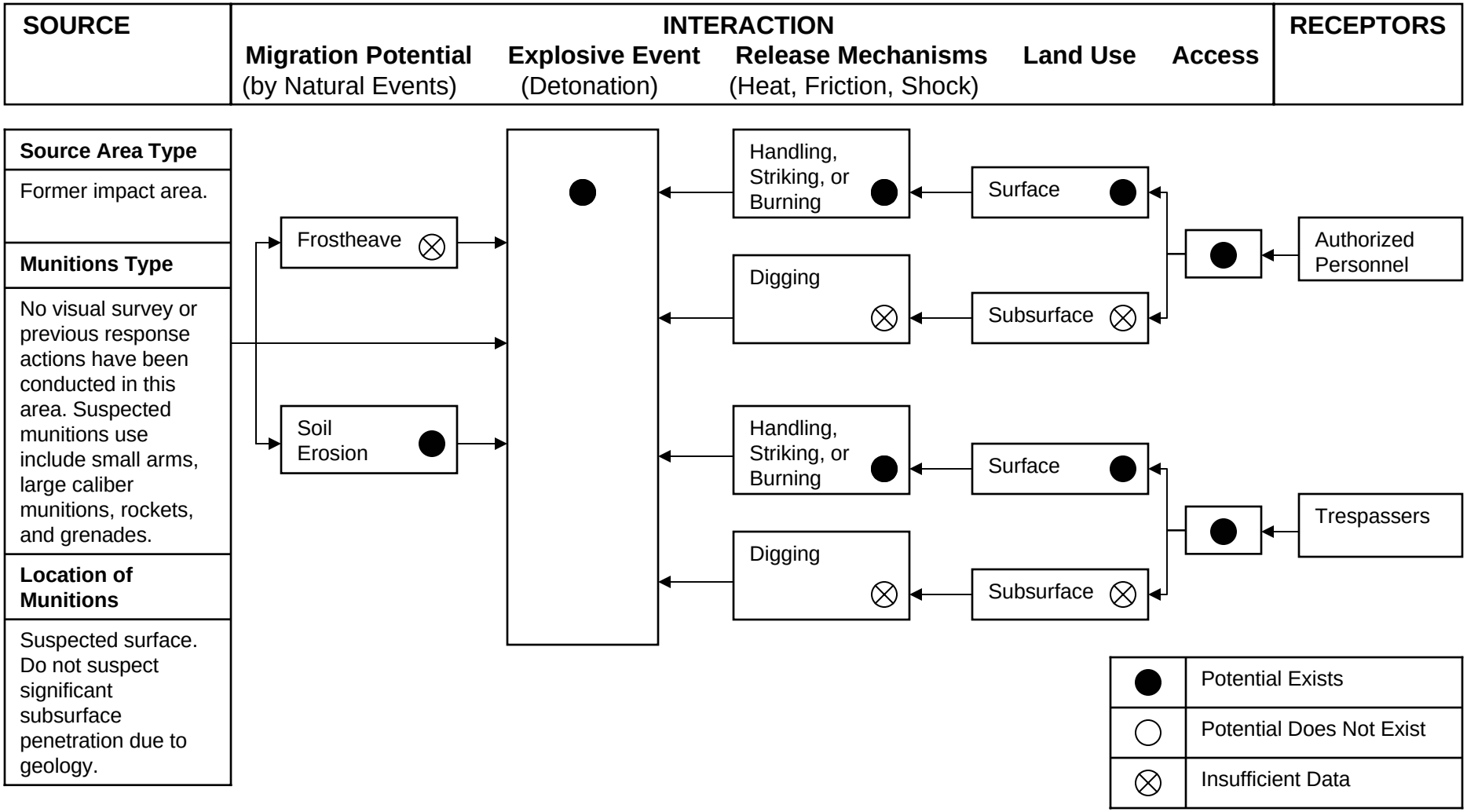
Figure 9-24. MEC ICSM for SR780 Impact Area



Note: This site is not eligible for munitions response under MMRP

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Figure 9-25. MEC ICSM for TS775 Airfield Skeet Range

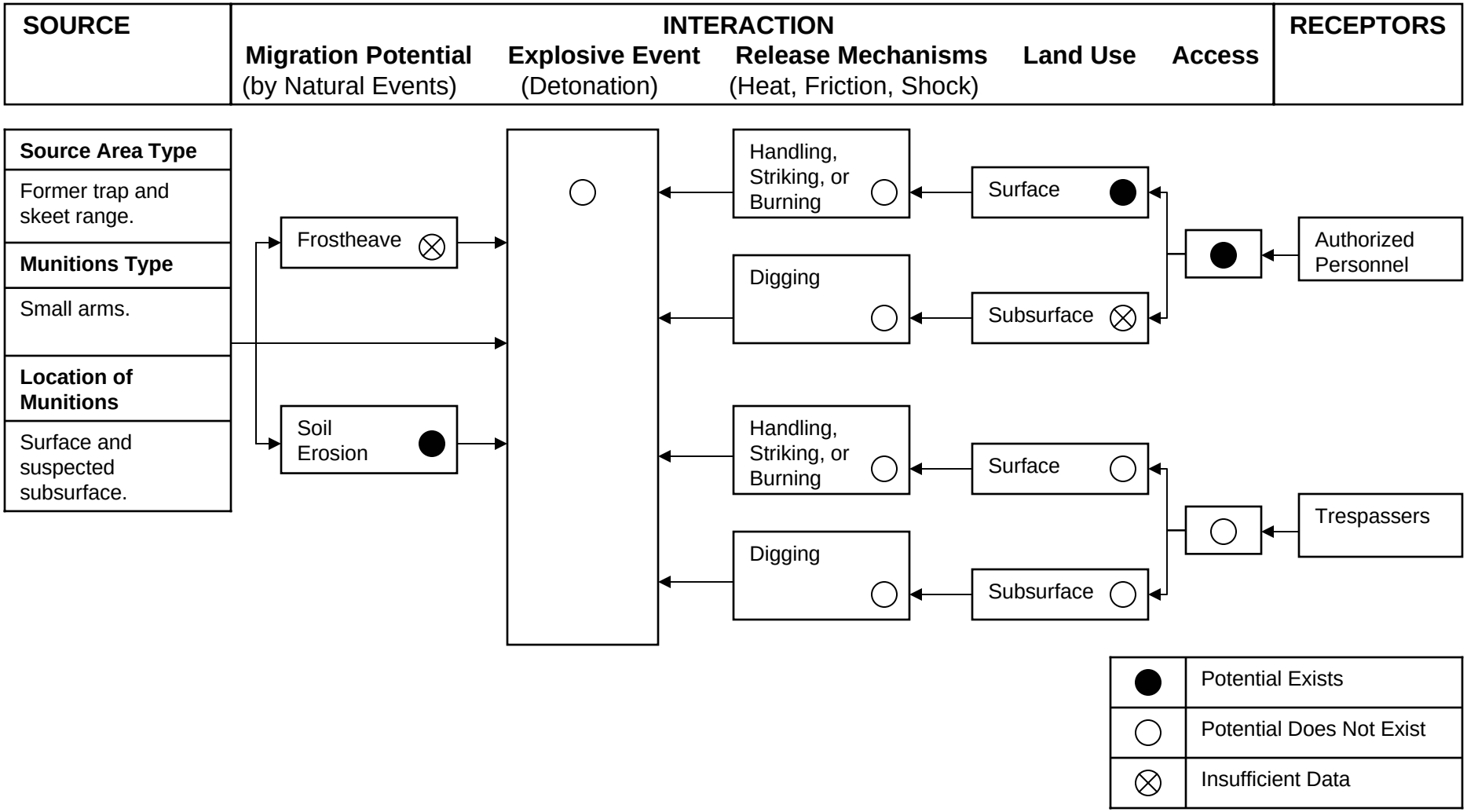

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Figure 9-26. MEC ICSM for TS776 Skeet Range

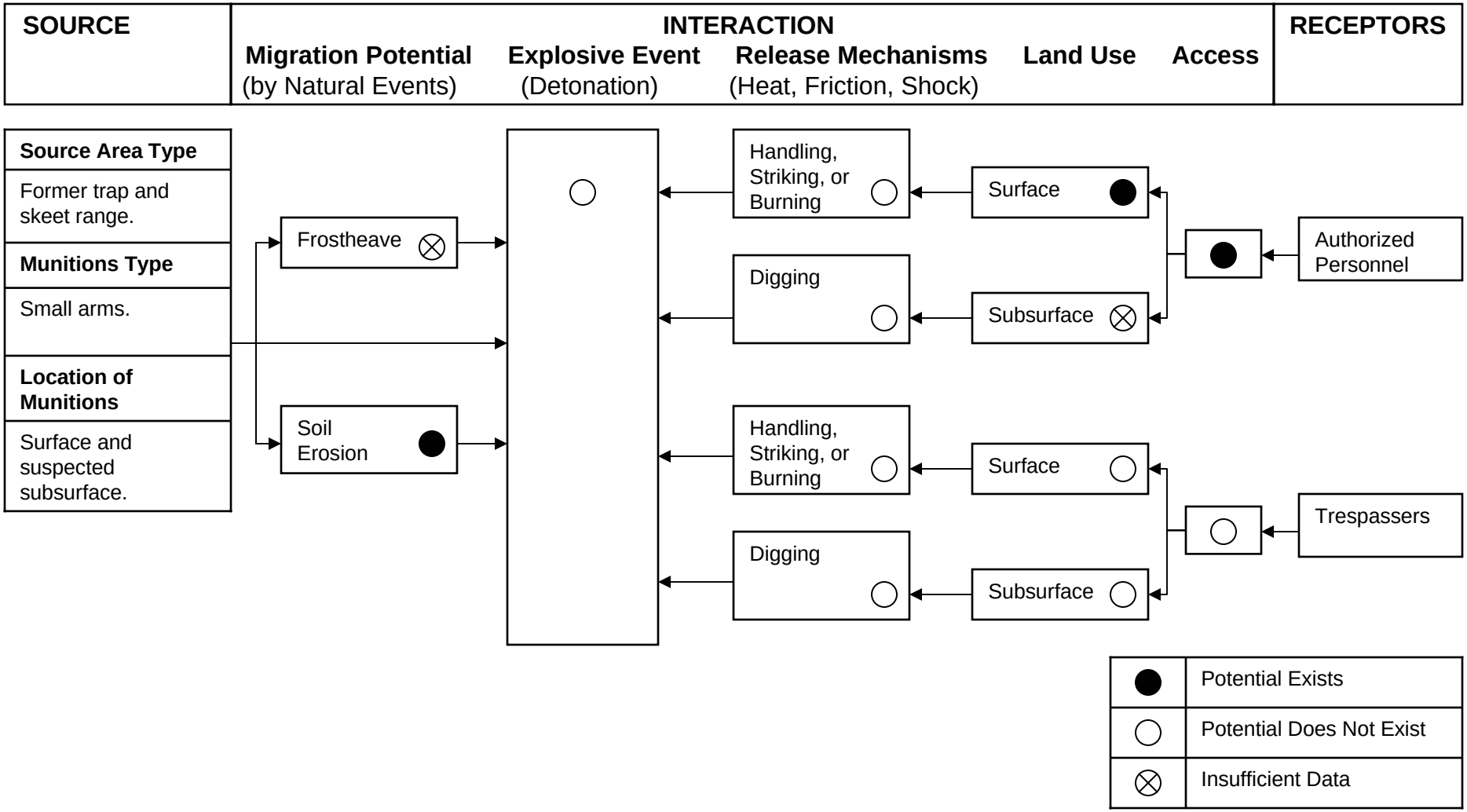

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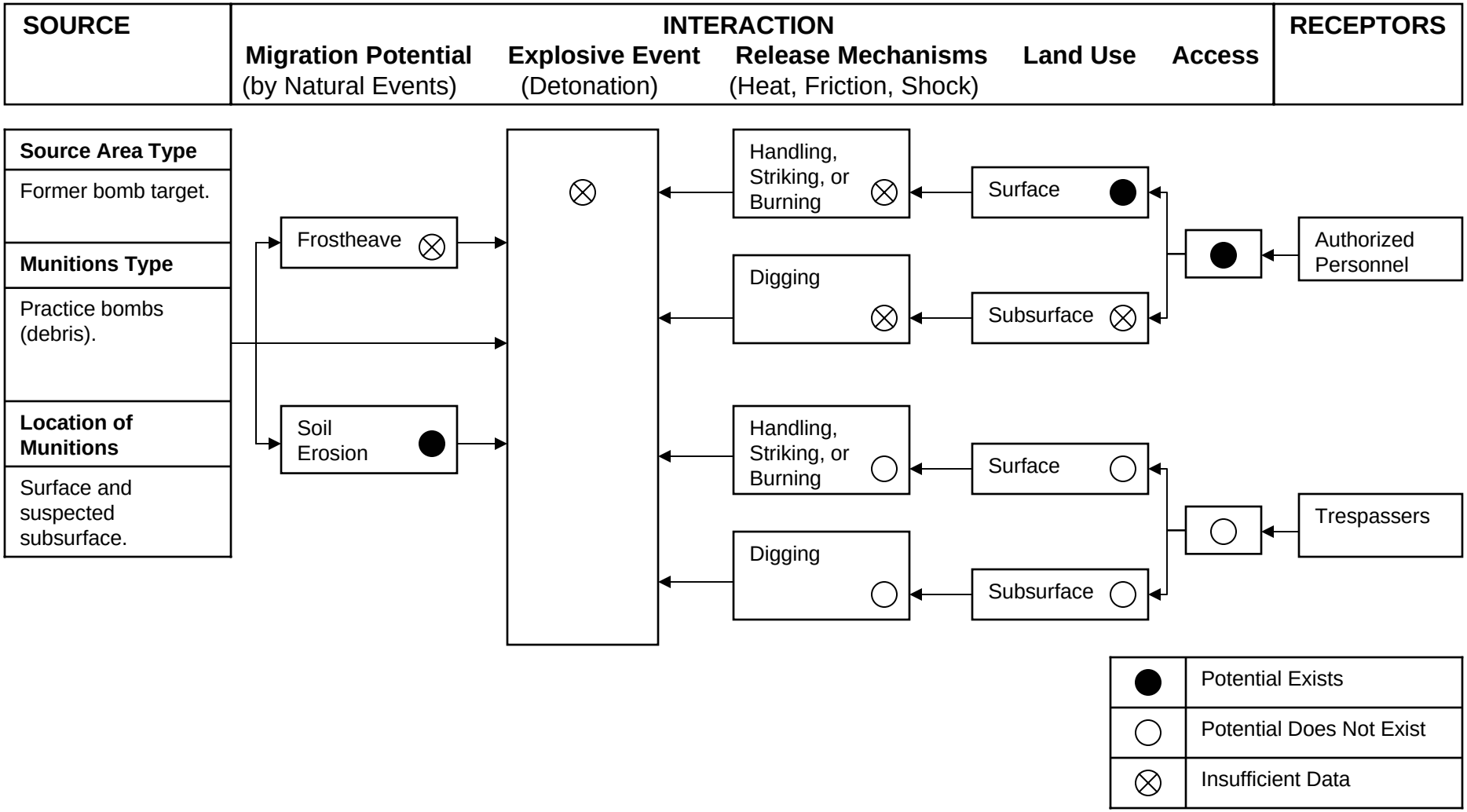
Figure 9-27. MEC ICSM for Bomb Target (No MRA ID)



Note: This site is not eligible for munitions response under MMRP

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Figure 9-28. MEC ICSM for Sandia Base Howitzer Range (No MRA ID)

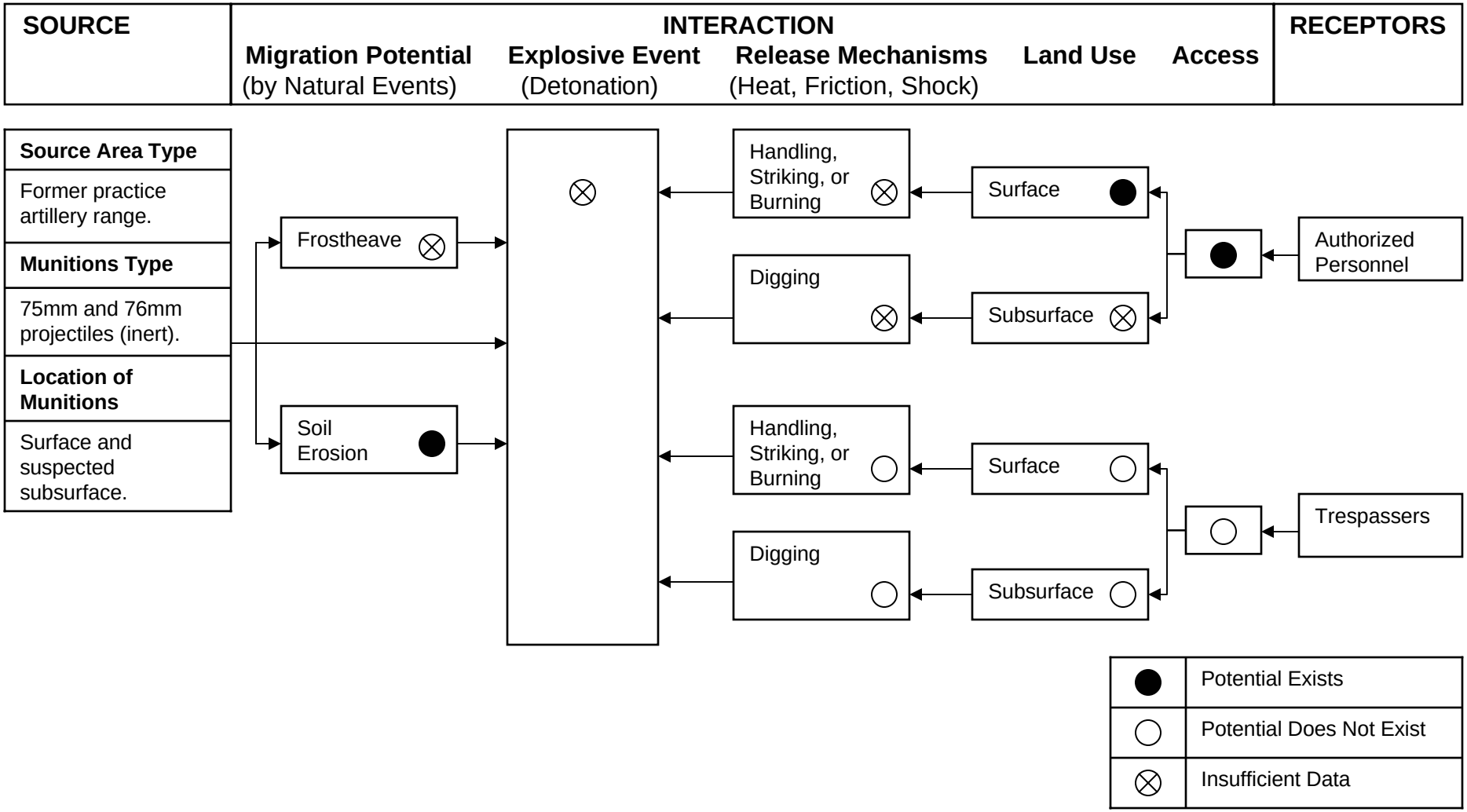

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Figure 9-29. MEC ICSM for Sandia Base Howitzer Range Buffer (No MRA ID)

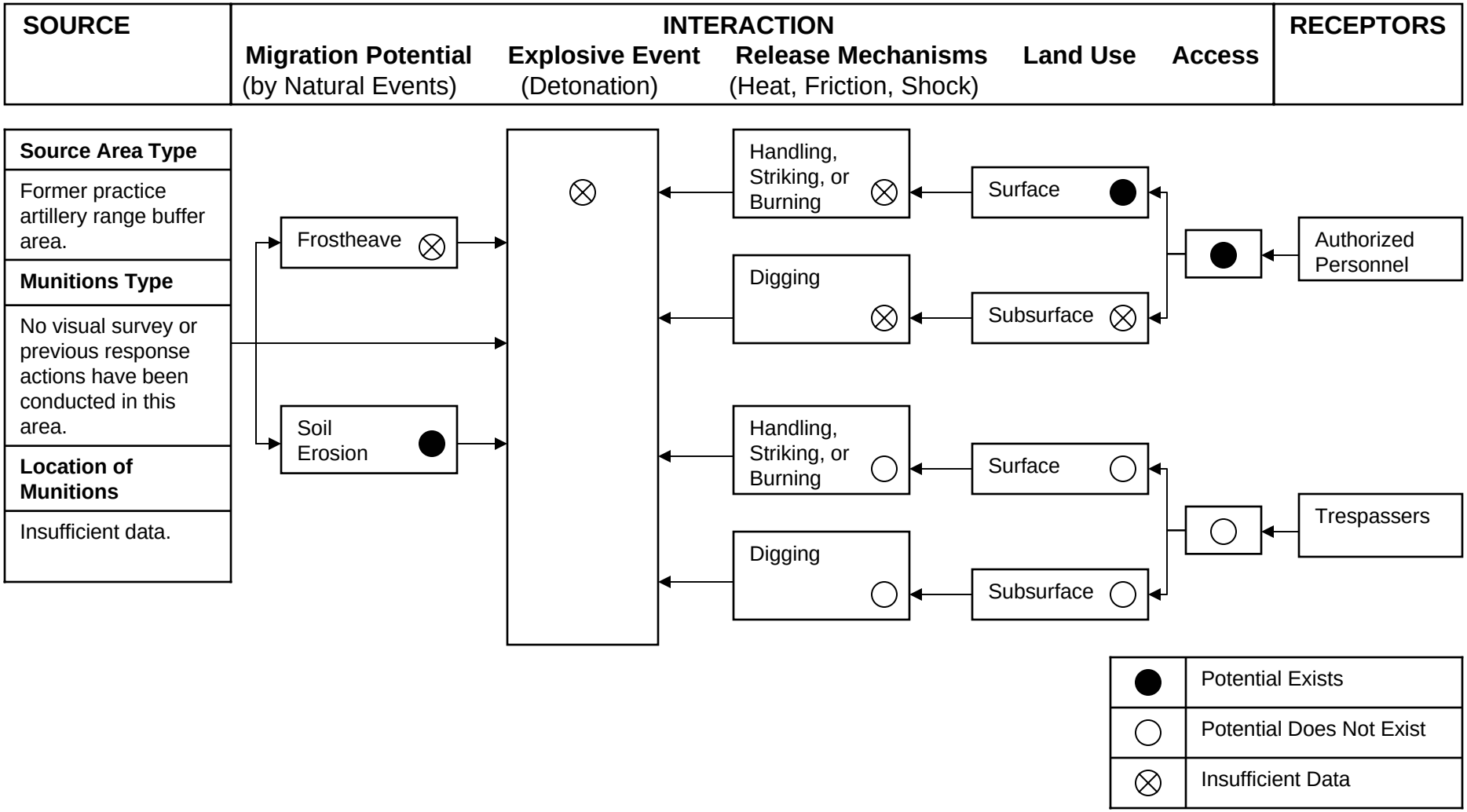

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Figure 9-30. MC ICSM for AL120 Proximity Fuze Range

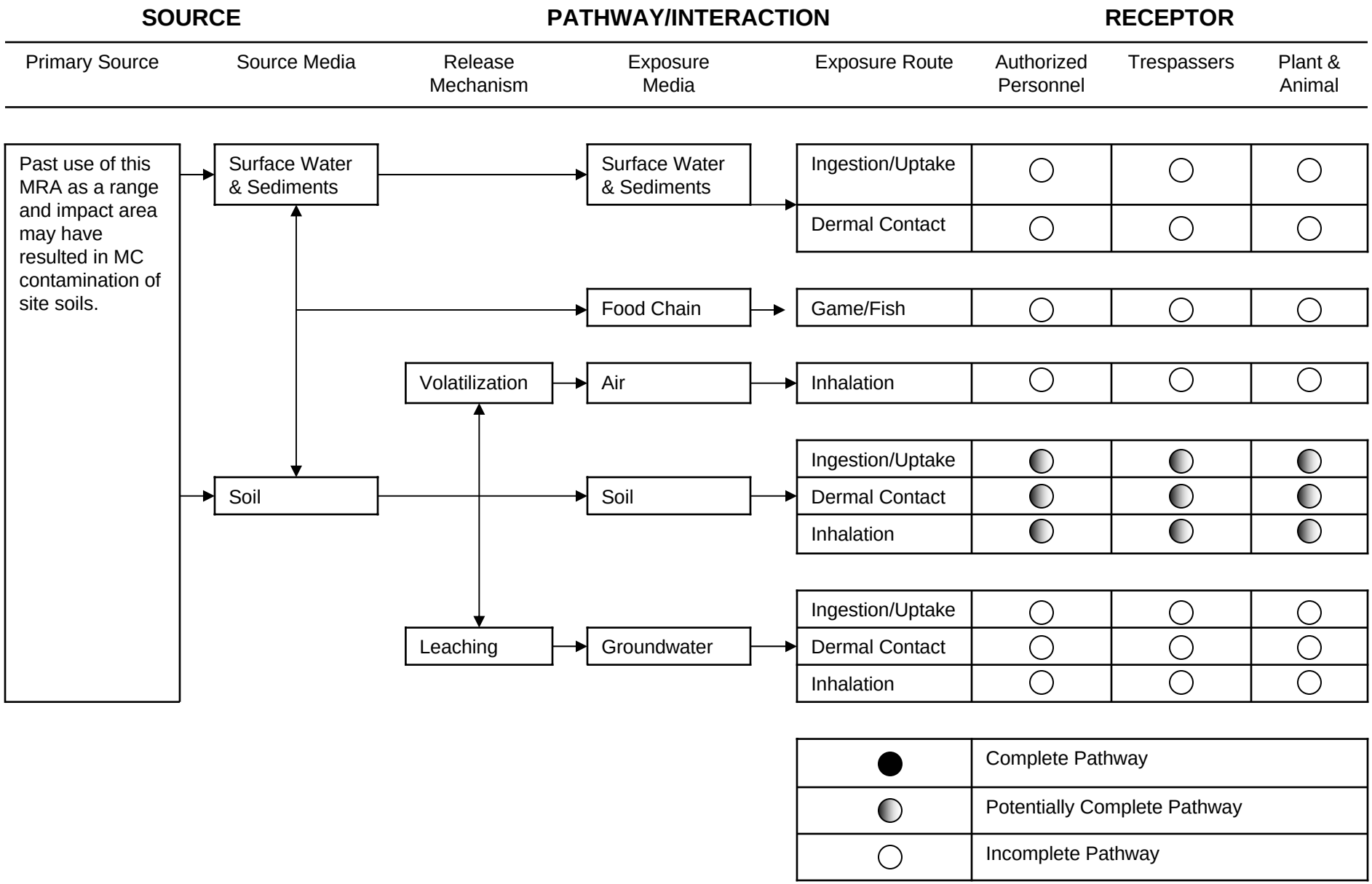

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Figure 9-31. MC ICSM for AL769 Ordnance Drop Zone

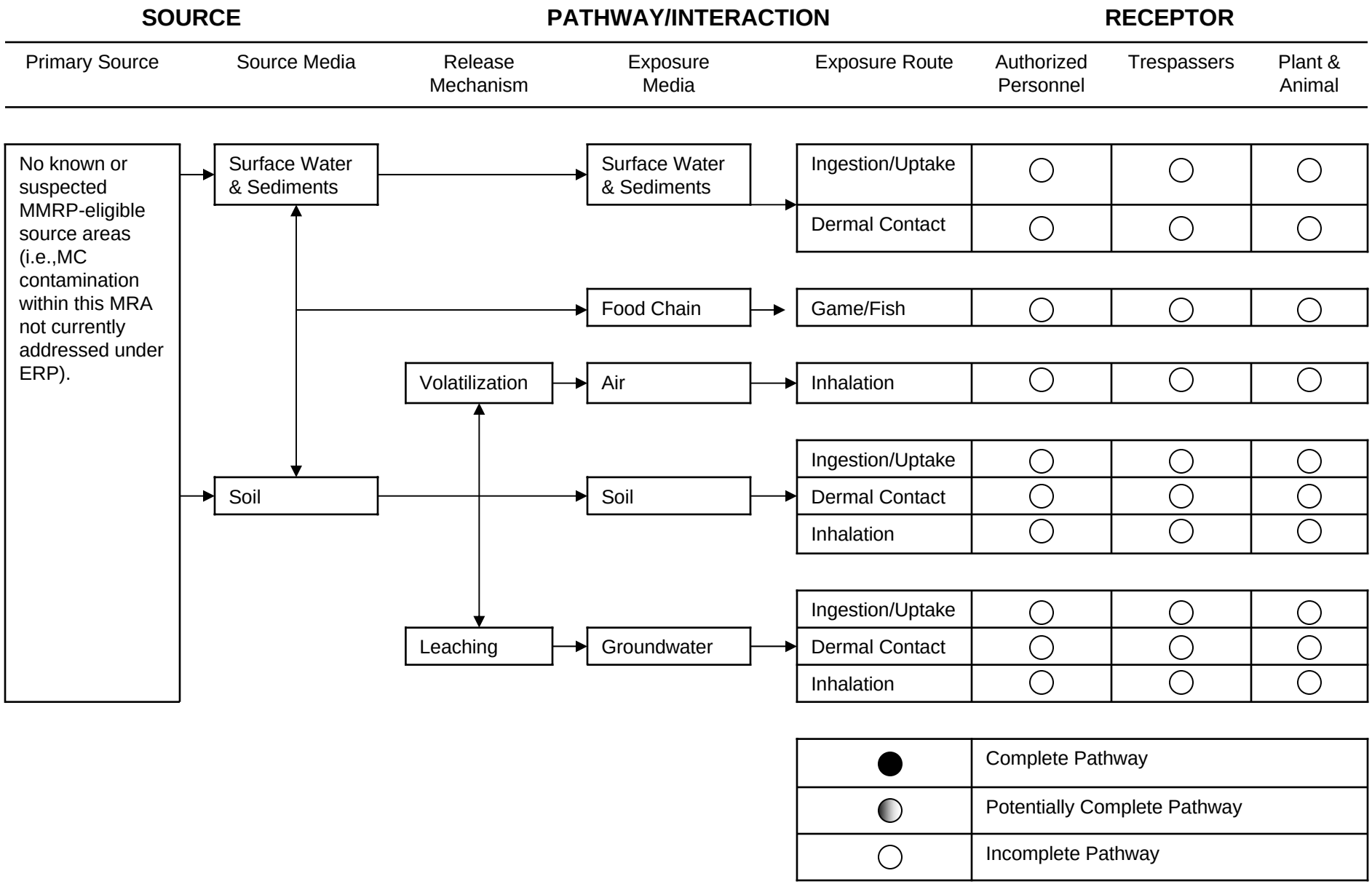

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Figure 9-32. MC ICSM for AL771 Old Cable Site

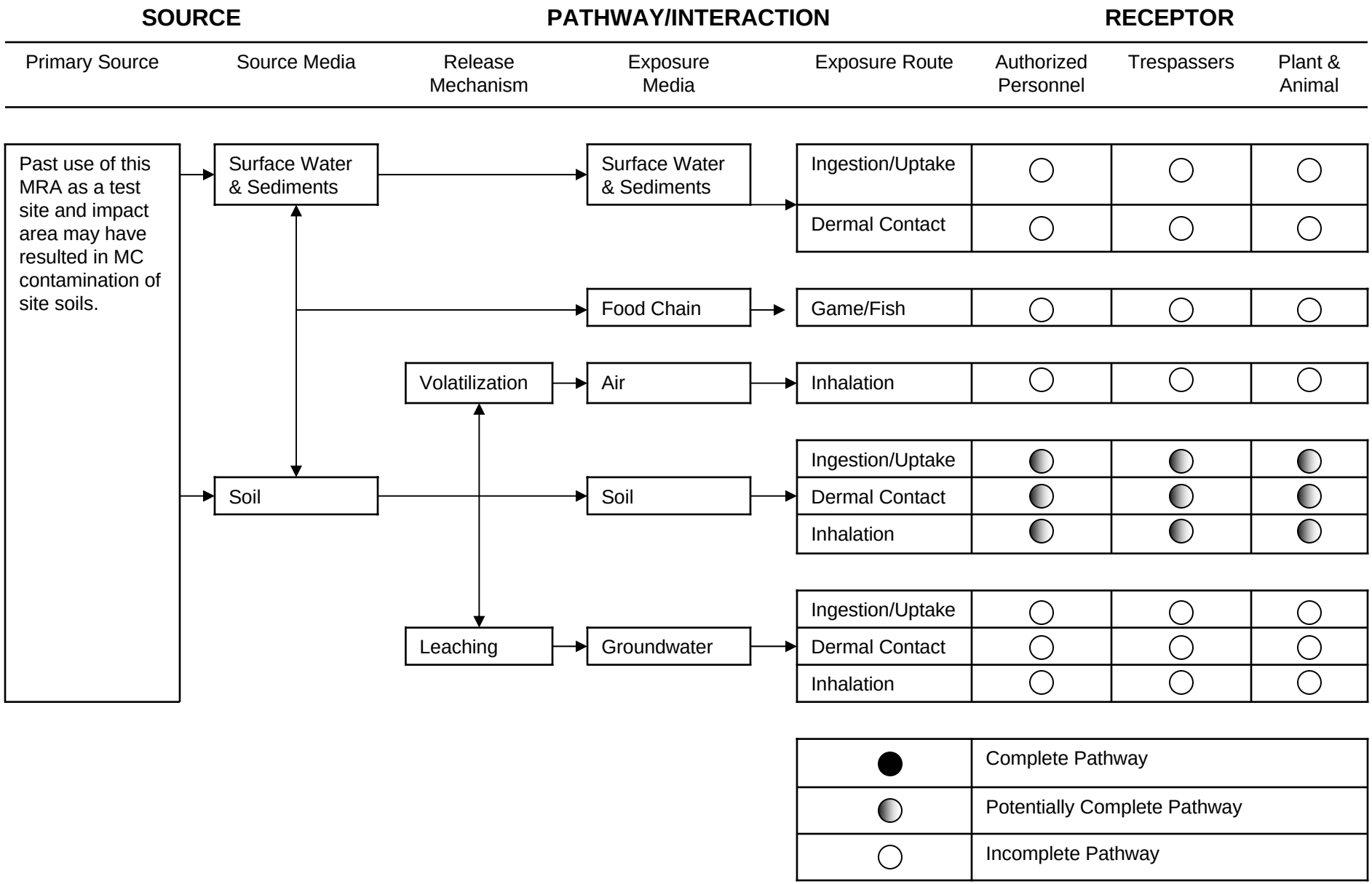

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Figure 9-33. MC ICSM for DA130 Arroyo del Coyote Demolition Area

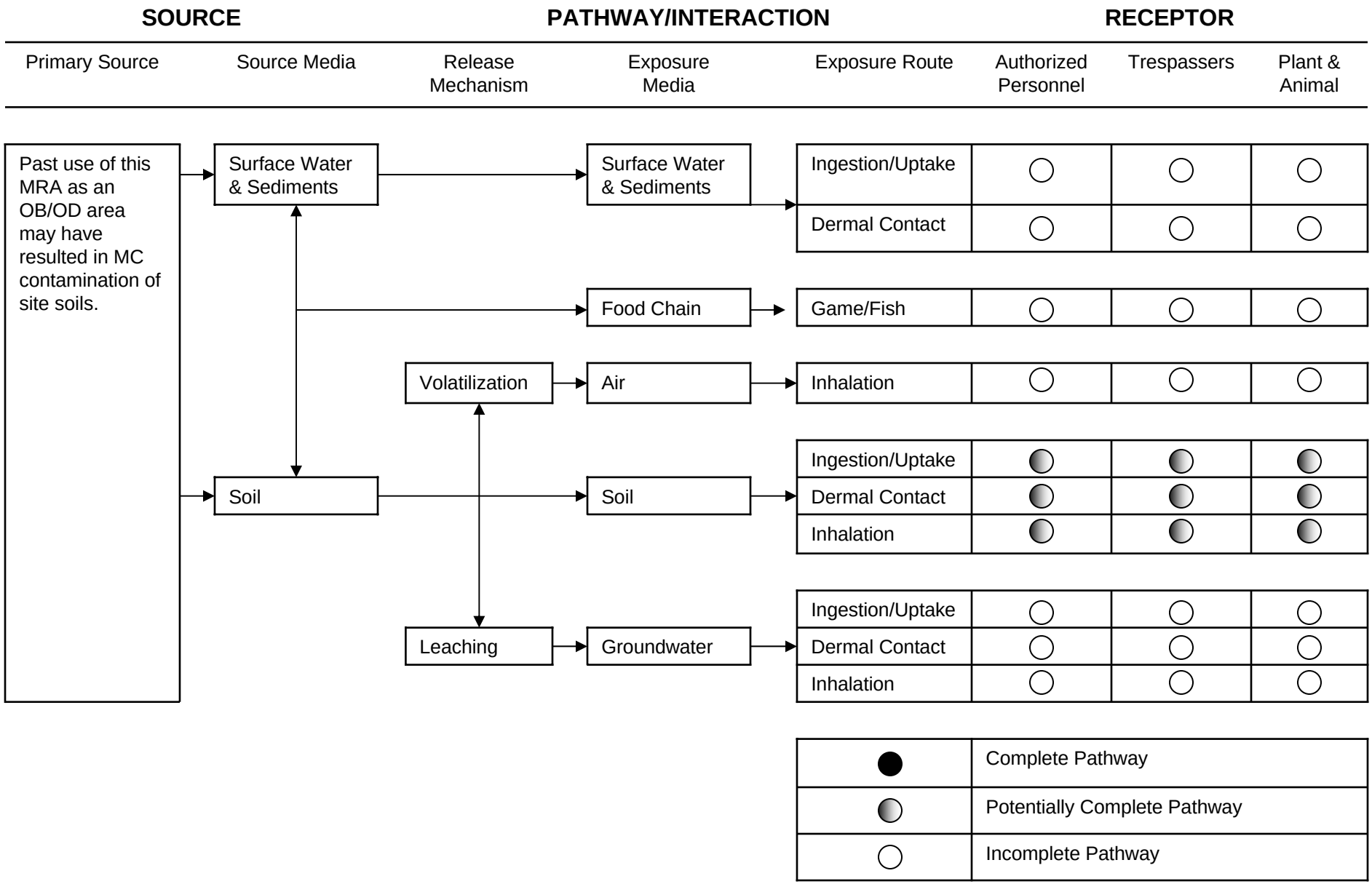

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Figure 9-34. MC ICSM for DA782 Explosive Disposal Area

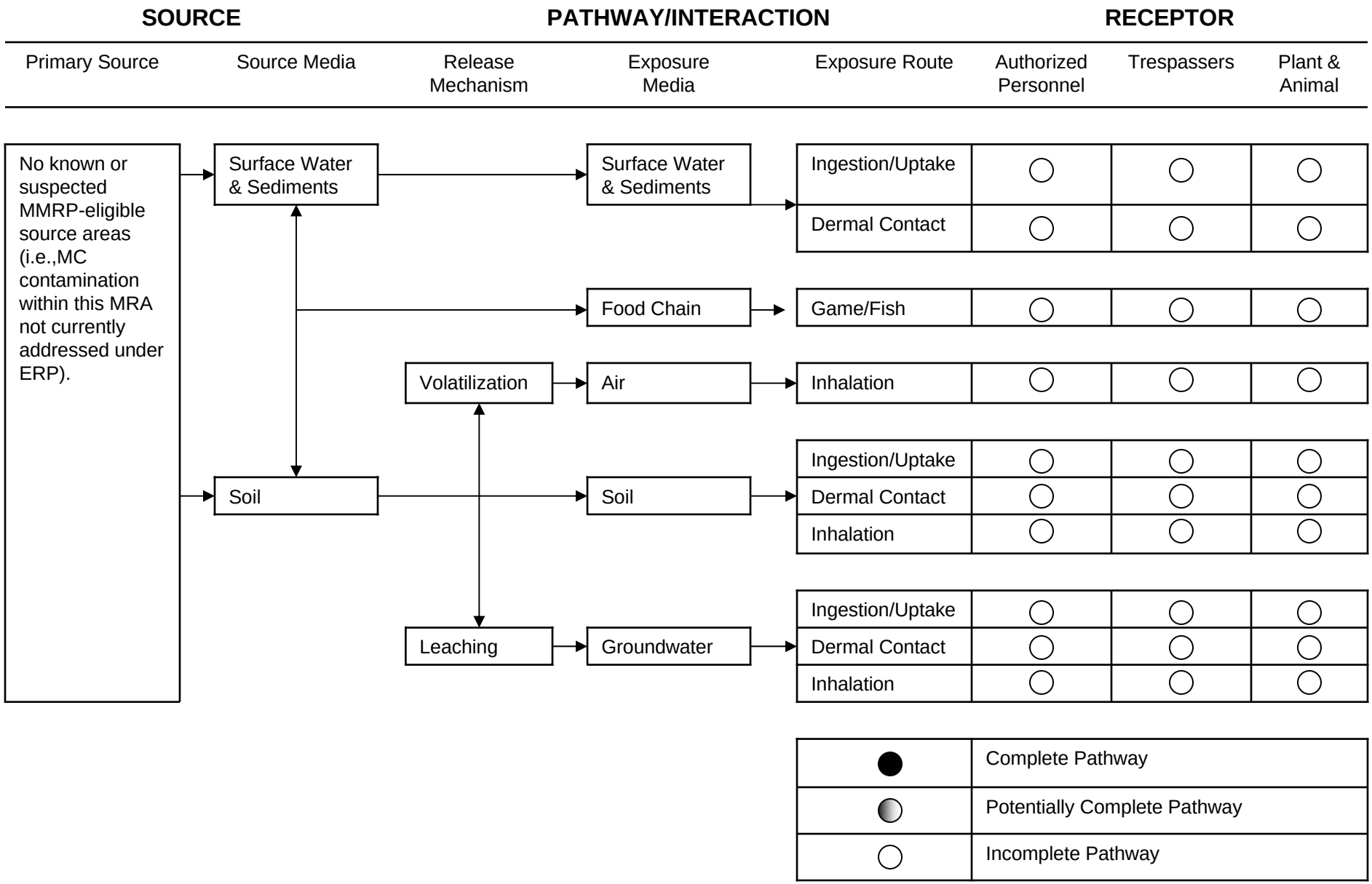

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Figure 9-35. MC ICSM for ED770 Experimental Range

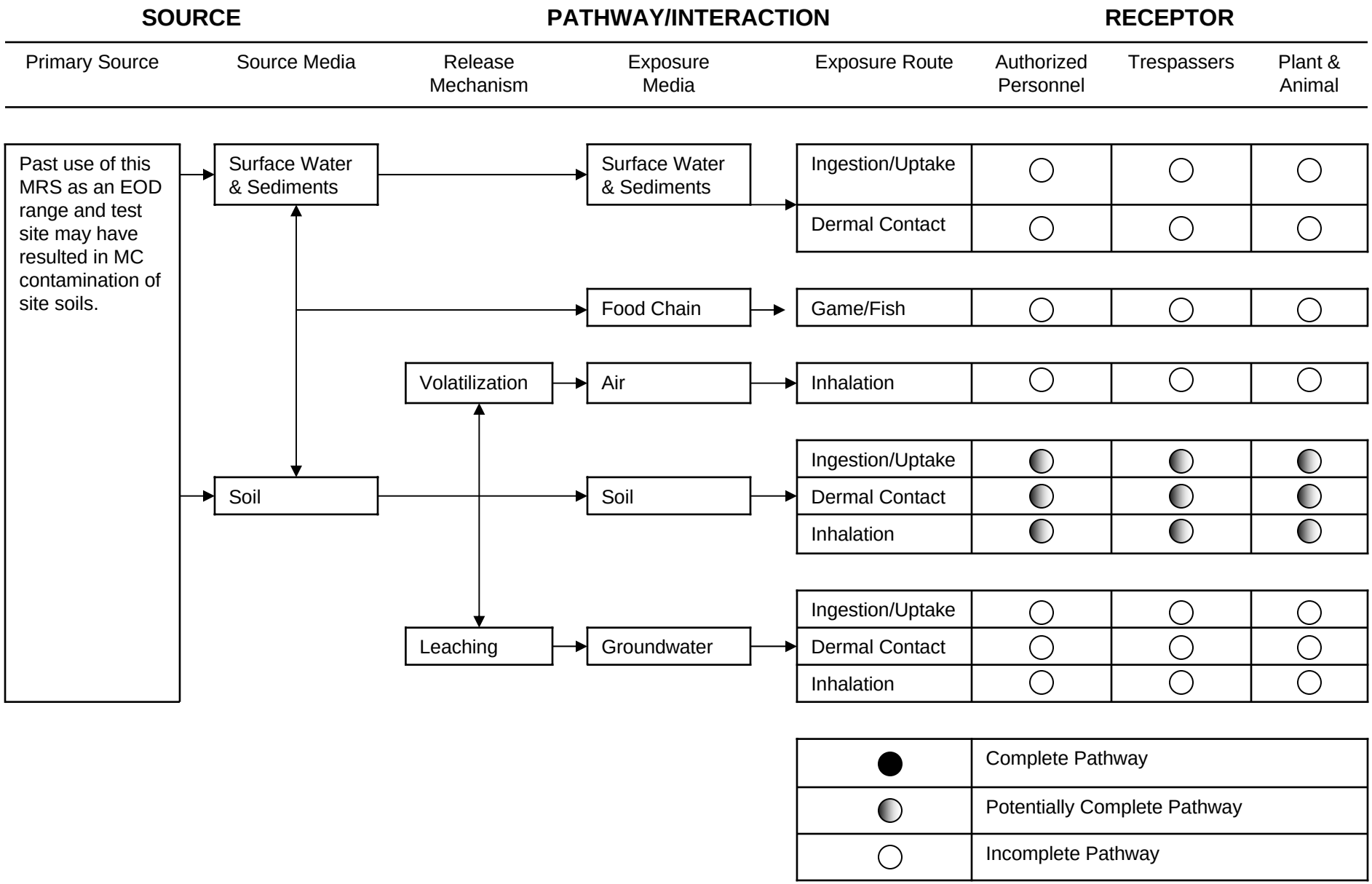

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Figure 9-36. MC ICSM for ML125 Field Firing Range

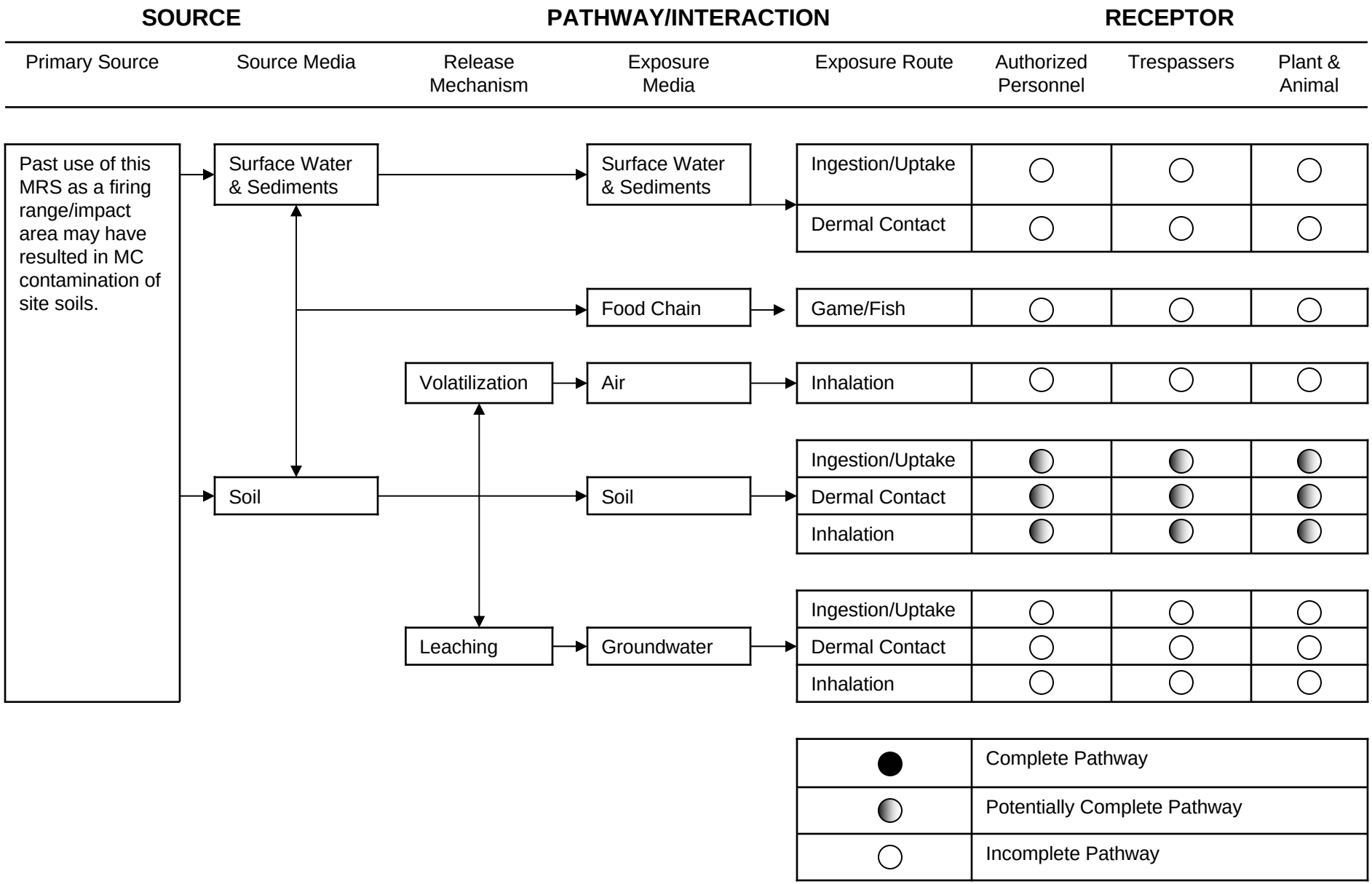

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Figure 9-37. MC ICSM for ML774 Gun Site Fan

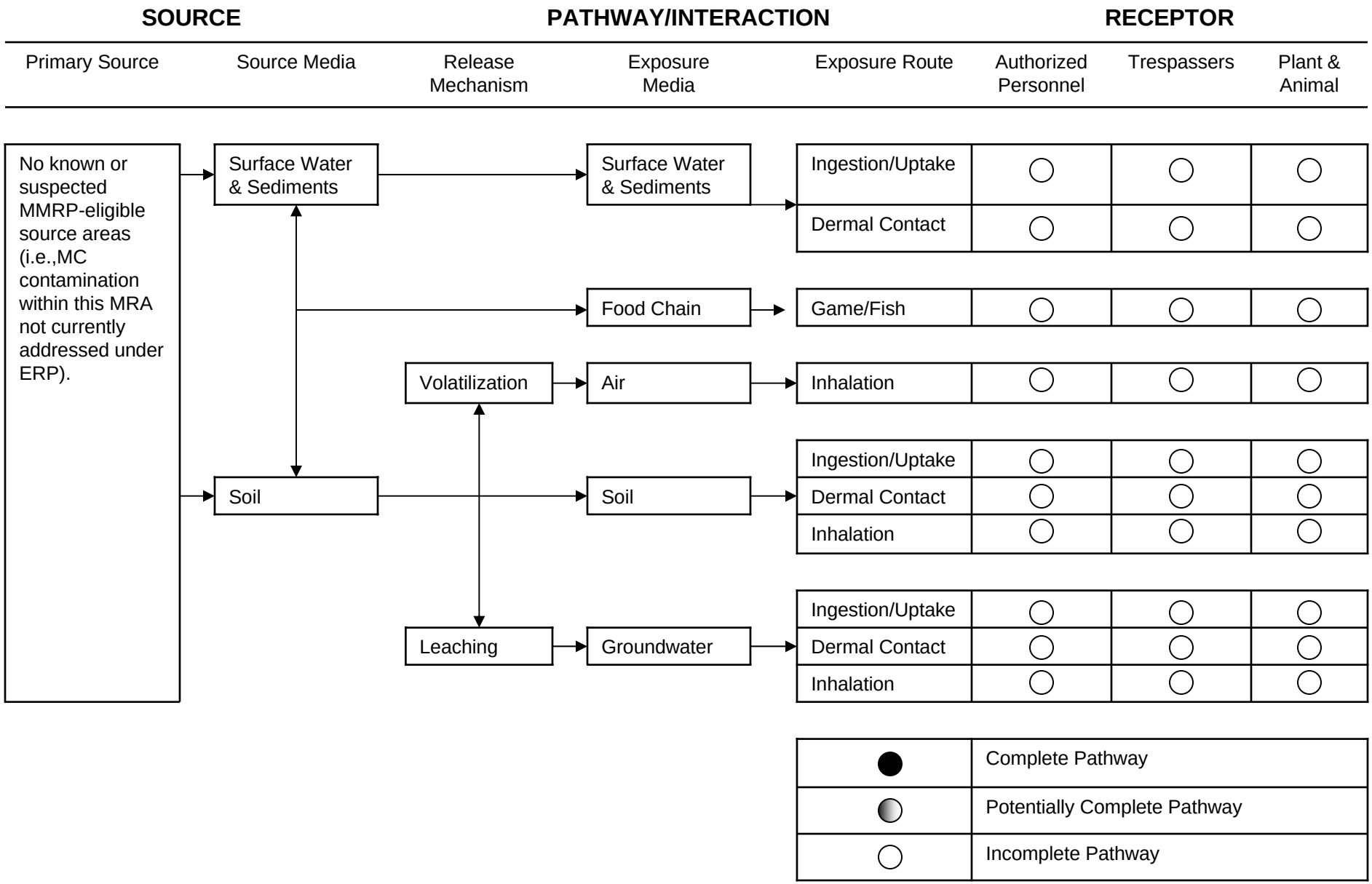

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Figure 9-38. MC ICSM for ML781 Firing In-Abutment

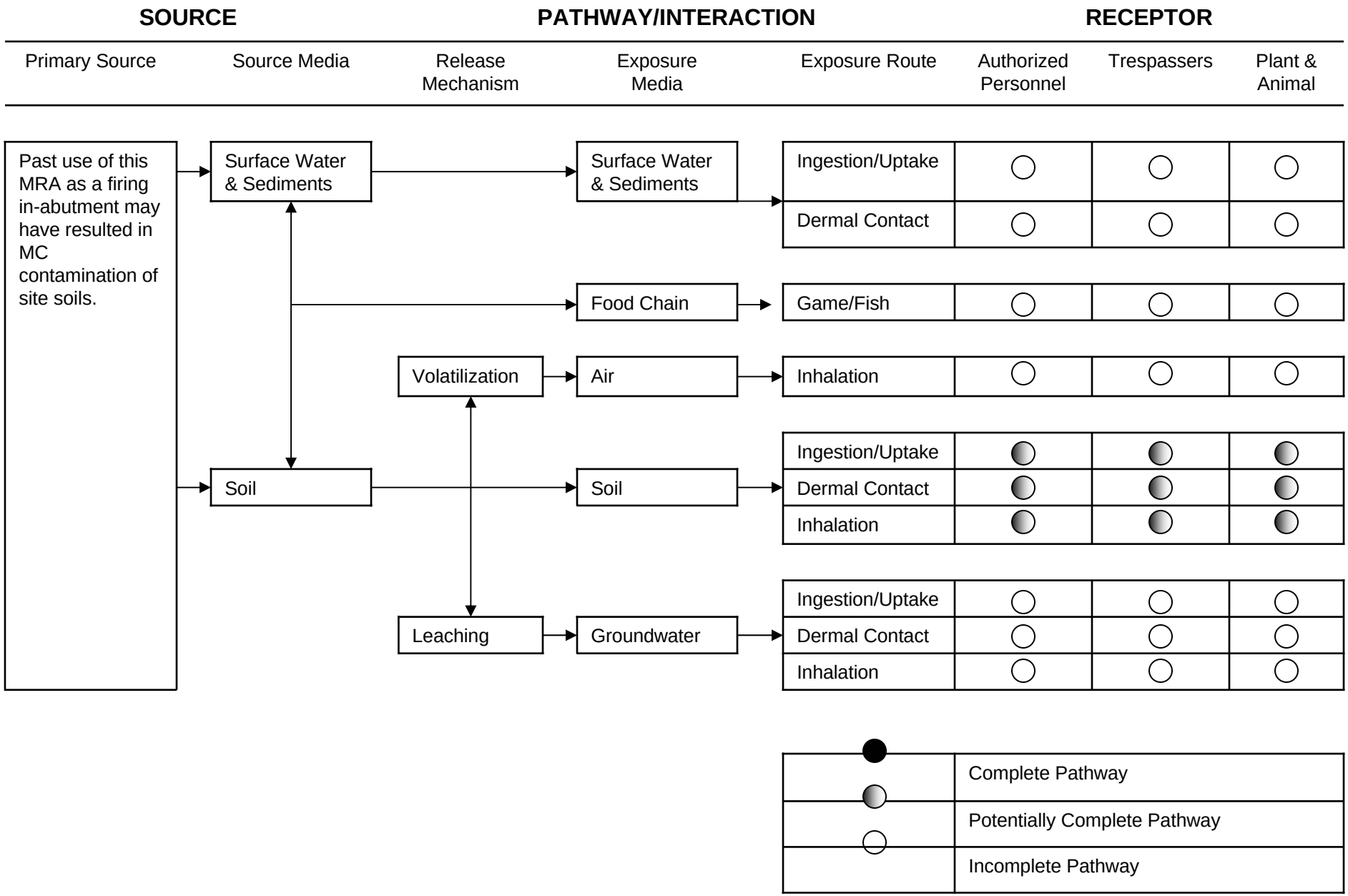

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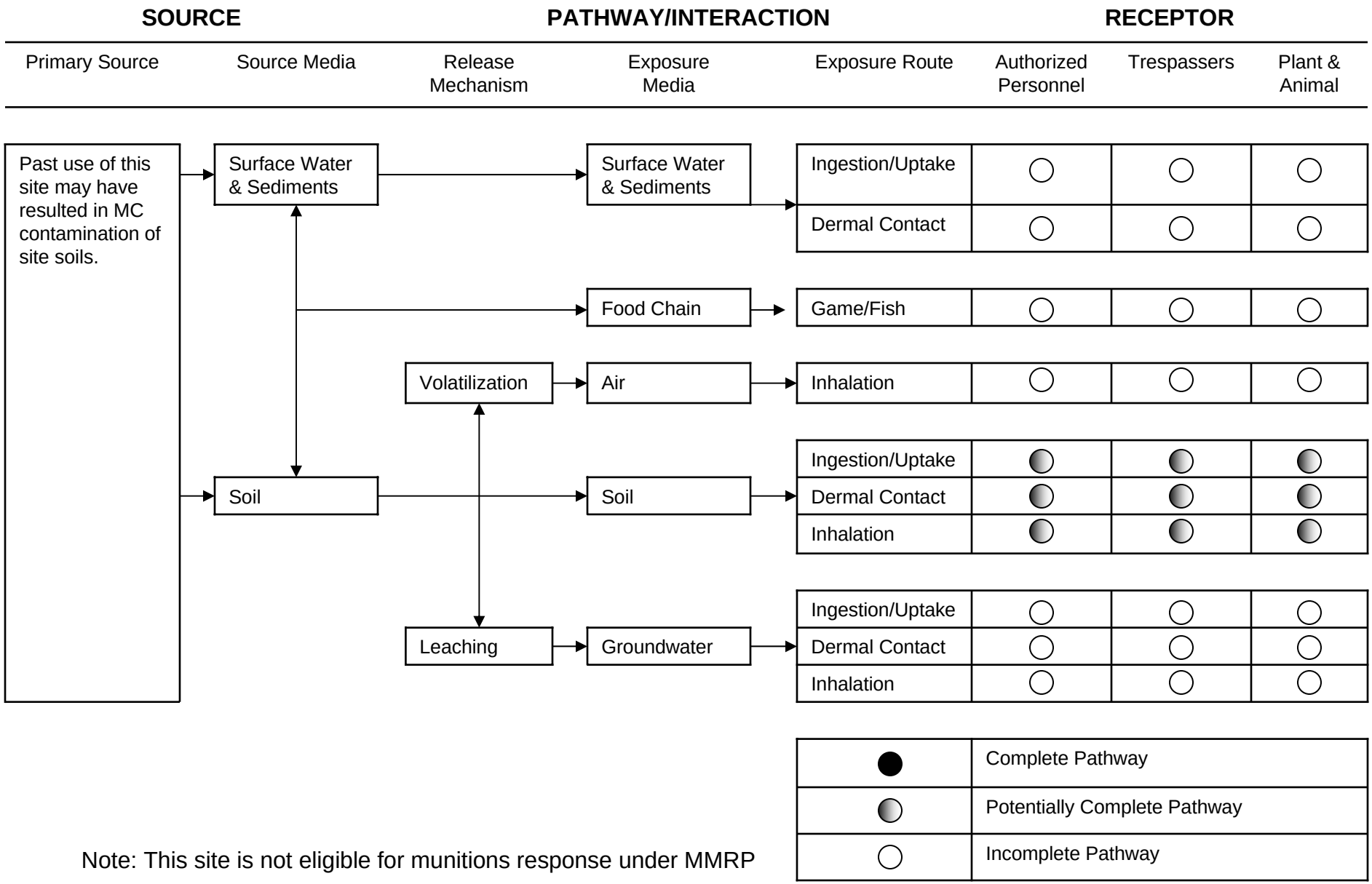
Figure 9-39. MC ICSM for ML784 40mm Test and Training Range



Note: This site is not eligible for munitions response under MMRP

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Figure 9-40. MC ICSM for MU772 H-25 Site

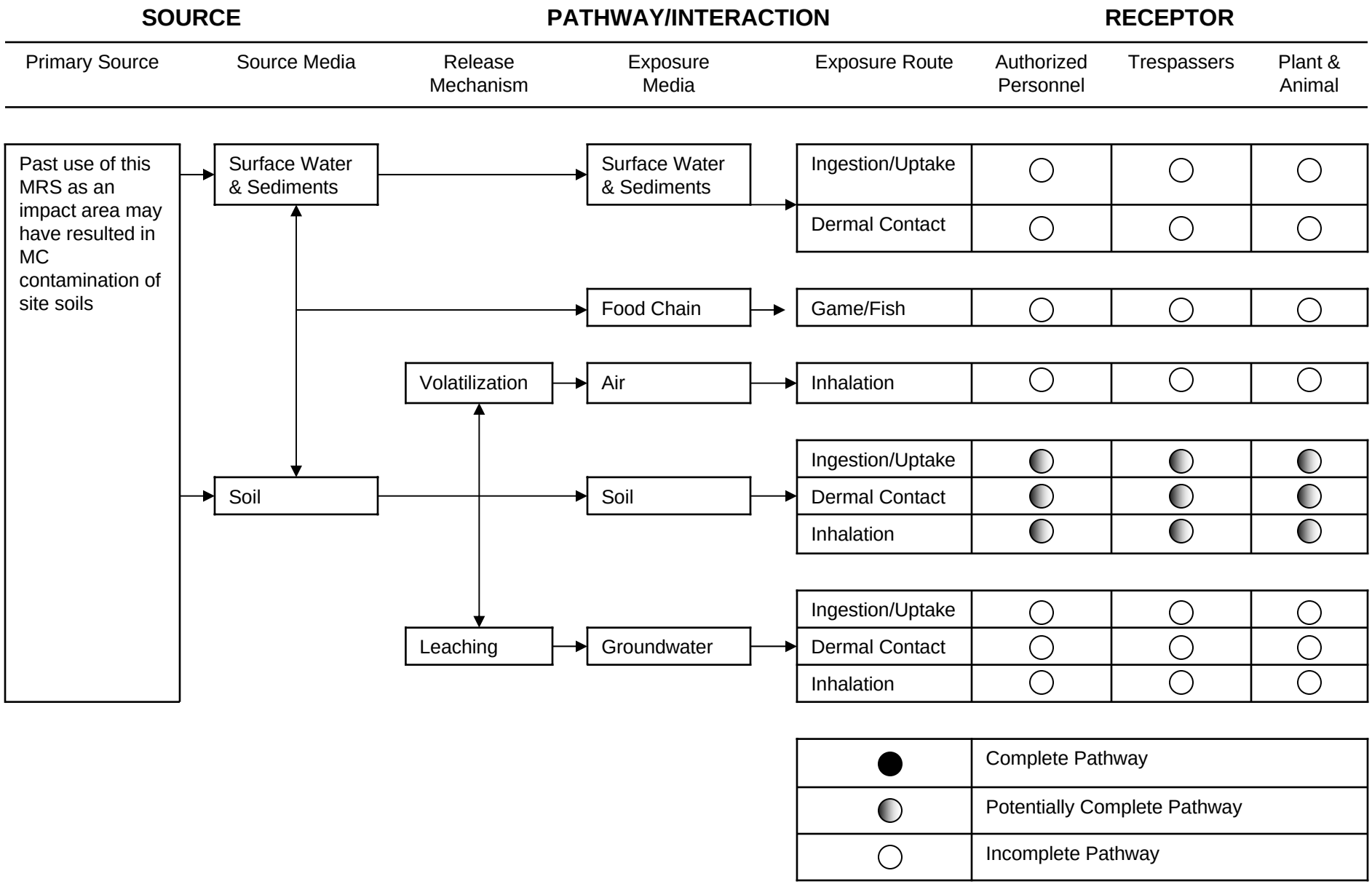

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Figure 9-41. MC ICSM for PT123 Tijeras Small Arms Range

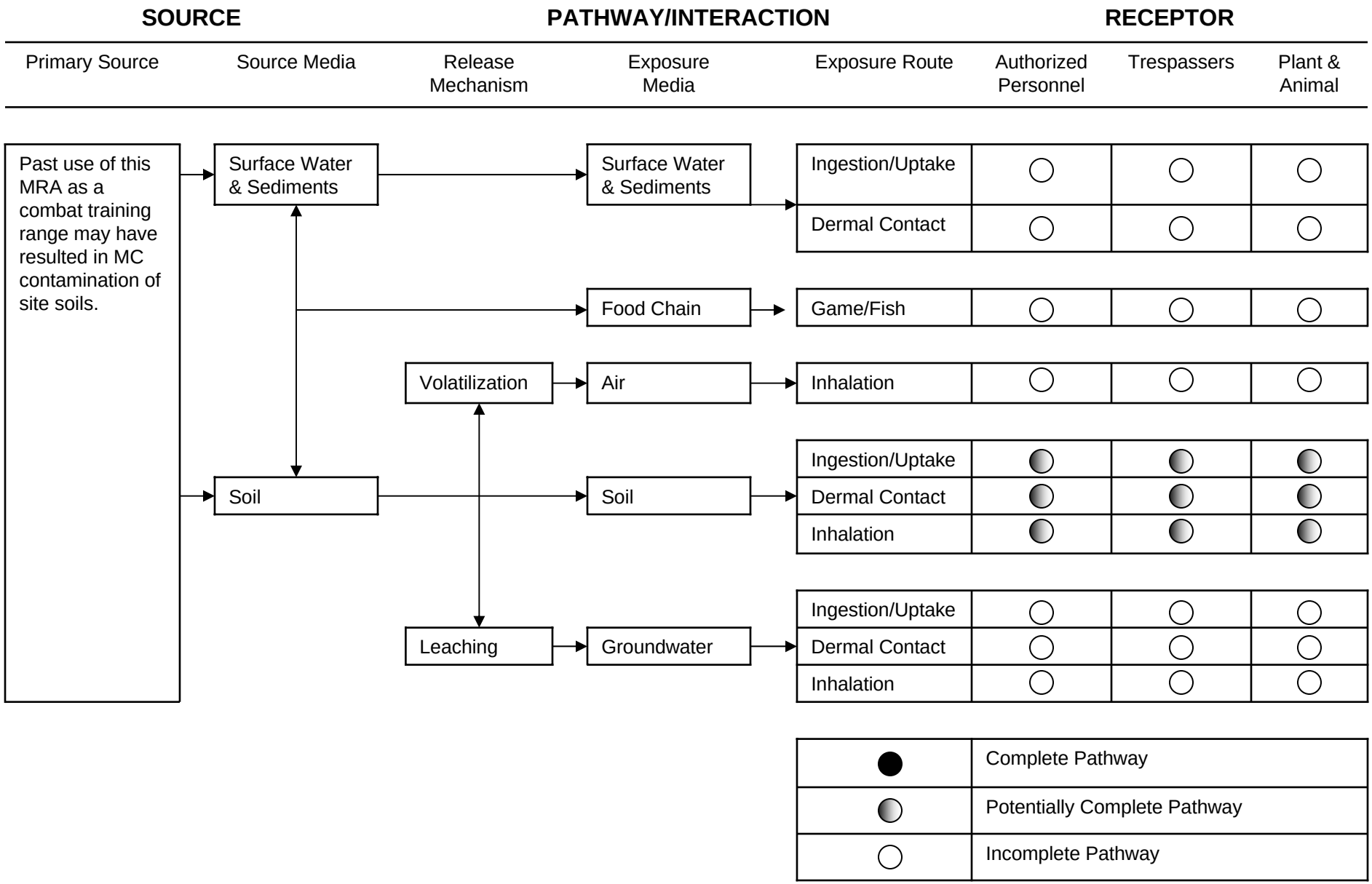

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Figure 9-42. MC ICSM for PT761 Tijeras Small Arms and Training Range

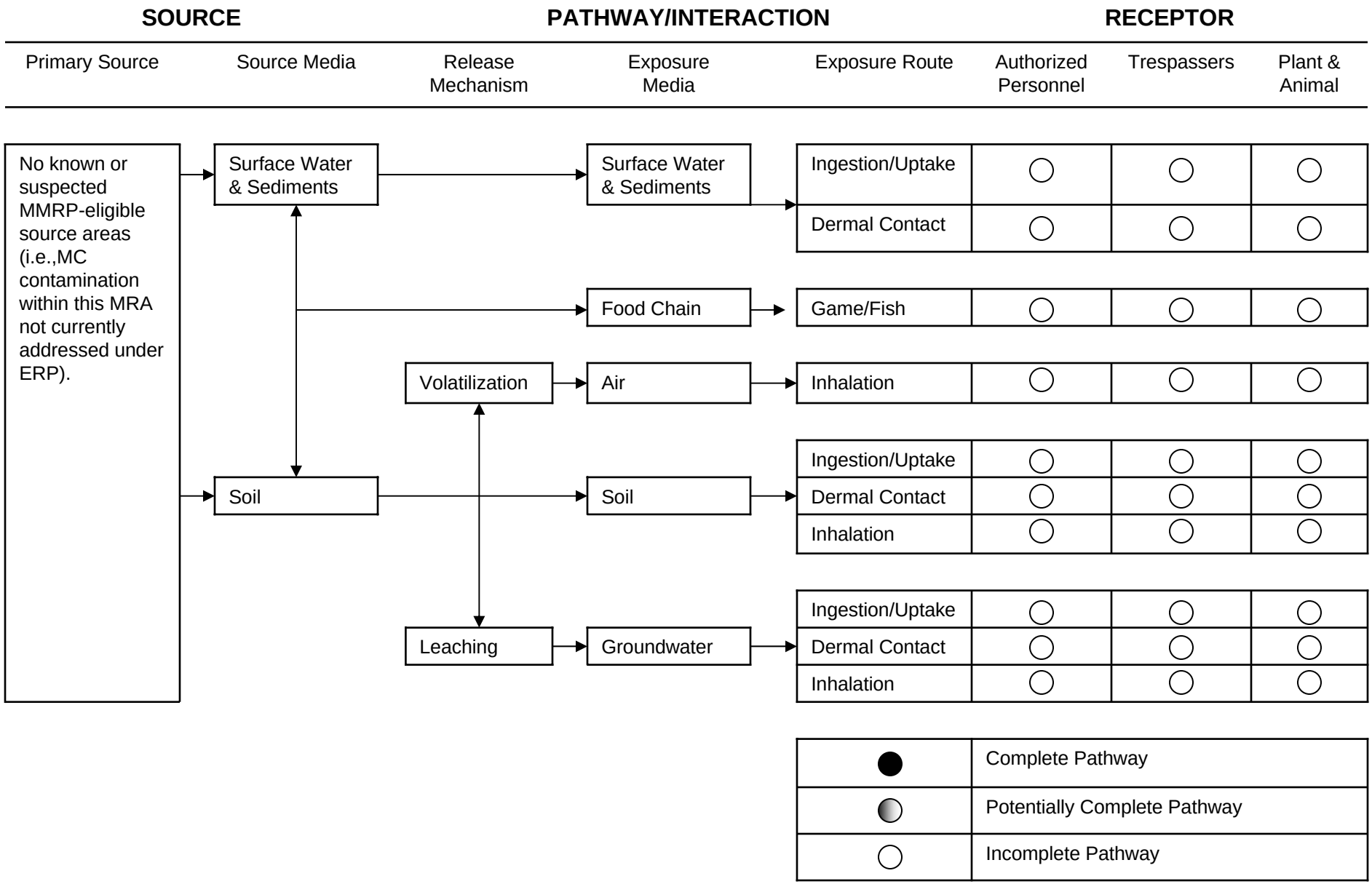

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Figure 9-43. MC ICSM for PT773 Coyote Canyon Tech Site

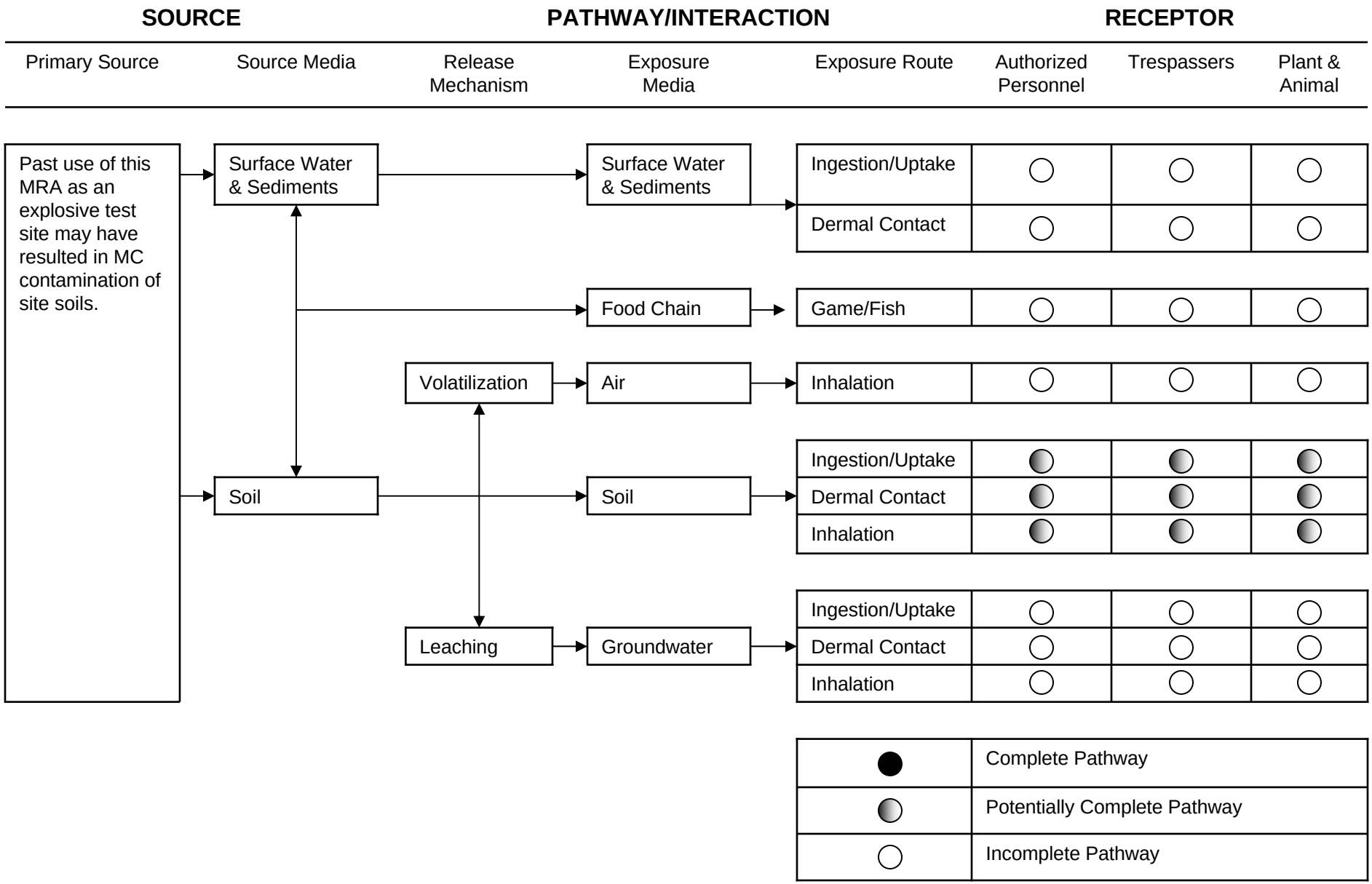

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Figure 9-44. MC ICSM for PT783 Bazooka Training Range

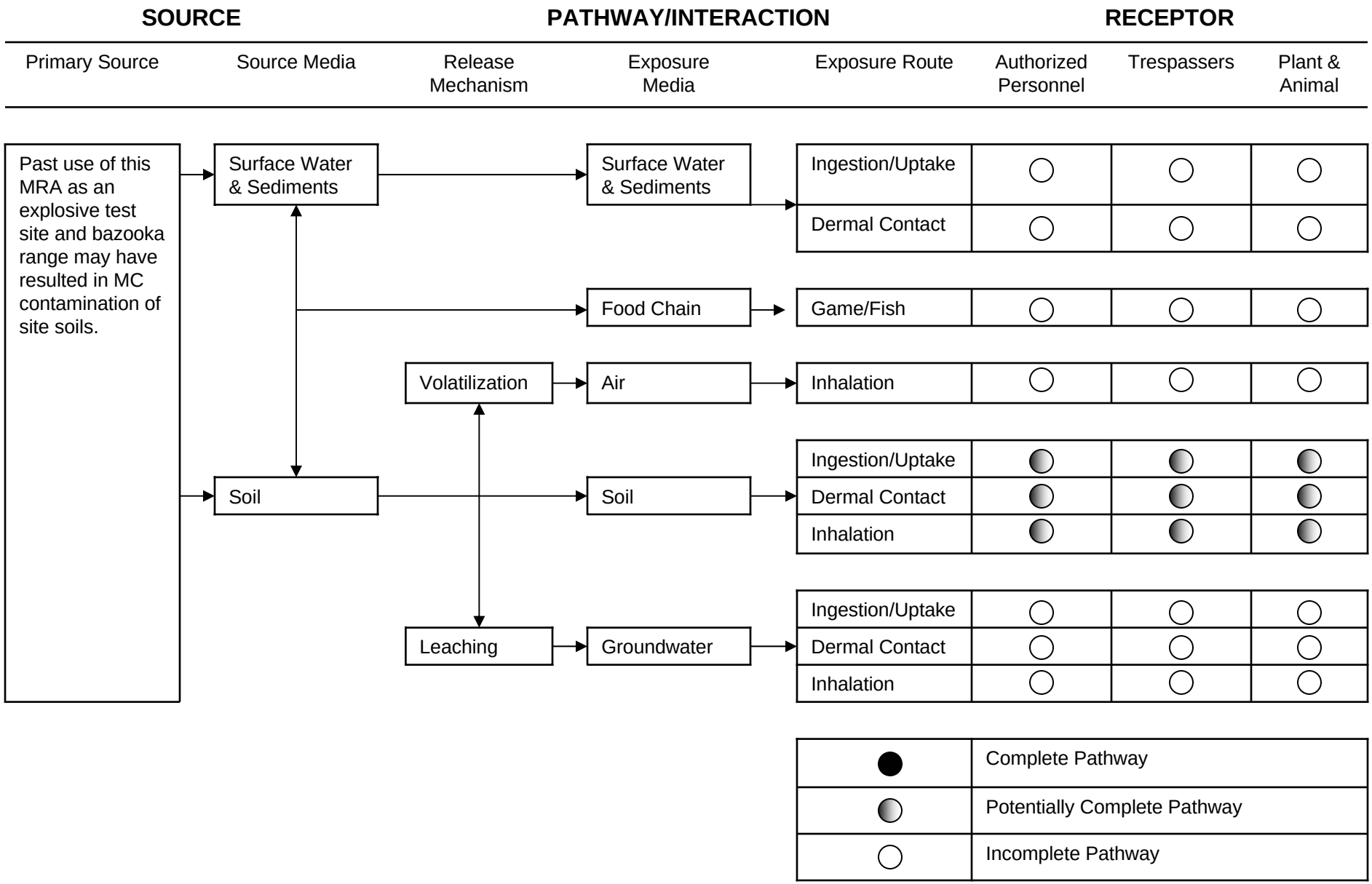

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Figure 9-45. MC ICSM for SR763 Rifle Range

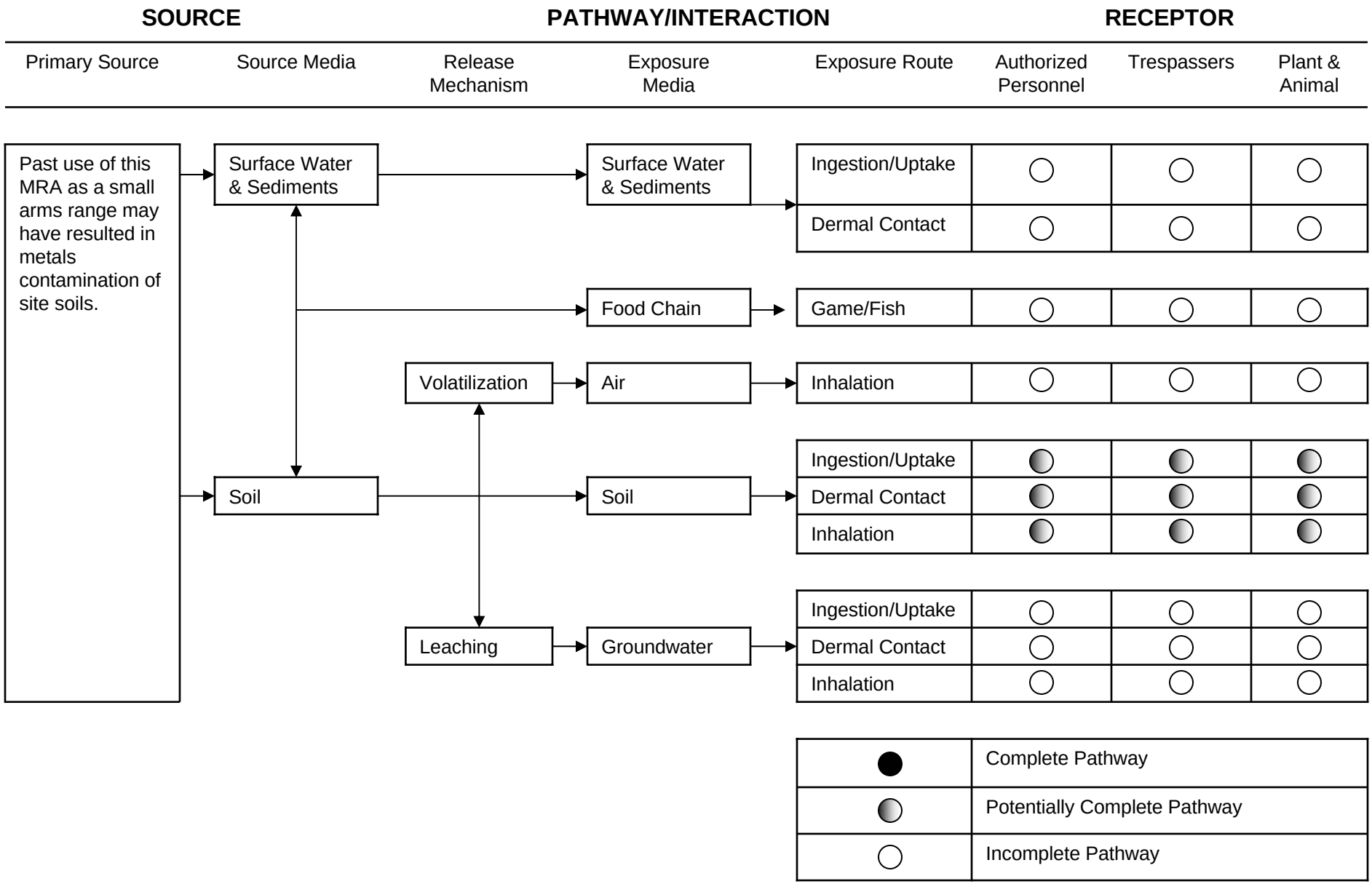

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Figure 9-46. MC ICSM for SR764 Rifle Range

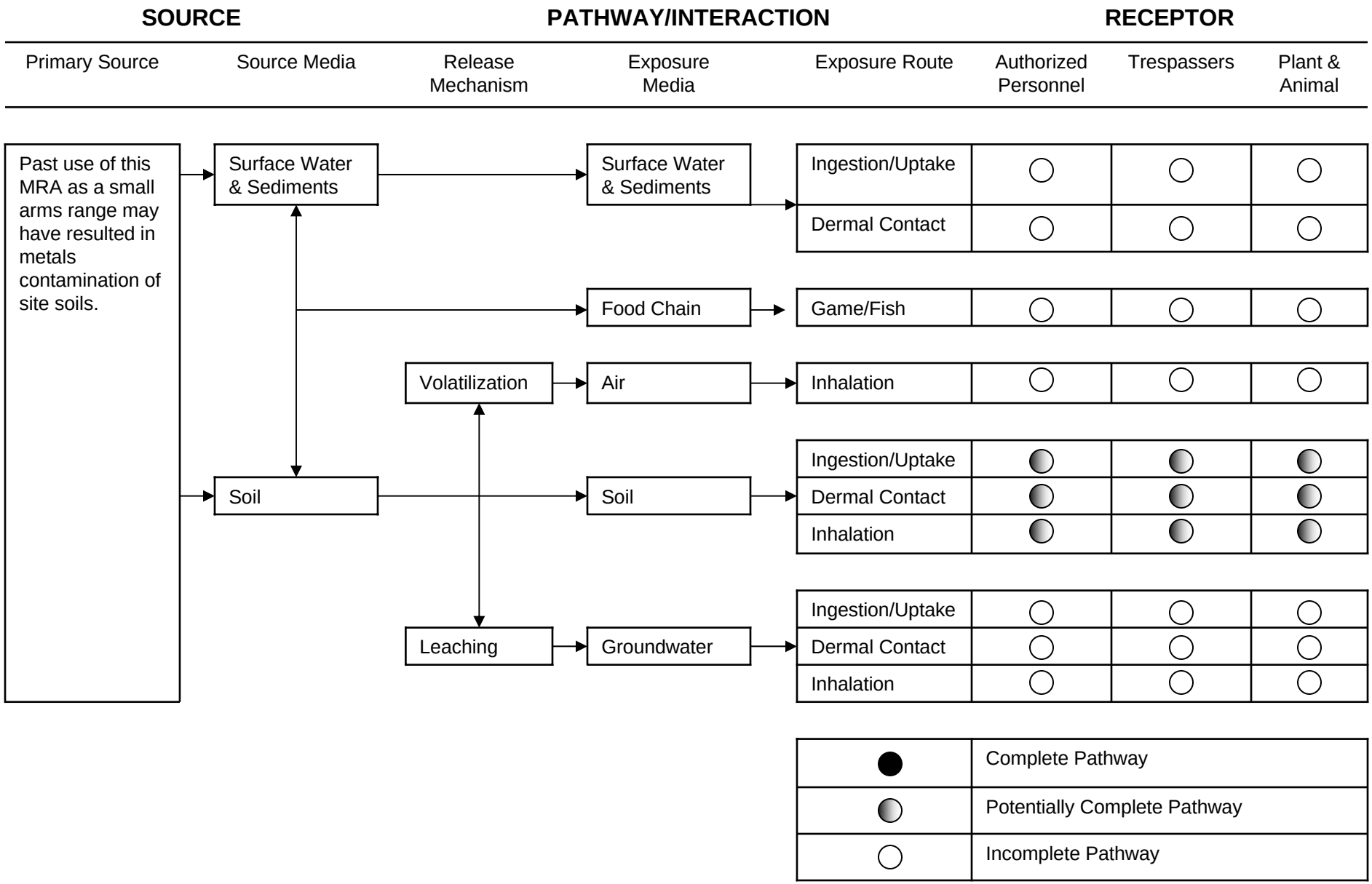

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Figure 9-47. MC ICSM for SR765 WWII Pistol Range

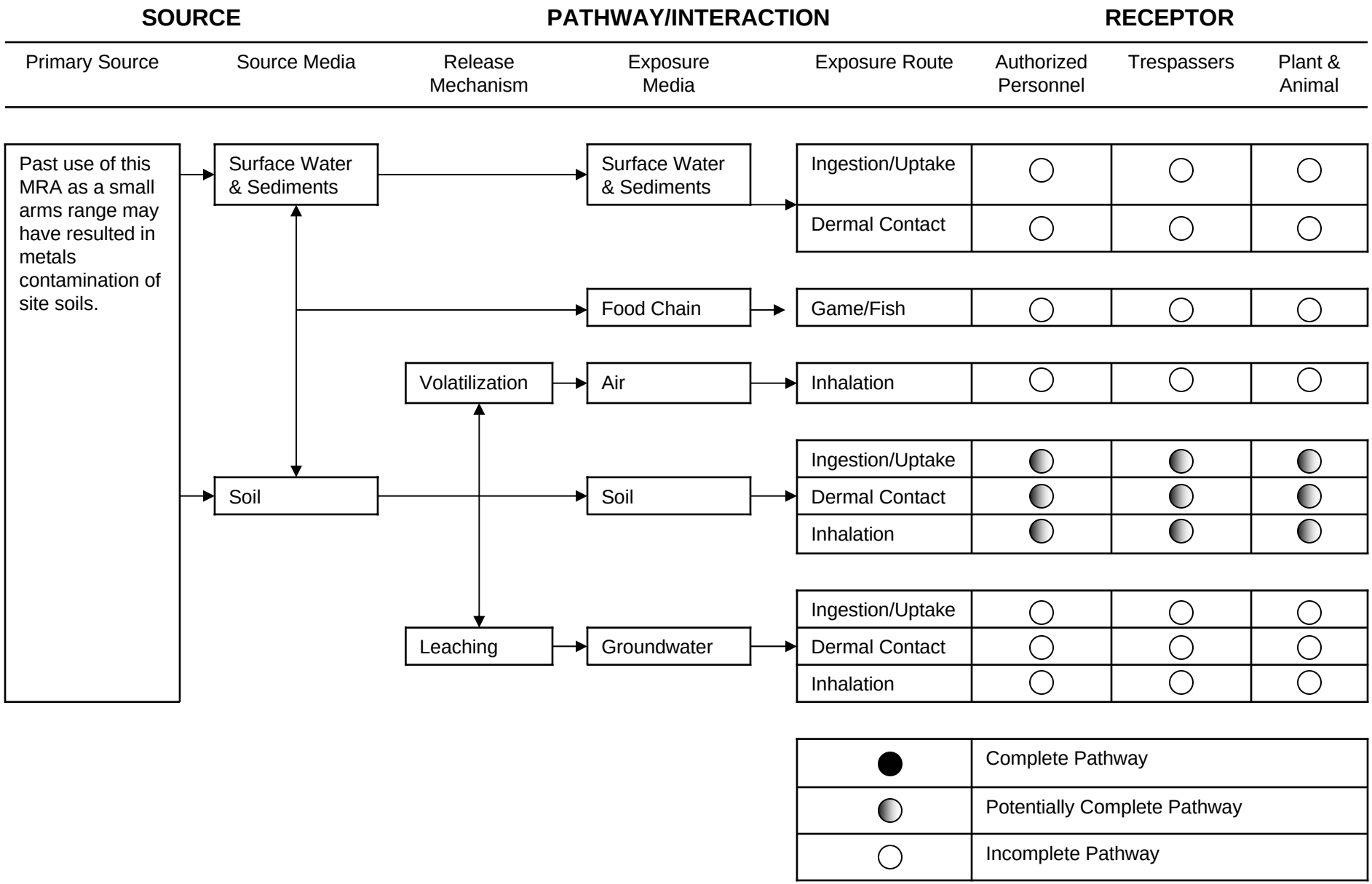

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Figure 9-48. MC ICSM for SR766 Sub-Machine Gun

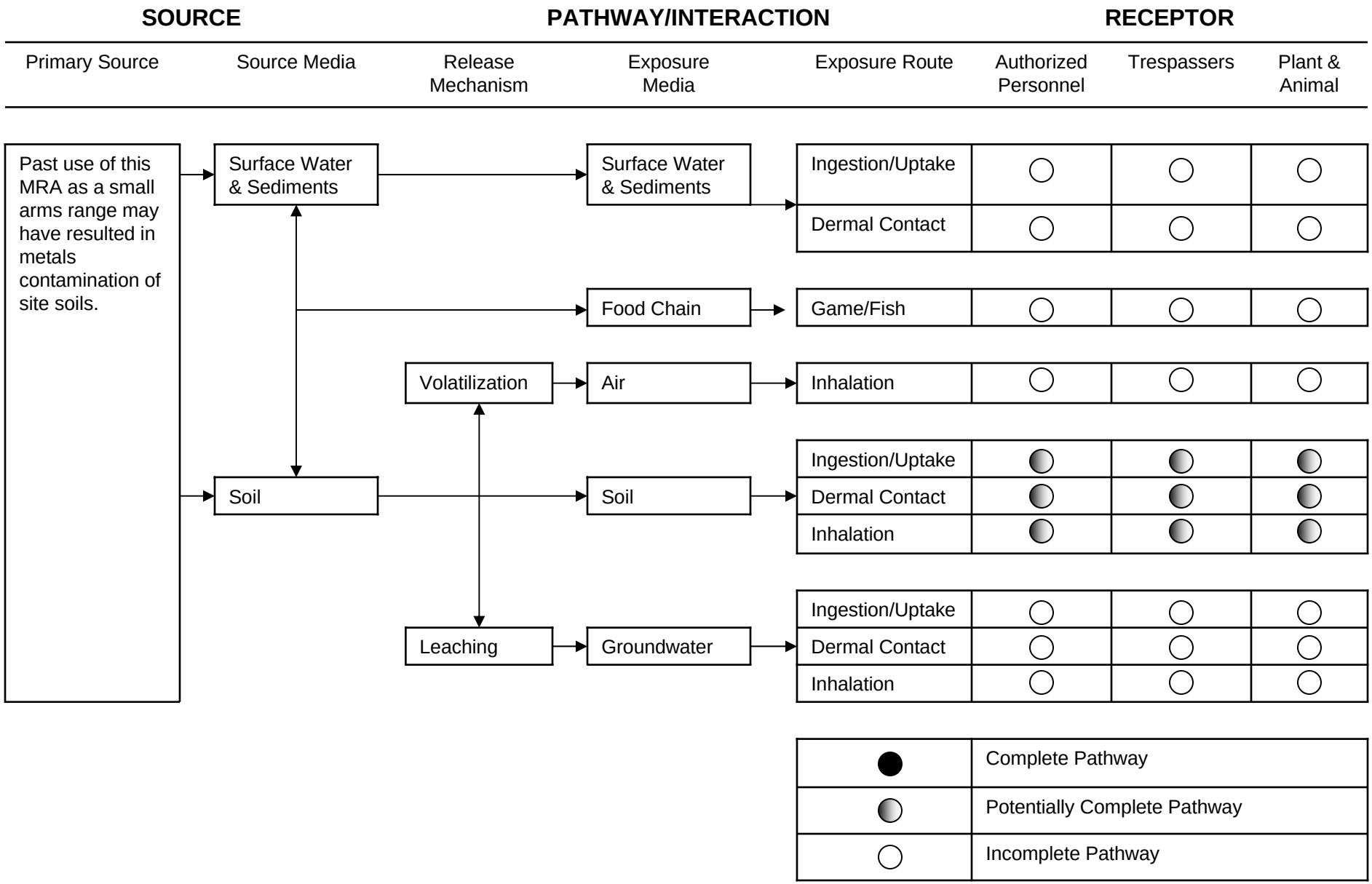

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Figure 9-49. MC ICSM for SR767 Rifle Range

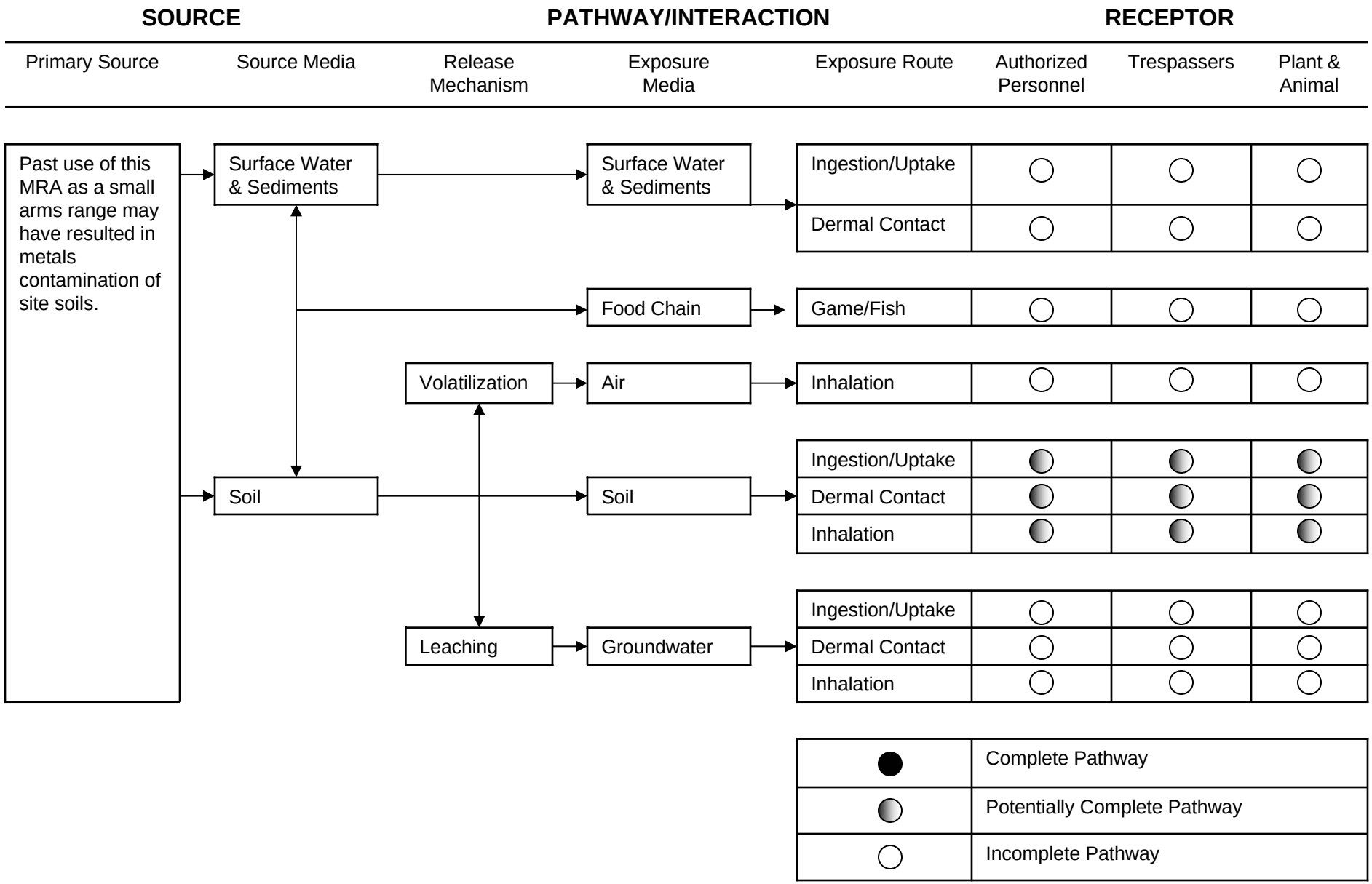

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Figure 9-50. MC ICSM for SR768 Close Combat Infiltration Course

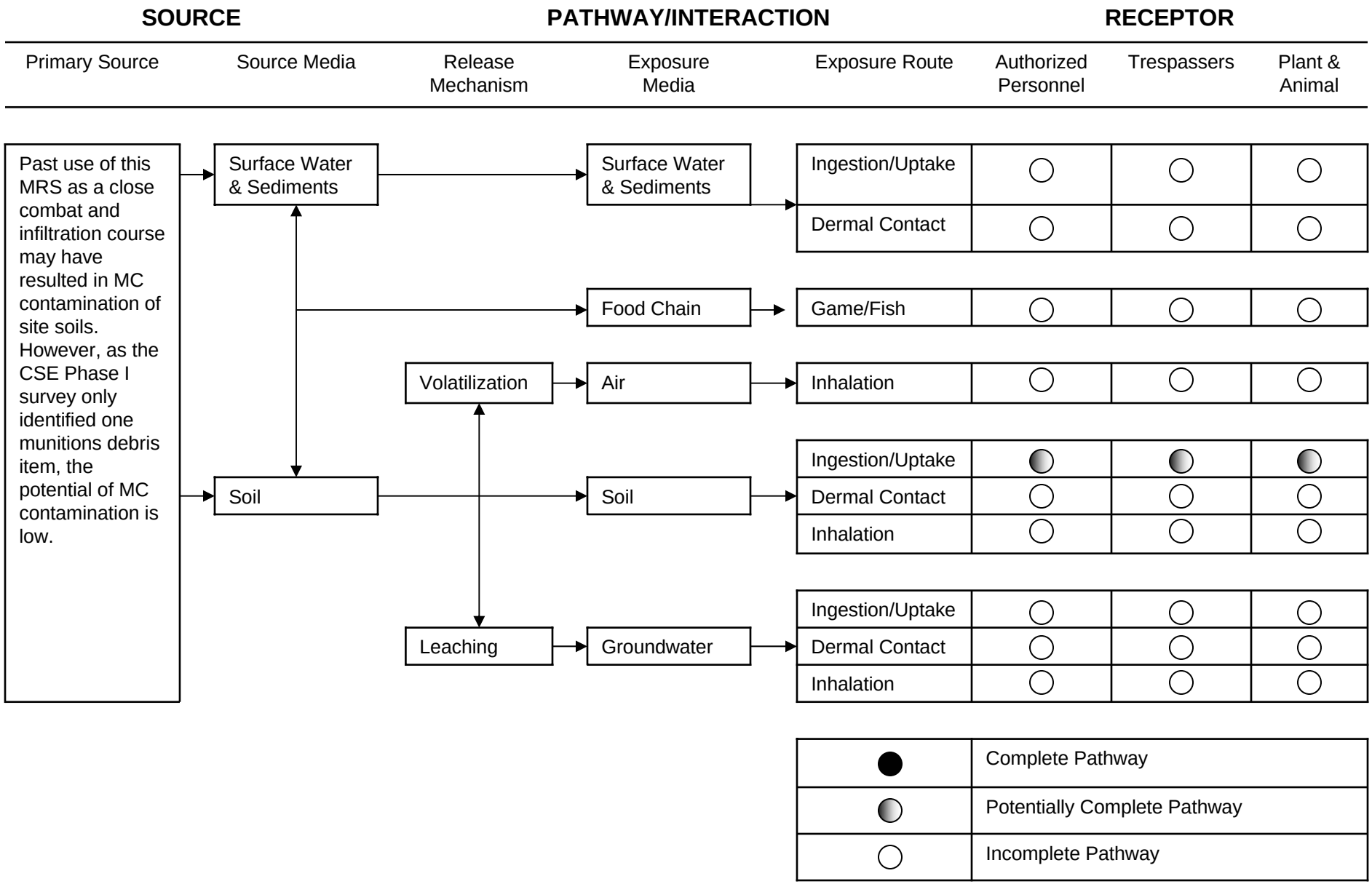

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Figure 9-51. MC ICSM for SR777 Rifle Range

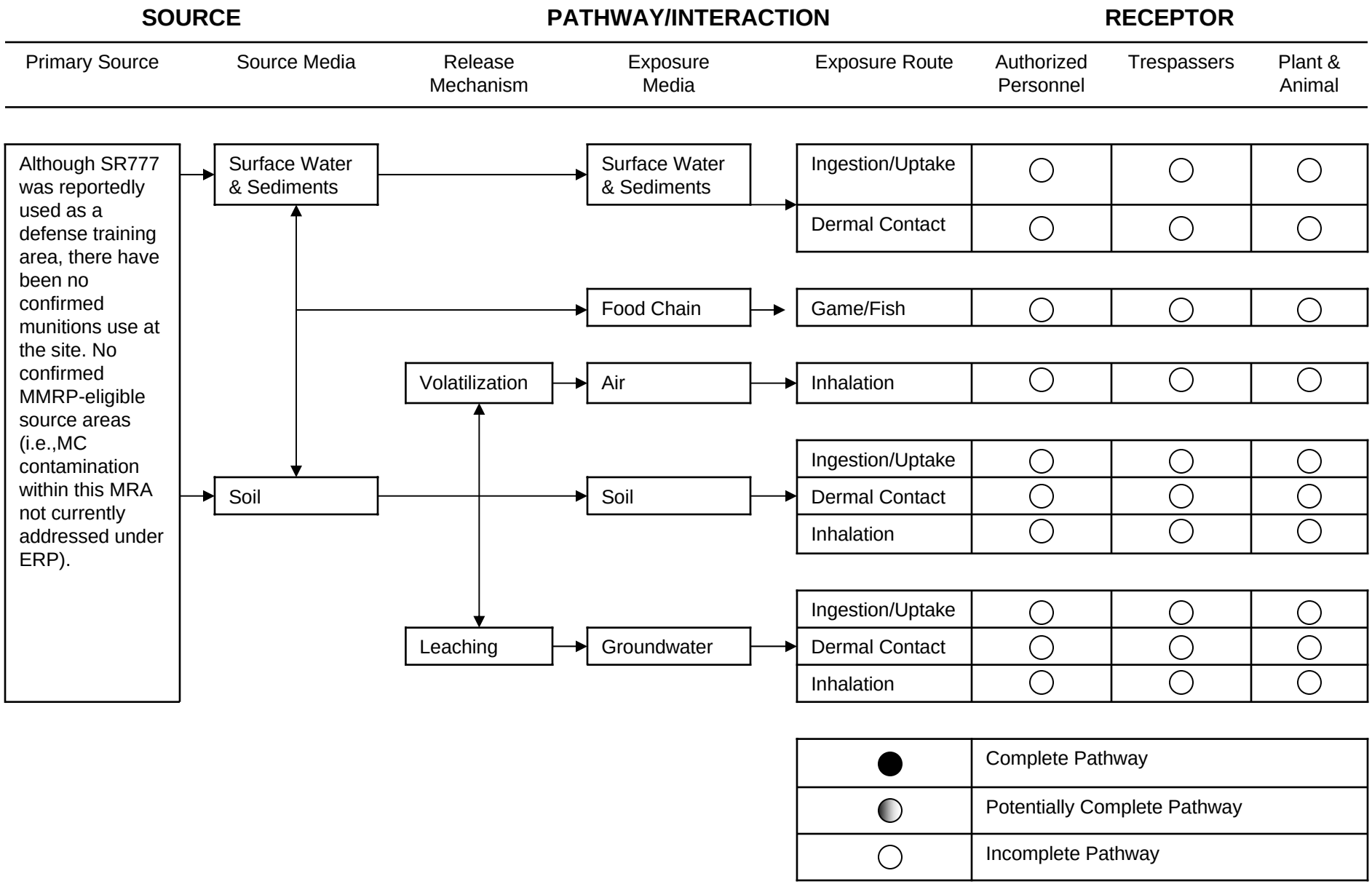

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Figure 9-52. MC ICSM for SR778 Airfield Pistol Range

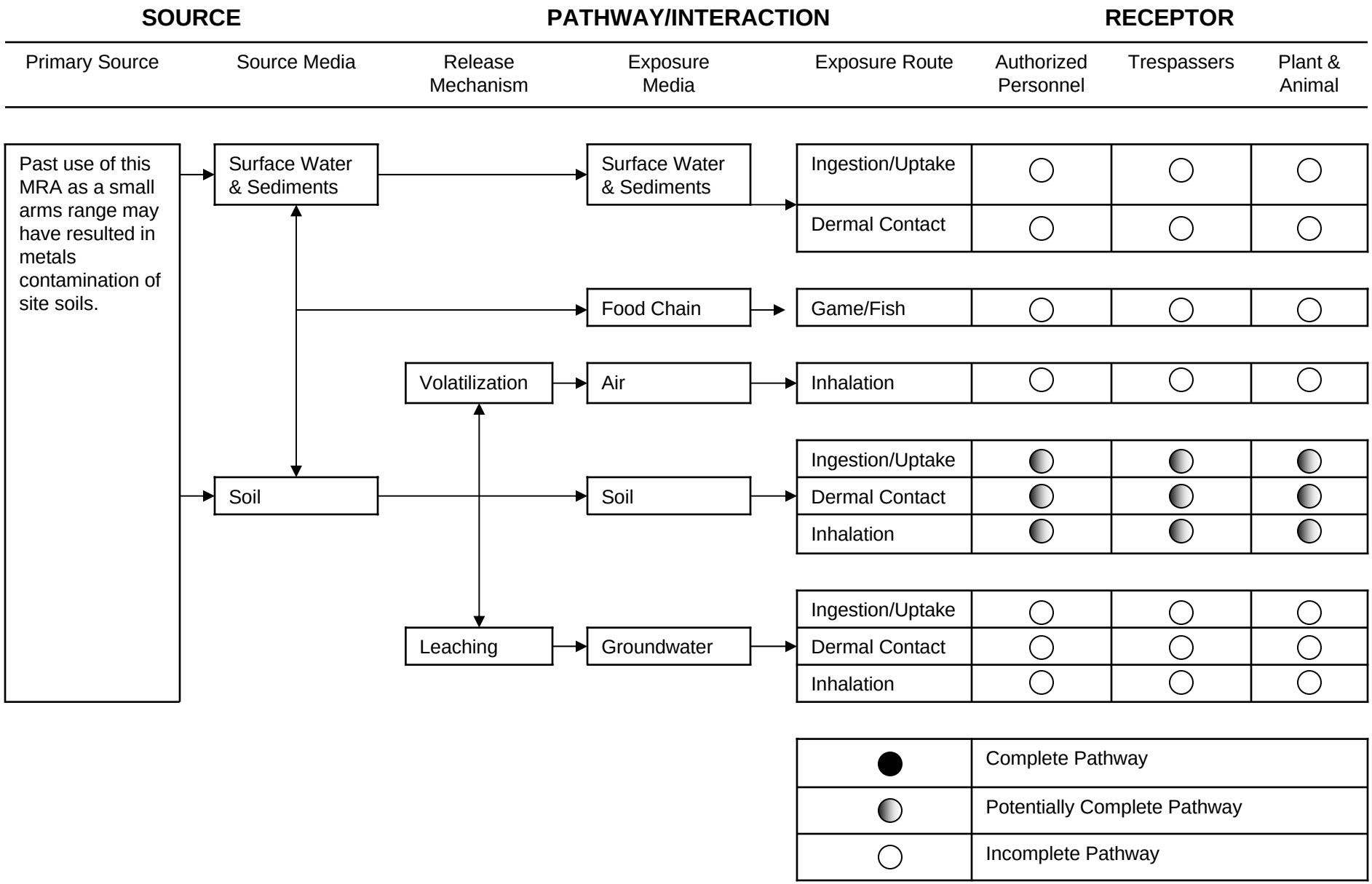

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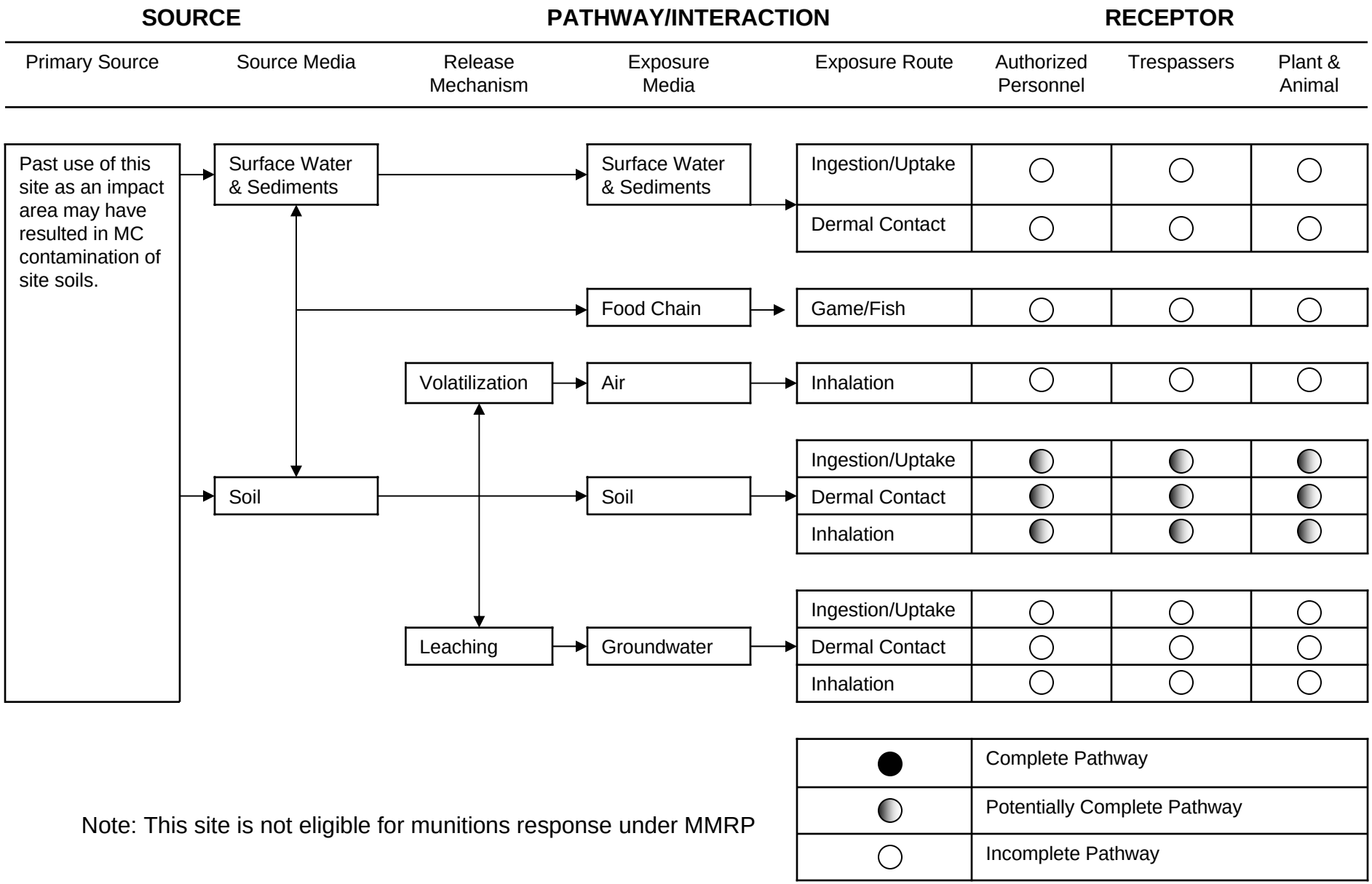
Figure 9-53. MC ICSM for SR780 Impact Area



Note: This site is not eligible for munitions response under MMRP

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Figure 9-54. MC ICSM for TS775 Airfield Skeet Range

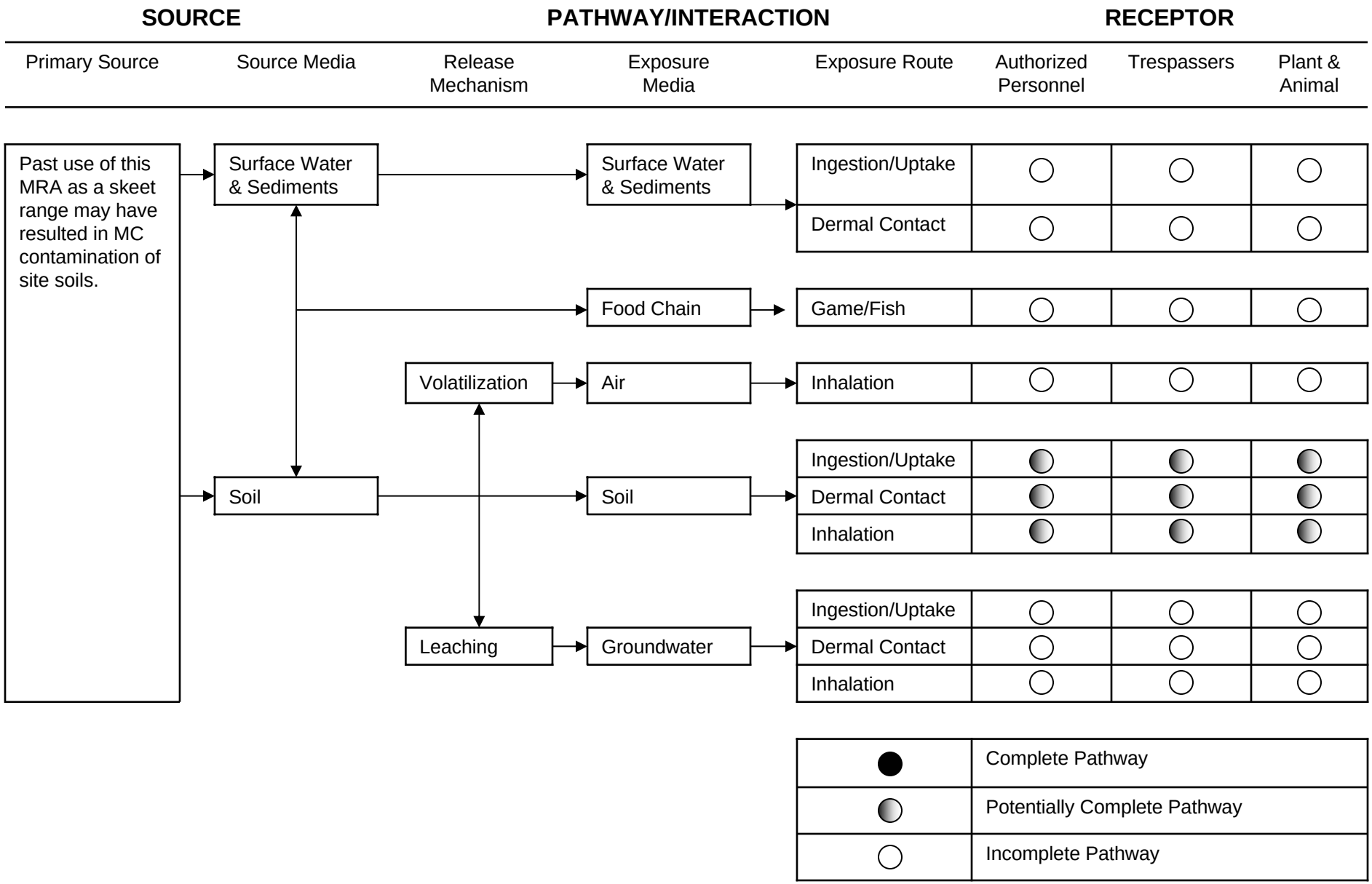

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Figure 9-55. MC ICSM for TS776 Skeet Range

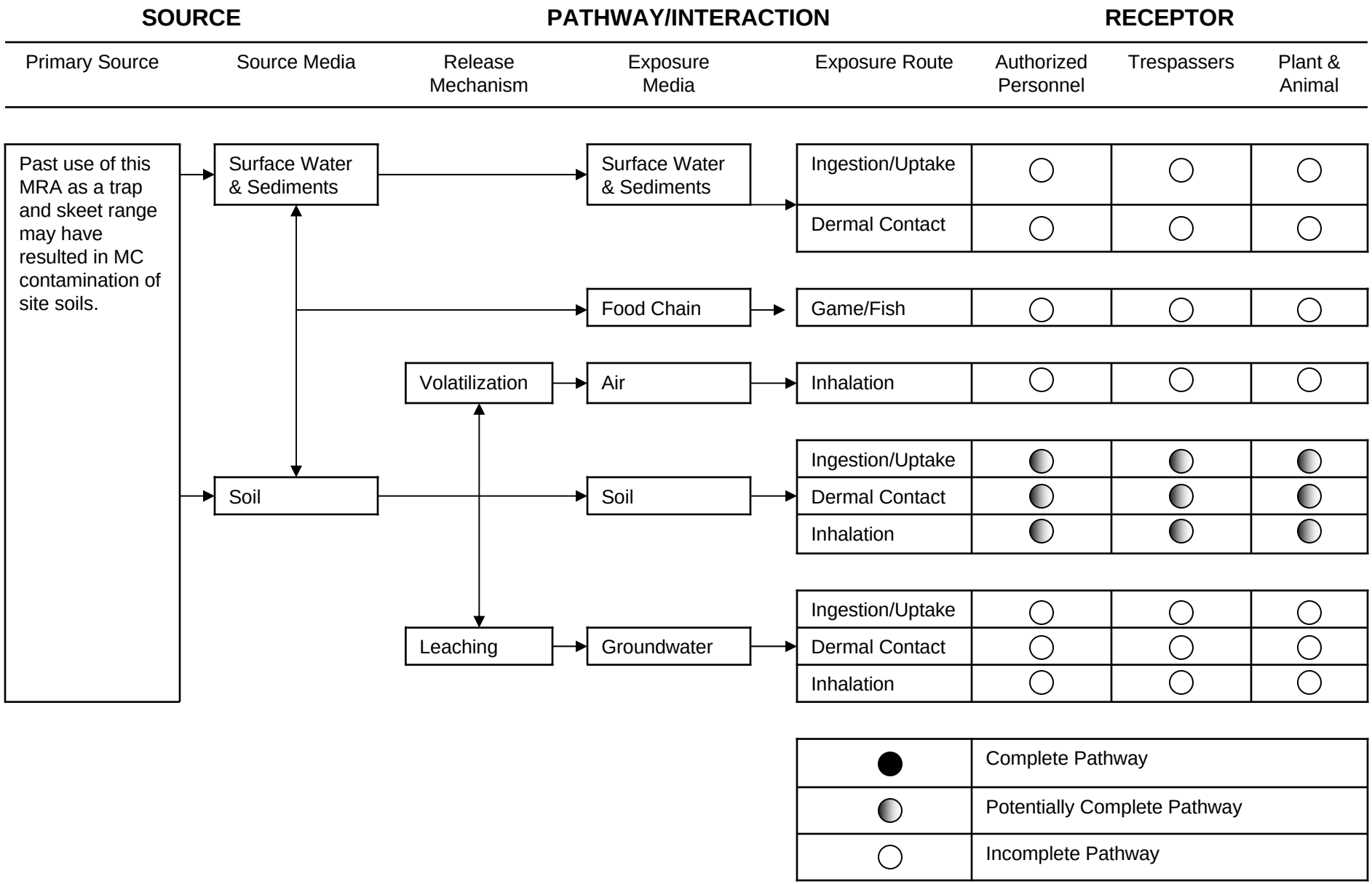

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Figure 9-56. MC ICSM for Bomb Target (No MRA ID)

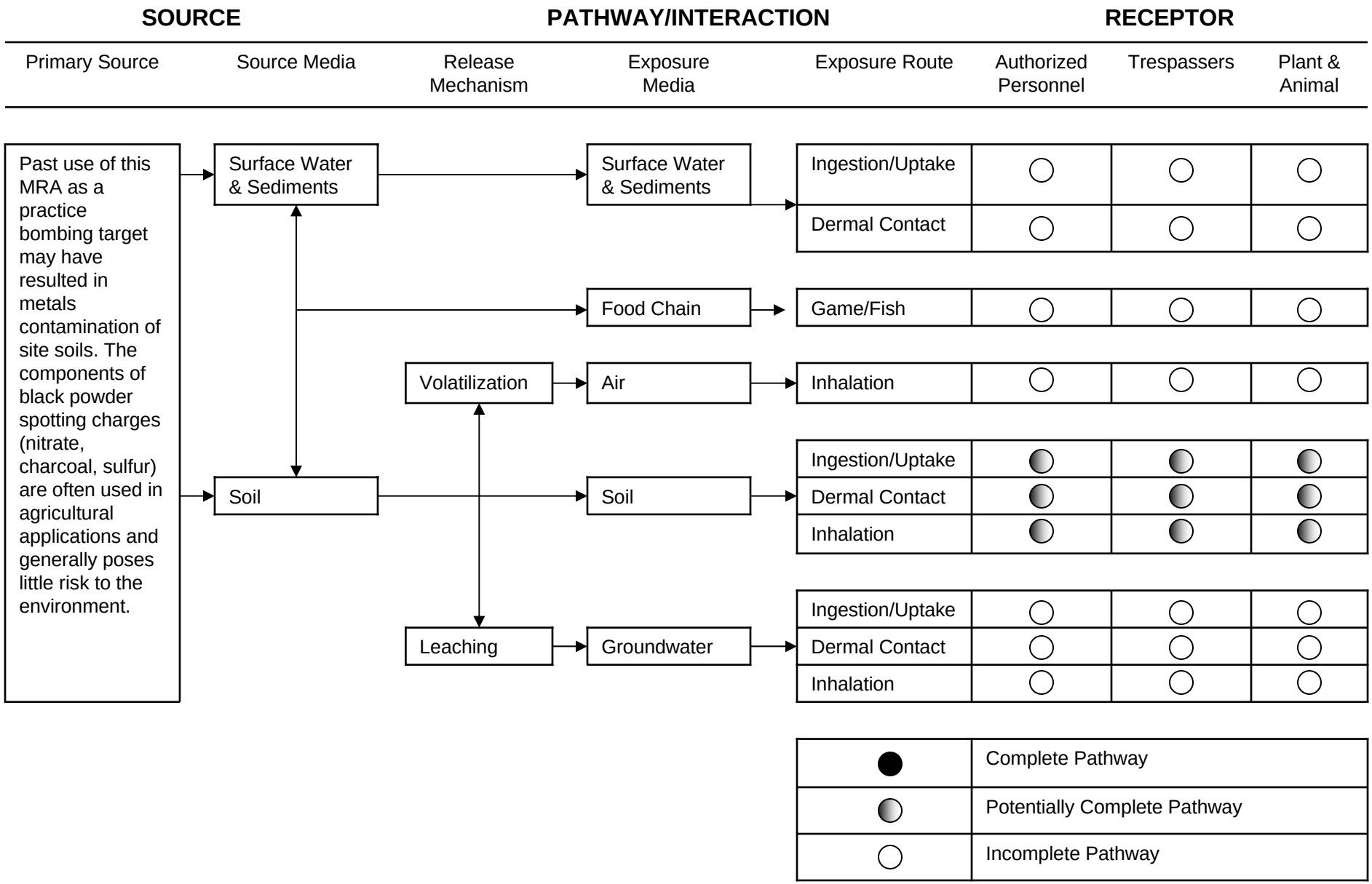

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Figure 9-57. MC ICSM for Sandia Base Howitzer Range (No MRA ID)

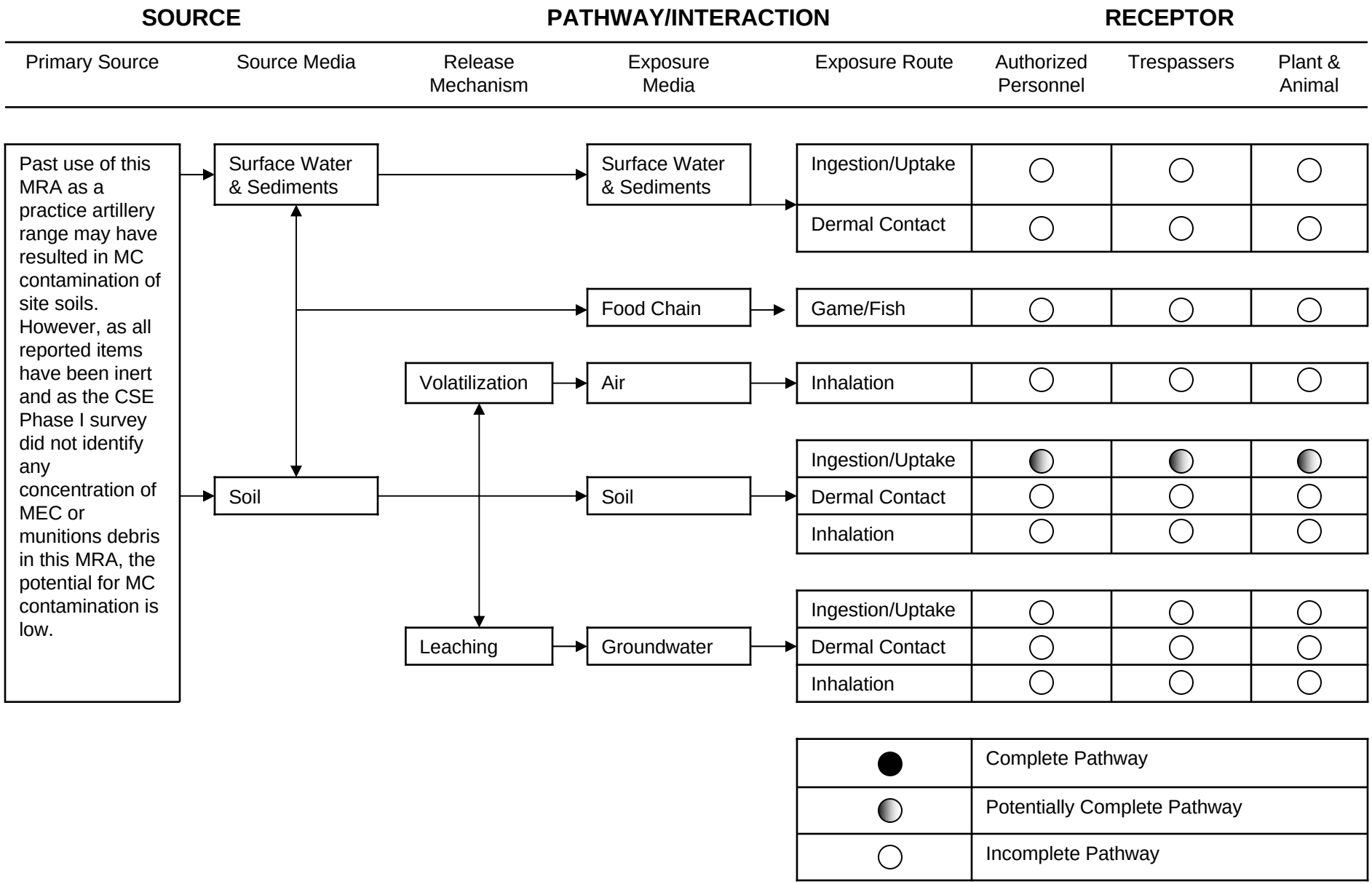

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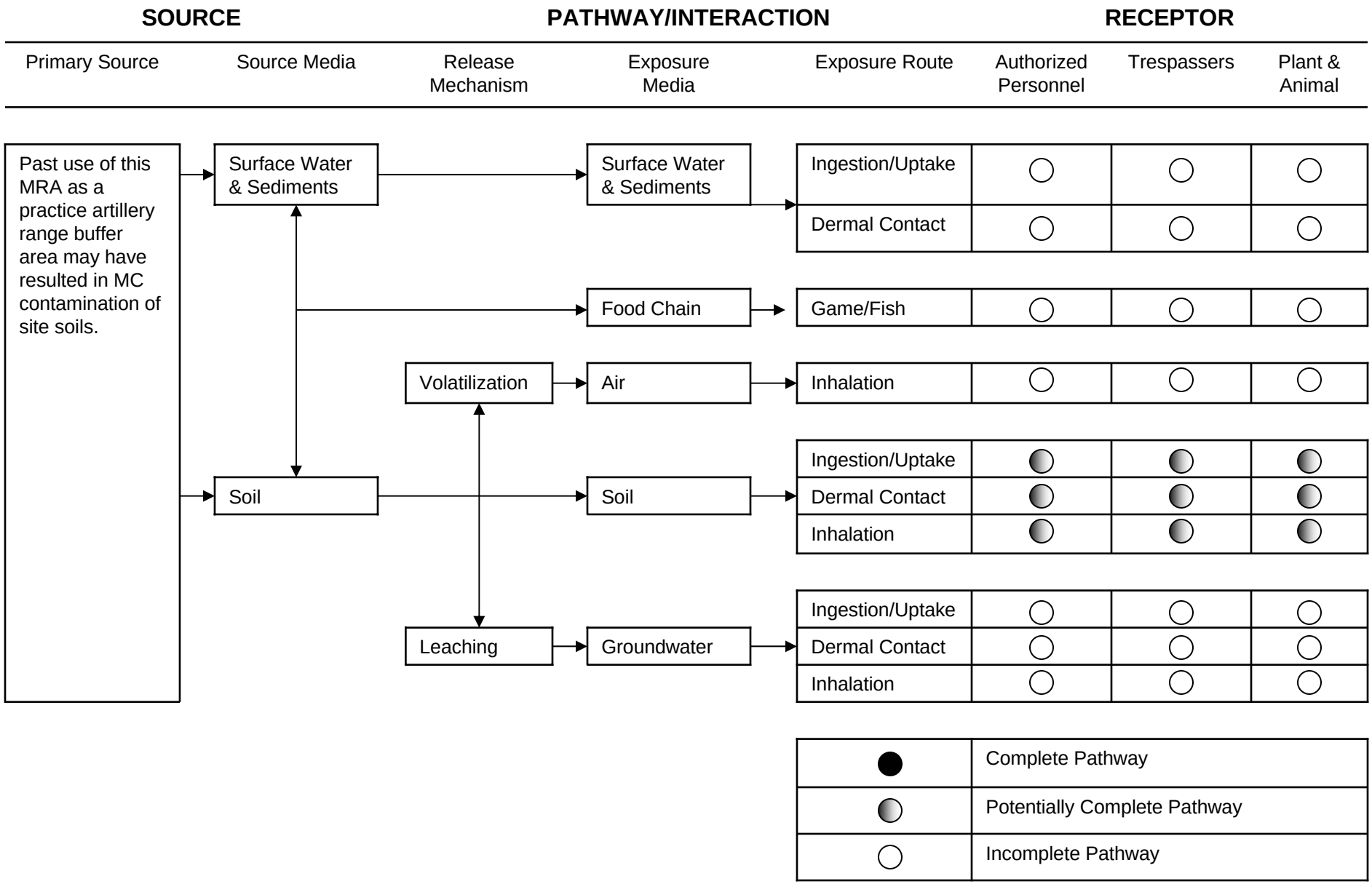
Figure 9-58. MC ICSM for Sandia Base Howitzer Range Buffer (No MRA ID)



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10. MUNITIONS RESPONSE SITE PRIORITIZATION PROTOCOL

In addition to establishing requirements for DoD to develop and maintain an inventory of defense sites known or suspected to contain UXO, DMM, and MC, Section 311 of the National Defense Authorization Act of Fiscal Year 2002 also established the requirement for DoD to develop and apply a prioritization protocol to all defense sites in the Air Force MMRP Site Inventory.

On October 5, 2005, the DoD published the MRSPP final rule. The final ruled defined the methodology to be employed for completing the three hazard evaluation modules and assigning relative priorities to defense sites in the Inventory. The MRSPP priorities will aid DoD in determining the sequence in which subsequent munitions response actions are funded.

The MRSPP is generally applied at the MRS level, but may be applied to MRAs when there is sufficient data to run at least one hazard evaluation module. If there is insufficient data to run a module, that module is assigned "Evaluation Pending" and does not contribute to the assigned MRS priority. The Protocol is reapplied as new information become available through further investigation or response actions.

The following sections summarize the MRSPP hazard evaluation modules. MRSPP modules were not applied to ML784, SR780, and the Bomb Target since these sites have been determined to be ineligible for munitions response under the Air Force MMRP.

10.1 Explosives Hazard Evaluation Module

The Explosive Hazard Evaluation (EHE) module assesses the presence of known or suspected explosive hazards. The EHE module is composed of three factors, each of which has two to four data elements that are intended to assess the specific conditions at an MRS. These factors are:

1) Explosive Hazard, which has the data elements *Munitions Type* and *Source of Hazard*;
2) Accessibility, which has the data elements *Location of Munitions*, *Ease of Access*, and *Status of Property*; and
3) Receptors, which has the data elements *Population Density*, *Population Near Hazard*, *Types of Activities/Structures*, and *Ecological and/or Cultural Resources*.

Based on site-specific information, each data element is assigned a numeric value, and the sum of these values is the EHE module score. The EHE module score results in an MRS receiving a rating. MRSPP tables for the Kirtland AFB MRAs are provided in Appendix G. The EHE module scores for the MRAs associated with Kirtland AFB are summarized in Table 10-1.

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Table 10-1. EHE Module Scores for the MRAs

MRA ID	Munitions Type	Source of Hazard	Location of Munitions	Ease of Access	Status of Property	Population Density	Population Near Hazard	Type of Activity	Eco/Cultural Resources	EHE Score/ Rating
AL120	25	10	25	10	0	5	4	2	5	86/B
AL769	5	10	5	8	0	5	5	5	3	46/F
AL771	30	10	25	8	0	5	4	2	3	87/B
DA130	25	8	25	10	0	5	5	4	3	85/B
DA782	25	8	5	8	0	5	5	5	3	64/D
ED770	25	10	25	8	0	5	5	2	3	83/B
ML125	25	10	25	8	0	5	4	2	3	82/B
ML774	25	10	5	8	0	5	5	5	3	66/D
ML781	25	10	25	8	0	5	5	5	0	83/B
ML784	Not eligible under Air Force MMRP. Area is totally contained within an operational range area.									
MU772	25	10	10	8	0	5	3	2	3	66/D
PT123	25	10	10	8	0	5	5	5	3	71/C
PT761	25	10	10	10	5	5	5	5	0	75/C
PT773	30	10	25	10	0	5	3	5	3	91/B
PT783	30	10	25	10	0	5	2	2	5	89/B
SR763	2	1	1	8	0	5	5	5	0	27/G
SR764	2	1	1	8	0	5	5	5	0	27/G
SR765	2	1	1	8	0	5	5	5	0	27/G
SR766	2	1	1	8	0	5	5	5	0	27/G
SR767	2	1	1	8	0	5	5	5	0	27/G
SR768	30	10	10	8	0	5	4	2	3	72/C
SR777	2	1	5	10	0	5	5	5	0	33/G
SR778	2	1	5	10	0	5	5	5	3	36/G
SR780	Not eligible under Air Force MMRP. Area is totally contained within an operational range area.									
TS775	2	1	1	8	0	5	5	5	0	27/G
TS776	2	1	1	10	0	5	5	5	0	29/G
Bomb Target	Not eligible under Air Force MMRP. Area is totally contained within an operational range area.									
SBHR	25	10	10	8	0	5	5	5	0	68/D
SBHRB	25	10	5	8	0	5	5	5	0	63/D

SBHR – Sandia Base Howitzer Range
SBHRB – Sandia Base Howitzer Range Buffer

10.2 Chemical Warfare Materiel Hazard Evaluation Module

The Chemical Warfare Materiel Hazard Evaluation (CHE) module provides an evaluation of the chemical hazards associated with the physiological effects of chemical warfare materiel (CWM). The CHE module is used only when CWM in the form of MEC or MC, are known or suspected of being present at an MRA. Like the EHE module, the CHE module has three factors, each of which has two to four data elements that are intended to assess the conditions at an MRA. These factors are as follows:

1) CWM Hazard, which has the data elements, *CWM Configuration and Sources of CWM*;
2) Accessibility, which focuses on the potential for receptors to encounter the CWM known or suspected to be present on an MRA. This factor consists of three data elements, *Location of CWM*, *Ease of Access*, and *Status of Property*; and
3) Receptor, which focuses on the human and ecological populations that may be impacted by the presence of CWM. It has the data elements P*opulation Density*, *Population Near Hazard*, *Types of Activities/Structures*, and *Ecological and/or Cultural Resource*s.

Similar to the EHE module, each data element is assigned a numeric value, and the sum of the CHE module scores is used to determine the CHE rating. The CHE module scores for the MRAs associated with Kirtland AFB are summarized in Table 10-2.

Table 10-2. CHE Module Scores for the MRAs

MRA ID	CWM of Configuration	Source of CWM	Location of CWM	Ease of Access	Status of Property	Population Density	Population Near Hazard	Type of Activity	Eco/Cultural Resources	CHE Score/ Rating
AL120	0	0	0	10	0	5	4	2	5	26/G
AL769	0	0	0	8	0	5	5	5	3	26/G
AL771	0	0	0	8	0	5	4	2	3	22/G
DA130	0	0	0	10	0	5	5	4	3	27/G
DA782	0	0	0	8	0	5	5	5	3	26/G
ED770	0	0	0	8	0	5	5	2	3	23/G
ML125	0	0	0	8	0	5	4	2	3	22/G
ML774	0	0	0	8	0	5	5	5	3	26/G
ML781	0	0	0	8	0	5	5	5	0	23/G
ML784	Not eligible under Air Force MMRP. Area is totally contained within an operational range area.									
MU772	0	0	0	8	0	5	3	2	3	21/G
PT123	0	0	0	8	0	5	5	5	3	26/G
PT761	0	0	0	10	5	5	5	5	0	30/G
PT773	0	0	0	10	0	5	3	5	3	26/G
PT783	0	0	0	10	0	5	2	2	5	24/G
SR763	0	0	0	8	0	5	5	5	0	23/G
SR764	0	0	0	8	0	5	5	5	0	23/G
SR765	0	0	0	8	0	5	5	5	0	23/G
SR766	0	0	0	8	0	5	5	5	0	23/G
SR767	0	0	0	8	0	5	5	5	0	23/G
SR768	0	0	0	8	0	5	4	2	3	22/G

MRA ID	CWM of Configuration	Source of CWM	Location of CWM	Ease of Access	Status of Property	Population Density	Population Near Hazard	Type of Activity	Eco/Cultural Resources	CHE Score/ Rating
SR777	0	0	0	10	0	5	5	5	0	25/G
SR778	0	0	0	10	0	5	5	5	3	28/G
SR780	Not eligible under Air Force MMRP. Area is totally contained within an operational range area.									
TS775	0	0	0	8	0	5	5	5	0	23/G
TS776	0	0	0	10	0	5	5	5	0	25/G
Bomb Target	Not eligible under Air Force MMRP. Area is totally contained within an operational range area.									
SBHR	0	0	0	8	0	5	5	5	0	23/G
SBHRB	0	0	0	8	0	5	5	5	0	23/G

SBHR – Sandia Base Howitzer Range
SBHRB – Sandia Base Howitzer Range Buffer

10.3 Human Health Hazard Evaluation Module

The Health Hazard Evaluation (HHE) module provides a consistent DoD-wide approach for evaluating the relative risk to human health and the environment posed by contaminants (i.e., MC) present at an MRA. The module has three factors:

1) Contamination Hazard Factor (CHF), which indicates contaminants present. This factor contributes a level of High (H), Middle (M), or Low (L) based on Significant, Moderate, or Minimal contaminants present, respectively;
2) Receptor Factor (RF), which indicates the receptors. This factor contributes a level of H, M, or L based on Identified, Potential, or Limited receptors, respectively; and
3) Migration Pathway Factor (MPF), which indicates environmental migration pathways, and contributes a level of H, M, or L based on Evident, Potential or Confined pathways, respectively.

The H, M, and L levels for the CHF, RF, and MPF are combined in a matrix to obtain composite three-letter combination levels that integrate considerations of all three factors. The three-letter combination levels are organized by frequency, and the resulting frequencies result in an HHE Hazard Evaluation rating.

The HHE builds on the Relative Risk Site Evaluation (RRSE) framework that is used in the ERP. The CHF, RF, and MPF are based on a quantitative evaluation of MC and/or CERCLA hazardous substances and a qualitative evaluation of pathways and human and ecological receptors in groundwater, surface water, sediment, and surface soils. The HHE does not consider air as a pathway, because the risk through this medium from MMRP sites with soil contamination is generally minimal. Until specific guidance on completing the HHE is developed, the user should reference the Relative Risk Site Evaluation Primer (Revised Edition) [DoD, 1997]. This reference provides guidance on completing the RRSE Worksheet and calculating the RRSE rating.

There is insufficient data to support scoring of the HHE module until contaminant concentration data is obtained.

10.4 Integrated MRS Priority

The EHE and CHE modules were applied to the MRA sites at Kirtland AFB. Table 10-3 summarizes the integrated MRS priorities for the MRAs associated with Kirtland AFB. Completed MRSPP Tables are provided in Appendix G.

Table 10-3. MRSPP Summary

MRA ID	MRA Name	EHE	CHE	Priority
AL120	Proximity Fuze Range	B (3)	G (7)	3
AL769	Ordnance Drop Zone	F (7)	G (7)	7
AL771	Old Cable Site	B (3)	G (7)	3
DA130	Arroyo del Coyote Demolition Area	B (3)	G (7)	3
DA782	Explosive Disposal Area	D (5)	G (7)	5
ED770	Experimental Range	B (3)	G (7)	3
ML125	Field Firing Range	B (3)	G (7)	3
ML774	Gun Site Fan	D (5)	G (7)	5
ML781	Firing In-Abutment	B (3)	G (7)	3
ML784	40mm Test and Training Range	Not eligible under Air Force MMRP		
MU772	H-25 Site	D (5)	G (7)	5
PT123	Tijeras Small Arms Range	C (4)	G (7)	4
PT761	Tijeras Small Arms and Training Range	C (4)	G (7)	4
PT773	Coyote Canyon Tech Site	B (3)	G (7)	3
PT783	Bazooka Training Range	B (3)	G (7)	3
SR763	Rifle Range	G (8)	G (7)	7
SR764	Rifle Range	G (8)	G (7)	7
SR765	WWII Pistol Range	G (8)	G (7)	7
SR766	Sub-Machine Gun	G (8)	G (7)	7
SR767	Rifle Range	G (8)	G (7)	7
SR768	Close Combat Infiltration Course	C (4)	G (7)	4
SR777	Rifle Range	G (8)	G (7)	7
SR778	Airfield Pistol Range	G (8)	G (7)	7
SR780	Impact Area	Not eligible under Air Force MMRP		
TS775	Airfield Skeet Range	G (8)	G (7)	7
TS776	Skeet Range	G (8)	G (7)	7
No ID	Bomb Target	Not eligible under Air Force MMRP		
No ID	Sandia Base Howitzer Range	D (5)	G (7)	5
No ID	Sandia Base Howitzer Range Buffer	D (5)	G (7)	5

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11. SUMMARY AND RECOMMENDATIONS

11.1 AL120 Proximity Fuze Range

11.1.1 Summary

Available historical data indicated extensive impact from past military munitions testing and training on AL120, including the Navy's BuOrd development and production testing of the VT fuze from January 1942 through October 1952; Sandia Base defense training; and weapons research, development, and testing.

AL120 encompasses five discrete non-operational range areas, including the McCormick Ranch Impact Area, the Isleta Drop Zone, the Workman Site, the NMPG Buffer Zone North, and the NMPG Buffer Zone South.

The McCormick Ranch Impact Area served as an impact area and safety zone for the NMPG/NMER developmental test firing of the VT fuze. The USAE Teams visually surveyed 3.7 acres within the McCormick Ranch Impact Area and recorded one UXO (57mm, fired, base fuzed) and two munitions debris items (HE fragmentations).

The Isleta Drop Zone served as the firing fan and safety zone for the NMPG/NMER development test firing of the VT fuze. The USAE Teams visually surveyed 4 acres within the Isleta Drop Zone and recorded six munitions debris items (HE fragmentations).

The Workman Site served as the main firing line and impact area for the NMPG/NMER development test firing of the VT fuze. The history of MEC activities within the Workman Site is consistent with that of the NMPG Firing Points 3, 4, and 6. The USAE Teams visually surveyed 9.5 acres within the Workman Site and recorded two MPPEH (one 3-inch projectile and one 90-mm projectile) and numerous munitions debris items. Most of these munitions-related items were located near the ML125.

The NMPG Buffer Zone North served as the safety zone for the NMPG/NMER development test firing of the VT fuze. The USAE Teams did not survey the NMPG Buffer Zone North because of schedule and access constraints.

The NMPG Buffer Zone South served as the safety zone for the NMPG/NMER development test firing of the VT fuze. The USAE Teams visually surveyed 15.1 acres within the NMPG Buffer Zone South and recorded three MPPEH (5-inch projectiles, no fuze) and one munitions debris item (grenade spoon).

Based on historical and visual survey data, the potential for human exposure to MEC and MC contaminated media exists within all five discrete non-operational range areas of AL120.

11.1.2 Recommendations

AL120 is recommended for further investigation under the CSE Phase II as defined in the Air Force SOO and CSE Phase II guidance. Further investigation may include:

- Additional detector-assisted visual survey to focus digital geophysical mapping (DGM) in areas of high subsurface anomaly density;

- Focused DGM in areas of high subsurface anomaly density. No DGM is recommended for the NMPG Buffer Zone North and the NMPG Buffer Zone South because the terrain and geology inhibit the efficient execution of geophysical mapping in these areas; and
- Screening level sampling and analysis of soils to assess MC contamination. If contamination is confirmed, additional investigation efforts may be required.

11.2 AL769 Ordnance Drop Zone

11.2.1 Summary

The period of use and purpose of the Ordnance Drop Zone are currently unknown. The USAE Teams visually surveyed 1.4 acres of AL769 (2.3 miles) and found no UXO, DMM, munitions debris, or surface indicators of MC contamination (e.g., impact craters, concentrations of munitions debris, scarred ground, unusual absence or abundance of vegetation, etc.) with this 524-acre MRA.

Based on historical and visual survey data, the potential for human exposure to MEC and MC contaminated media does not exist within AL769.

11.2.2 Recommendations

AL769 is recommended for NFA.

11.3 AL771 Old Cable Site

11.3.1 Summary

The Old Cable Site was formerly used as a test site and projectile impact area. The Kirtland AFB EOD team has responded to the site to destroy 5-inch shells and fuzes. In 2001, as many as 40 concrete-filled 90mm projectiles with burned out tracer elements were found in this area.

The USAE Teams visually surveyed 7.7 acres within AL771 and recorded one UXO item (40mm grenade, riot control), several pieces of unfired rocket motor propellant (Ballistite), two MPPEH (one 5-inch projectile without fuze and one partially expended smoke grenade), and several munitions debris items within this 863-acre MRA.

Based on historical and visual survey data, the potential for human exposure to MEC and MC contaminated media exists within AL771.

11.3.2 Recommendations

A TCRA of surface MEC and munitions debris is recommended for AL771. Because of the geology in this area (i.e., very shallow depth to bedrock), MEC and munitions debris will primarily be confined to the surface and near surface of the site. The TCRA of surface MEC is a more responsive and cost-efficient risk reduction method that will often provide better characterization of the nature and surface area extent of MEC presence than SI and Remedial Investigation (RI) data collection efforts.

AL771 is also recommended for further investigation under CSE Phase II as defined in the Air Force SOO and CSE Phase II guidance. Further investigation may include screening level sampling and analysis of soils to assess MC contamination. If contamination is confirmed, additional investigation efforts may

be required. No DGM is recommended for AL771 because the terrain and geology inhibit the efficient execution of geophysical mapping in this MRA.

11.4 DA130 Arroyo del Coyote Demolition Area

11.4.1 Summary

The Arroyo del Coyote Demolition Area is a former demolition area. The periods of use and types of demolition processes used at this former demolition area are currently unknown. The HRR identified two historical ranges associated with DA130, Defense Training Area D and Area E. These two historical ranges were part of the Defense Training Areas used by Sandia Base in the 1950s (TechLaw, 2006). A 2001 investigation of a suspected EOD area (DP-101) indicated no buried munitions at the site.

The USAE Teams visually surveyed 2.6 acres within DA130 and recorded one munitions debris item (light case metal fragment) within this 386-acre MRA.

Based on historical and visual survey data, the potential for human exposure to MEC and MC contaminated media exists within DA130.

11.4.2 Recommendations

DA130 is recommended for further investigation under CSE Phase II as defined in the Air Force SOO and CSE Phase II guidance. Further investigation may include:

- Additional detector-assisted visual survey to identify areas of high subsurface anomaly density;
- Focused DGM in areas of high subsurface anomaly density (if such areas exist); and
- Screening level sampling and analysis of soils to assess MC contamination. If contamination is confirmed, additional investigation efforts may be required.

11.5 DA782 Explosives Disposal Area

11.5.1 Summary

The Explosives Disposal Area is a former explosives disposal area. The period of use and method of disposal at the former Explosives Disposal Area are currently unknown.

The USAE Teams visually surveyed 0.8 acres within DA782 and found no UXO, DMM, munitions debris, or surface indicators of MC contamination (e.g., impact craters, concentrations of munitions debris, scarred ground, unusual absence or abundance of vegetation, etc.) within this 6-acre MRA.

Based on historical and visual survey data, the potential for human exposure to MEC and MC contaminated media does not exist within DA782.

11.5.2 Recommendations

DA782 is recommended for NFA.

11.6 ED770 Experimental Range

11.6.1 Summary

The period of use and purpose of the Experimental Range are currently unknown. The adjacent EOD Range began operations in 1972 and is currently active.

The USAE Teams visually surveyed 9.6 acres within ED770 and recorded several munitions debris items (e.g., HE fragmentations, grenade debris, small arms debris) within this 1,480-acre MRA.

Based on historical and visual survey data, the potential for human exposure to MEC and MC contaminated media exists within ED770.

11.6.2 Recommendations

ED770 is recommended for further investigation under CSE Phase II as defined in the Air Force SOO and CSE Phase II guidance. Further investigation may include:

- Additional detector-assisted visual survey to identify areas of high subsurface anomaly density;
- Focused DGM in areas of high subsurface anomaly density (if such areas exist); and
- Screening level sampling and analysis of soils to assess MC contamination. If contamination is confirmed, additional investigation efforts may be required.

11.7 ML125 Field Firing Range

11.7.1 Summary

Historical data indicate that the Field Firing Range was used as the main impact area for the VT fuze development and production testing of the proximity fuze, and subsequently as the Sandia Base Field Firing Range, which included a mortar range and M-20 range. The period of use is currently unknown.

The USAE Teams visually surveyed 13.1 acres within ML125 and recorded two UXO items (one 5-inch projectile with MK48 Series fuze and one 57mm projectile with partially intact fuze), numerous MPPEH, and two munitions debris items within this 1,993-acre MRA. This MRA has the highest concentration of MEC and munitions debris; furthermore, the types of munitions recorded represent a wide range of munitions reportedly fired at the NMPG from 1943 through 1952, including 5-inch, 3-inch, 105mm, 90mm, 76mm, 75mm, and 57mm projectiles, and 5-inch rockets. The team also recorded several munitions that indicate limited use of this MRA as the former Field Firing Range and Mortar Impact Area, including the 60mm mortar, 57mm and 75mm projectiles, and 3.5-inch rockets.

Based on historical and visual survey data, the potential for human exposure to MEC and MC contaminated media exists within ML125.

11.7.2 Recommendations

A TCRA of surface MEC and munitions debris is recommended for ML125. Because of the geology in this area (i.e., very shallow depth to bedrock), MEC and munitions debris will primarily be confined to the surface and near surface of the site. The TCRA of surface MEC is a more responsive and cost-efficient risk reduction method that will often provide better characterization of the nature and surface area extent of MEC presence than will SI and RI data collection efforts.

ML125 is recommended for further investigation under CSE Phase II as defined in the Air Force SOO and CSE Phase II guidance. Further investigation may include screening level sampling and analysis of soils to assess MC contamination. If contamination is confirmed, additional investigation efforts may be required. No DGM is recommended for ML125 because the terrain and geology inhibit the efficient execution of geophysical mapping in this MRA.

11.8 ML774 Gun Site Fan

11.8.1 Summary

The period of use and purpose of the Gun Site Fan are currently unknown. According to the initial range inventory, the Gun Site Fan was used to fire medium to large caliber rounds at target emplacements located at the base boundary, possibly in an effort to test and develop rounds during WWII. No confirmation of the existence of the Gun Site Fan was found in aerial photographs.

The USAE Teams visually surveyed 4.7 acres within ML774 and found no surface evidence of MEC or MC contamination within this 634-acre MRA. The teams found three pieces of munitions debris within the eastern portions of ML774 that are completely within the surface danger zones of nearby operational range areas.

Based on historical and visual survey data, the potential for human exposure to MEC and MC contaminated media does not exist within ML774.

11.8.2 Recommendations

ML774 is recommended for administrative closure and removal from the Air Force MMRP Site Inventory because there is no evidence to confirm the existence of the Gun Site Fan. The eastern portion of this MRA is within the surface danger zones of an operational range/storage area and is not eligible for munitions response under the Air Force MMRP.

11.9 ML781 Firing In-Abutment

11.9.1 Summary

The Firing In-Abutment was used to unload aircraft weapons misfires; however, this area has also historically been used for aircraft machine gun maintenance. The period of use of the Firing In-Abutment is unknown.

The USAE Teams visually surveyed 0.2 acres within ML781 and recorded one munitions debris item (20mm projectile debris) within this 1-acre MRA.

Based on historical and visual survey data, the potential for human exposure to MEC and MC contaminated media exists within ML781.

11.9.2 Recommendations

ML781 is recommended for further investigation under CSE Phase II as defined in the Air Force SOO and CSE Phase II guidance. Further investigation may include:

- DGM of the entire 1-acre MRA; and

- Screening level sampling and analysis of soils to assess MC contamination. If contamination is confirmed, additional investigation efforts may be required.

11.10 ML784 40mm Test & Training Range

11.10.1 Summary

ML784 was used from 1984 to 1994 for the annual Peacekeeper Challenge competition, which involved the firing of 40mm practice grenades.

A previous site survey identified one unexpended 40mm practice grenade (M781) projectile, one clip of 5.56mm blanks, and several pieces of munitions debris (SNL, 1994). Although the M781 practice grenade cartridge would pose an explosive hazard because of the expelling charge, the projectiles themselves do not pose an explosive hazard.

Although ML784 is not eligible for munitions response under the Air Force MMRP and was not surveyed during CSE Phase I, historical data indicate that there is a potential for human exposure to MEC at this site.

11.10.2 Recommendations

ML784 is recommended for administrative closure and removal from the Air Force MMRP Site Inventory because it is within the explosive safety limit of the operational Electro-Explosive Facility and is not eligible for munitions response under the Air Force MMRP.

11.11 MU772 H-25 Site

11.11.1 Summary

The period of use and purpose of the H-25 Site are currently unknown. Crystallized explosives and 81mm mortar rounds have been recovered at this site.

The USAE Teams visually surveyed 0.9 acre within MU772 and found no evidence of MEC or surface indicators of MC contamination (e.g., impact craters, concentrations of munitions debris, scarred ground, unusual absence or abundance of vegetation) within this 133-acre MRA.

Although not confirmed by physical data, the proximity of MU772 to MRAs with confirmed MEC presence (i.e., AL771 and ML125) indicates a reasonable potential for human exposure to MEC and MC contaminated media within MU772.

11.11.2 Recommendations

MU772 is recommended for further investigation under CSE Phase II as defined in the Air Force SOO and CSE Phase II guidance. Further investigation may include:

- Additional detector-assisted visual survey to identify areas of high subsurface anomaly density; and
- Screening level sampling and analysis of soils to assess MC contamination. If contamination is confirmed, additional investigation efforts may be required.

No DGM is recommended for MU772 because the terrain and geology inhibit the efficient execution of geophysical mapping in this MRA.

11.12 PT123 Tijeras Small Arms Range

11.12.1 Summary

The Tijeras Small Arms Range was a former small combat training range. The period of use of this former small arms range is currently unknown. Previous surveys have identified one unexpended ground burst simulator and several munitions debris items associated with 3.5-inch rockets, 40mm practice grenades, smoke grenades, signals, and small arms.

The USAE Teams visually surveyed 3.8 acres within PT123 and recorded one munitions debris item (smoke grenade spoon) within this 434-acre MRA.

Based on historical and visual survey data, the potential for human exposure to MEC and MC contaminated media exists within PT123.

11.12.2 Recommendations

PT123 is recommended for further investigation under CSE Phase II as defined in the Air Force SOO and CSE Phase II guidance. Further investigation may include:

- Additional detector-assisted visual survey to identify areas of high subsurface anomaly density;
- Limited DGM in areas of high subsurface anomaly density (if such areas exist); and
- Screening level sampling and analysis of soils to assess MC contamination. If contamination is confirmed, additional investigation efforts may be required.

11.13 PT761 Tijeras Small Arms and Training Range

11.13.1 Summary

The Tijeras Small Arms and Training Range is the portion of Tijeras Small Arms Range that extends beyond the northern property boundary of Kirtland AFB. The period of use and purpose of the Tijeras Small Arms and Training Range are currently unknown.

The USAE Teams visually surveyed 3.7 acres within PT761 and recorded one munitions debris item (cartridge section of a slap flare) near the Installation boundary within this 575-acre MRA.

Based on historical and visual survey data, the potential for human exposure to MEC and MC contaminated media does not exist within PT761.

11.13.2 Recommendations

PT761 is recommended for NFA.

11.14 PT773 Coyote Canyon Tech Site

11.14.1 Summary

The Coyote Canyon Tech Site is a former explosives testing site used in the 1950s and may contain some blast shelters and demolition pads. Live munitions and munitions debris (including white phosphorus canisters) associated with the Manzano Combat Range were removed from the nearby DOE/SNL Site 58 (Coyote Canyon Blast Area) in 1996.

The USAE Teams visually surveyed 2.3 acres within PT773 and recorded five munitions debris items (four pieces of HE fragmentations and one piece of aluminum fragmentation) within this 77-acre MRA. As part of the visual survey of PT773, the team surveyed the additional non-operational range areas east of PT773 and found no UXO, DMM, munitions debris or surface indicators of MC contaminant (e.g., impact craters, concentrations of munitions debris, scarred ground, unusual absence or abundance of vegetation) in this area.

Based on historical and visual survey data, the potential for human exposure to MEC and MC contaminated media exists within PT773.

11.14.2 Recommendations

PT773 is recommended for further investigation under CSE Phase II as defined in the Air Force SOO and CSE Phase II guidance. Further investigation may include:

- Additional detector-assisted visual survey to identify areas of high subsurface anomaly density;
- Limited DGM in areas of high subsurface anomaly density (if such areas exist); and
- Screening level sampling and analysis of soils to assess MC contamination. If contamination is confirmed, additional investigation efforts may be required.

11.15 PT783 Bazooka Training Range

11.15.1 Summary

The Bazooka Training Range is a former bazooka training area. The period of use is currently unknown. Previous surveys recovered eight 3.5-inch rocket and two 81mm mortars at this site.

The USAE Teams visually surveyed 3.3 acres within PT783 and recorded several munitions debris items (multiple pieces of HE fragmentations) within this 354-acre MRA. As part of the visual survey of PT783, the team surveyed the additional, other than operational, range areas east of PT783 and found no UXO, DMM, munitions debris, or surface indicators of MC contaminant (e.g., impact craters, concentrations of munitions debris, scarred ground, unusual absence or abundance of vegetation) in this area. The USAE Team did not survey the additional, other than operational, range areas southwest of PT783 because of schedule constraints.

Based on historical and visual survey data, the potential for human exposure to MEC and MC contaminated media exists within PT783.

11.15.2 Recommendations

PT783 is recommended for further investigation under CSE Phase II as defined in the Air Force SOO and CSE Phase II guidance. Further investigation may include:

- Additional detector-assisted visual survey to identify areas of high subsurface anomaly density;
- Limited DGM in areas of high subsurface anomaly density (if such areas exist); and
- Screening level sampling and analysis of soils to assess MC contamination. If contamination is confirmed, additional investigation efforts may be required.

11.16 SR763 Rifle Range

11.16.1 Summary

The SR763 Rifle Range is a former Sandia Base rifle range. The period of use is currently unknown. Expended small arms are the only munitions-related items expected to be found at the site.

The USAE Teams visually surveyed 1.0 acres within SR763 and did not record any UXO, DMM, munitions debris, or surface indicators of MC contamination (e.g., impact craters, concentrations of munitions debris, scarred ground, unusual absence or abundance of vegetation, etc.) within this 232-acre MRA.

Based on historical and visual survey data, the potential for human exposure to MEC does not exist within SR763. However, the potential for MC contamination does exist at SR763 because of its past use as a small arms range.

11.16.2 Recommendations

SR763 is recommended for further investigation under CSE Phase II as defined in the Air Force SOO and CSE Phase II guidance. Further investigation may include:

- Additional detector-assisted visual survey to identify areas of high subsurface anomaly density; and
- Screening level sampling and analysis of soils to assess MC contamination. If contamination is confirmed, additional investigation efforts may be required.

11.17 SR764 Rifle Range

11.17.1 Summary

The SR764 Rifle Range is a former Sandia Base rifle range. The range had a 4,000-yard safety fan pointing south. The fan is shown in two forms, indicating that the range size or arms used may have varied over time. The period of use is currently unknown. Expended small arms are the only munitions-related items expected to be found at this site.

The USAE Teams visually surveyed 0.6 acres within SR764 and recorded multiple munitions debris items (7.62mm small arms cartridge case and links) in a 6-ft-diameter area within this 116-acre MRA.

Based on historical and visual survey data, the potential for human exposure to MEC does not exist within SR764. However, the potential for MC contamination does exist at SR764 because of its past use as a small arms range.

11.17.2 Recommendations

SR764 is recommended for further investigation under CSE Phase II as defined in the Air Force SOO and CSE Phase II guidance. Further investigation may include:

- Additional detector-assisted visual survey to identify areas of high subsurface anomaly density; and
- Screening level sampling and analysis of soils to assess MC contamination. If contamination is confirmed, additional investigation efforts may be required.

11.18 SR765 WWII Pistol Range

11.18.1 Summary

The WWII Pistol Range is an abandoned WWII-era pistol range. Expended small arms are the only munitions-related items expected to be found at the site.

The USAE Teams did not survey SR765 because the discrepancies in the location and boundary of the WWII Pistol Range were identified after the CSE Phase I survey efforts.

Based on historical data and the lack of survey data, the potential for human exposure to MEC does not exist within SR765. However, the potential for MC contamination does exist at SR765 because of its past use as a small arms range.

11.18.2 Recommendations

SR765 is recommended for further investigation under CSE Phase II as defined in the Air Force SOO and CSE Phase II guidance. Further investigation may include:

- Additional detector-assisted visual survey to identify areas of high subsurface anomaly density; and
- Screening level sampling and analysis of soils to assess MC contamination. If contamination is confirmed, additional investigation efforts may be required.

11.19 SR766 Sub-Machine Gun

11.19.1 Summary

The Sub-Machine Gun is a WWII-era sub-machine gun range. Expended small arms are the only munitions-related items expected to be found at SR766.

The USAE Teams did not survey SR766 because the discrepancies in the location and boundary of the Sub-Machine Gun were identified after the CSE Phase I survey efforts.

Based on historical and visual survey data, the potential for human exposure to MEC does not exist within SR766. However, the potential for MC contamination does exist at SR766 because of its past use as a small arms range.

11.19.2 Recommendations

SR766 is recommended for further investigation under CSE Phase II as defined in the Air Force SOO and CSE Phase II guidance. Further investigation may include:

- Additional detector-assisted visual survey to identify areas of high subsurface anomaly density; and
- Screening level sampling and analysis of soils to assess MC contamination. If contamination is confirmed, additional investigation efforts may be required.

11.20 SR767 Rifle Range

11.20.1 Summary

The SR767 Rifle Range is a WWII-era rifle range. Expended small arms are the only munitions-related items expected to be found at the site.

The USAE Teams did not survey SR767 because the discrepancies in the location and boundary of the Rifle Range were identified after the CSE Phase I survey efforts.

Based on historical and visual survey data, the potential for human exposure to MEC does not exist within SR767. However, the potential for MC contamination does exist at SR767 because of its past use as a small arms range.

11.20.2 Recommendations

SR767 is recommended for further investigation under CSE Phase II as defined in the Air Force SOO and CSE Phase II guidance. Further investigation may include:

- Additional detector-assisted visual survey to identify areas of high subsurface anomaly density; and
- Screening level sampling and analysis of soils to assess MC contamination. If contamination is confirmed, additional investigation efforts may be required.

11.21 SR768 Close Combat Infiltration Course

11.21.1 Summary

The period of use and purpose of the Close Combat Infiltration Course are currently unknown. In documentation from 1962, this site was depicted as the “future rifle range.”

The USAE Teams visually surveyed 4 acres within SR768 and recorded one munitions debris item from the 40mm grenade within this 536-acre MRA.

Although not confirmed by physical data, the proximity of SR768 to MRAs with confirmed MEC presence (i.e., AL771 and ML12) indicates a reasonable potential for human exposure to MEC and MC contaminated media within SR768.

11.21.2 Recommendations

SR768 is recommended for further investigation under CSE Phase II as defined in the Air Force SOO and CSE Phase II guidance. Further investigation may include:

- Additional detector-assisted visual survey to identify areas of high subsurface anomaly density; and
- Screening level sampling and analysis of soils to assess MC contamination. If contamination is confirmed, additional investigation efforts may be required.

No DGM is recommended for SR768 because the terrain and geology inhibit the efficient execution of geophysical mapping in this MRA.

11.22 SR777 Rifle Range

11.22.1 Summary

The Rifle Range is an abandoned rifle range. The period of use of the former rifle range is currently unknown. Two historical ranges were identified as associated with SR777 (Defense Training Areas I and K). These ranges were part of the Defense Training Areas used by Sandia Base in the 1950s for "dry firing" and combat exercises (TechLaw, 2006).

The USAE Teams visually surveyed 0.7 acres within SR777 and found no surface evidence of MEC presence or MC contamination within this 57-acre MRA.

Based on historical and visual survey data, the potential for human exposure to MEC and MC contaminated media does not exist within SR777.

11.22.2 Recommendations

SR777 is recommended for NFA.

11.23 SR778 Airfield Pistol Range

11.23.1 Summary

The Airfield Pistol Range is a WWII-era pistol range. The period of use for this former pistol range is currently unknown.

The USAE Teams visually surveyed 0.3 acres within SR778 and found no surface evidence of MEC presence or MC contamination within this 86-acre MRA. The team did not survey large portions of SR778 because the discrepancies in the boundary and location of the Airfield Pistol Range were identified after the survey effort.

Based on historical and visual survey data, the potential for human exposure to MEC does not exist within SR778. However, the potential for MC contamination does exist at SR778 because of its past use as a firing range.

11.23.2 Recommendations

SR778 is recommended for further investigation under CSE Phase II as defined in the Air Force SOO and CSE Phase II guidance. Further investigation may include:

- Additional detector-assisted visual survey to identify areas of high subsurface anomaly density; and
- Screening level sampling and analysis of soils to assess MC contamination. If contamination is confirmed, additional investigation efforts may be required.

11.24 SR780 Impact Area

11.24.1 Summary

The period of use and purpose of the Impact Area are currently unknown. Although SR780 is not eligible for munitions response under the Air Force MMRP and was not surveyed during CSE Phase I, historical data indicate that there is a potential for human exposure to MEC at this site.

11.24.2 Recommendations

SR780 is recommended for administrative closure and removal from the Air Force MMRP Site Inventory because it is within the explosive safety limit of the operational DOE/SNL Burn Site and is not eligible for munitions response under the Air Force MMRP.

11.25 TS775 Airfield Skeet Range

11.25.1 Summary

The Airfield Skeet Range is a former trap and skeet range that was identified during the assessment of ECP site ST-351. Clay targets and spent pellets were observed at the site. It was determined that the site was a WWII-era skeet range. No additional information on the period of use is currently available.

The USAE Team did not survey this 25-acre MRA because of schedule and access constraints. Obtaining airport permission to enter the property will be necessary for any follow-up investigation.

Based on historical and visual survey data, the potential for human exposure to MEC does not exist within TS775. However, the potential for MC contamination does exist at TS775 because of its past use as a trap and skeet range.

11.25.2 Recommendations

TS775 is recommended for further investigation under the CSE Phase II as defined in the Air Force SOO and CSE Phase II guidance. Further investigation may include:

- Detector-assisted visual survey to identify areas of high subsurface anomaly density; and
- Screening level sampling and analysis of soils to assess MC contamination. If contamination is confirmed, additional investigation efforts may be required.

11.26 TS776 Skeet Range

11.26.1 Summary

The Skeet Range is a WWII and post-WWII-era skeet range. From the late 1960s through May 1998, Skeet Range TS776 was used as a recreational facility for clay pigeon shooting practice. On several occasions, the Skeet Club had Kirtland AFB Civil Engineering group scrape the range. Estimates of lead shot accumulation, based on past facility usage, indicated approximately 86,000 lb of lead were deposited on the range every 3 years. Because of these past practices, the range was sampled, cleaned, and determined appropriate for NFA petition (Kirtland AFB, 2001).

The USAE Teams visually surveyed 0.5 acres within TS776 and found no surface evidence of MEC presence or MC contamination.

Based on historical and visual survey data, the potential for human exposure to MEC does not exist within TS776. However, the potential for MC contamination does exist at TS776 because of its past use as a skeet range.

11.26.2 Recommendations

TS776 is recommended for further investigation under CSE Phase II as defined in the Air Force SOO and CSE Phase II guidance. Further investigation may include:

- Additional detector-assisted visual survey to identify areas of high subsurface anomaly density; and
- Screening level sampling and analysis of soils to assess MC contamination. If contamination is confirmed, additional investigation efforts may be required.

11.27 Bomb Target

11.27.1 Summary

The Bomb Target was identified from a 1958 aerial photograph that depicted the outline of a bomb target. No other historical information was found for this target. Tail fins and other debris from what appeared to be practice bombs were found during a 29 March 2006 site survey by Carl Lanz, Chief of Environmental Restoration at Kirtland AFB.

Although the Bomb Target is not eligible for munitions response under the Air Force MMRP and was not surveyed during CSE Phase I, historical data indicate that there is a potential for human exposure to MEC at this site.

11.27.2 Recommendations

It is recommended that the Bomb Target not be included in the Air Force MMRP Site Inventory because it is within the explosive safety limit of the operational munitions storage areas and is not eligible for munitions response under the Air Force MMRP.

11.28 Sandia Base Howitzer Range

11.28.1 Summary

The Sandia Base Howitzer Range is a new MRA identified from the Sandia Base Range Regulations from the 1950s. The MRAs are part of the Defense Training Areas used by Sandia Base for flat trajectory line of sight firing of 75mm projectiles (TechLaw, 2006). There is no additional information on period of use or purpose of these MRAs.

The USAE Teams visually surveyed 4.2 acres within the Sandia Base Howitzer Range. The teams recorded one munitions debris item (practice 76mm AP projectile, fired, inert).

Although not confirmed by physical data, the historical use of the Sandia Base Howitzer Range indicates a reasonable potential for human exposure to MEC within the Sandia Base Howitzer Range. There is insufficient historical and physical data to assess the potential for human exposure to MEC and MC contaminated media within the Sandia Base Howitzer Range Buffer.

11.28.2 Recommendations

The Sandia Base Howitzer Range is recommended for further investigation under CSE Phase II as defined in the Air Force SOO and CSE Phase II guidance. Further investigation may include:

- Additional detector-assisted visual survey to identify areas of high subsurface anomaly density;
- Limited DGM in areas of high subsurface anomaly density (if such areas exist); and
- Screening level sampling and analysis of soils to assess MC contamination. If contamination is confirmed, additional investigation efforts may be required.

11.29 Sandia Base Howitzer Range Buffer

11.29.1 Summary

The Sandia Base Howitzer Range Buffer is the range buffer zone for the Sandia Base Howitzer Range identified from the Sandia Base Range Regulations. There is no additional information on period of use or purpose of this former range buffer zone.

The USAE Teams did not survey the Sandia Base Howitzer Range Buffer because of schedule and access constraints.

There is insufficient historical and physical data to assess the potential for human exposure to MEC and MC contaminated media within the Sandia Base Howitzer Range Buffer.

11.29.2 Recommendations

The Sandia Base Howitzer Range Buffer is recommended for further investigation under CSE Phase II as defined in the Air Force SOO and CSE Phase II guidance. Further investigation may include:

- Detector-assisted visual survey to identify areas of high subsurface anomaly density;
- Limited DGM in areas of high subsurface anomaly density (if such areas exist); and
- Screening level sampling and analysis of soils to assess MC contamination.

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12. COHORT ASSIGNMENT, PROCESS STREAMLINING OPPORTUNITIES, MRA SUBDIVISION, AND NEWLY IDENTIFIED MRAS

This section provides recommendations for process streamlining opportunities, including the assignment of MRAs to different cohorts, the splitting of MRAs for subsequent munitions response actions, and inclusion of new MRAs to the Air Force MMRP Site Inventory.

12.1 Cohort Assignment

To comply with the Air Force Knowledge Driven/Performance-Based Management initiative, the MRAs are subdivided into seven "cohorts." The assignment of MRAs to different cohorts supports streamlining of the restoration process, including the development and implementation of remedies for specific cohort types. The cohort type will be reflected in the site description in AFRIMS. The seven Air Force MMRP cohorts are shown in Table 12-1. Descriptions of each of the cohort types are provided in Appendix A.

Table 12-1. Air Force MMRP Cohort Assignments

Cohort	Description
A	Small Arms Ranges
B	Bore-sight Ranges
C	EOD Ranges and Open Burn/Open Detonation (OB/OD) Sites
D	CWM Sites
E	Pyrotechnic/Practice Sites
F	All Other Sites
G	Munitions Constituents Sites

For the CSE Phase I, the cohort type was defined by the range type. As the Air Force MMRP evolves, the cohort assignments may be expanded or consolidated to reflect what has been learned from the CSE Phase I. The cohort assignment will be further refined based on field investigation in future phases. Any MRA with a site description of "multi-use" in AFRIMS will be assigned a site description that reflects a specific cohort. The site description will be revised to the range type designated in documentation. Reassignment of cohorts or site descriptions may be required in the future and will be based on the types of munitions found during future fieldwork.

Table 12-2 lists previous and recommended cohort reassignments for the Kirtland AFB MRAs.

Table 12-2. Cohort Assignments for Kirtland AFB MRAs

MRA ID	MRA Name	Previous Cohort Assignment	Recommended Cohort Reassignment
AL120	Proximity Fuze Range	F - Air-to-Ground Range	F - Multi-Use Range
AL769	Ordnance Drop Zone	F - Air-to-Ground Range	No change
AL771	Old Cable Site	F - Air-to-Ground Range	F - Multi-Use Range
DA130	Arroyo del Coyote Demolition Area	C - OB/OD Site	No change

MRA ID	MRA Name	Previous Cohort Assignment	Recommended Cohort Reassignment
DA782	Explosive Disposal Area	C - OB/OD Site	No change
ED770	Experimental Range	C - EOD Range	No change
ML125	Field Firing Range	F - Multi-Use Range	No change
ML774	Gun Site Fan	F - Large Caliber Range	No change
ML781	Firing In-Abutment	F - Multi-Use Range	No change
ML784	40mm Test and Training Range	F - Rifle Grenade Range	No change
MU772	H-25 Site	F - Multi-Use Range	No change
PT123	Tijeras Small Arms Range	F - Multi-Use Range	No change
PT761	Tijeras Small Arms Training Range	F - Multi-Use Range	No change
PT773	Coyote Canyon Tech Site	E - Pyrotechnics Range	F- Multi-Use Range
PT783	Bazooka Training Range	F - Multi-Use Range	No change
SR763	Rifle Range	A - Small Arms Range	No change
SR764	Rifle Range	A - Small Arms Range	No change
SR765	WWII Pistol Range	A - Small Arms Range	No change
SR766	Sub-Machine Gun	A - Small Arms Range	No change
SR767	Rifle Range	A - Small Arms Range	No change
SR768	Close Combat Infiltration Course	F - Multi-Use Range	No change
SR777	Rifle Range	A - Small Arms Range	No change
SR778	Airfield Pistol Range	A - Small Arms Range	No change
SR780	Impact Area	F - Multi-Use Range	F - Large Caliber Range
TS775	Airfield Skeet Range	A - Trap and Skeet Range	No change
TS776	Skeet Range	A - Trap and Skeet Range	No change
No ID	Sandia Base Howitzer Range	Not applicable	F - Large Caliber Range
No ID	Sandia Base Howitzer Range Buffer	Not applicable	F - Large Caliber Range

12.2 Process Streamlining Opportunities

In addition to the assignment of MRAs to different cohorts (Section 12.1), the splitting of MRAs for subsequent munitions response actions (Section 12.3), and the inclusion of new MRAs to the Air Force MMRP Site Inventory (Section 12.4), process streamlining opportunities for Kirtland AFB include:

- involving the regulators early in the planning process
- on-board review of documents to streamline the review process
- developing sampling programs that target only those MC that are associated with known and suspected munitions use for each MRA.

12.3 MRA Subdivision

Existing and new MRAs may be designated as a discrete MRS or subdivided into multiple MRSs to allow for more efficient execution of the CSE Phase II and subsequent munitions response actions. An MRA must be composed of at least one MRS, but may contain multiple MRSs. The total area of all MRSs contained within an MRA must, however, equal the area of the MRA. This will ensure that the total acreage within an MRA is investigated during CSE Phases I and II. Typical site-specific factors that may be considered during the subdivision of MRAs into MRSs include:

- The prevalence of MEC or the extent of MC-contaminated media present within different areas of the MRA
- The type of MEC or MC present within the MRA
- Physical features (vegetation, topography, land areas versus water bodies, accessibility, and location of receptors that may be potentially exposed to MEC, etc.)
- Geological and hydrogeological characteristics.

Overlapping MRAs of similar past military munitions use and other-than-operational range areas with unconfirmed MEC or MC contamination may be designated as a single MRS.

Based on the results of the CSE Phase I investigation, the only MRA recommended for subdivision into multiple MRSs is AL120 because it encompasses five discrete non-operational range areas. These MRSs include the McCormick Ranch Impact Area, the Isleta Drop Zone, the Workman Site, the NMPG Buffer Area North, and the NMPG Buffer Area South. Figure 12-1 depicts the recommended subdivision of AL120.

12.4 Newly Identified MRAs

In addition to the investigation of MRAs currently on the Air Force MMRP Site Inventory, the CSE Phase I investigation of Kirtland AFB also evaluated whether additional MRAs exist at the Installation. This CSE Phase I effort identified two new MRAs that have been recommended for inclusion into the Air Force MMRP Site Inventory and investigation under the CSE Phase II (refer to Section 11 for specific recommendations). These MRAs include the Sandia Base Howitzer Range and the Sandia Base Howitzer Range Buffer.

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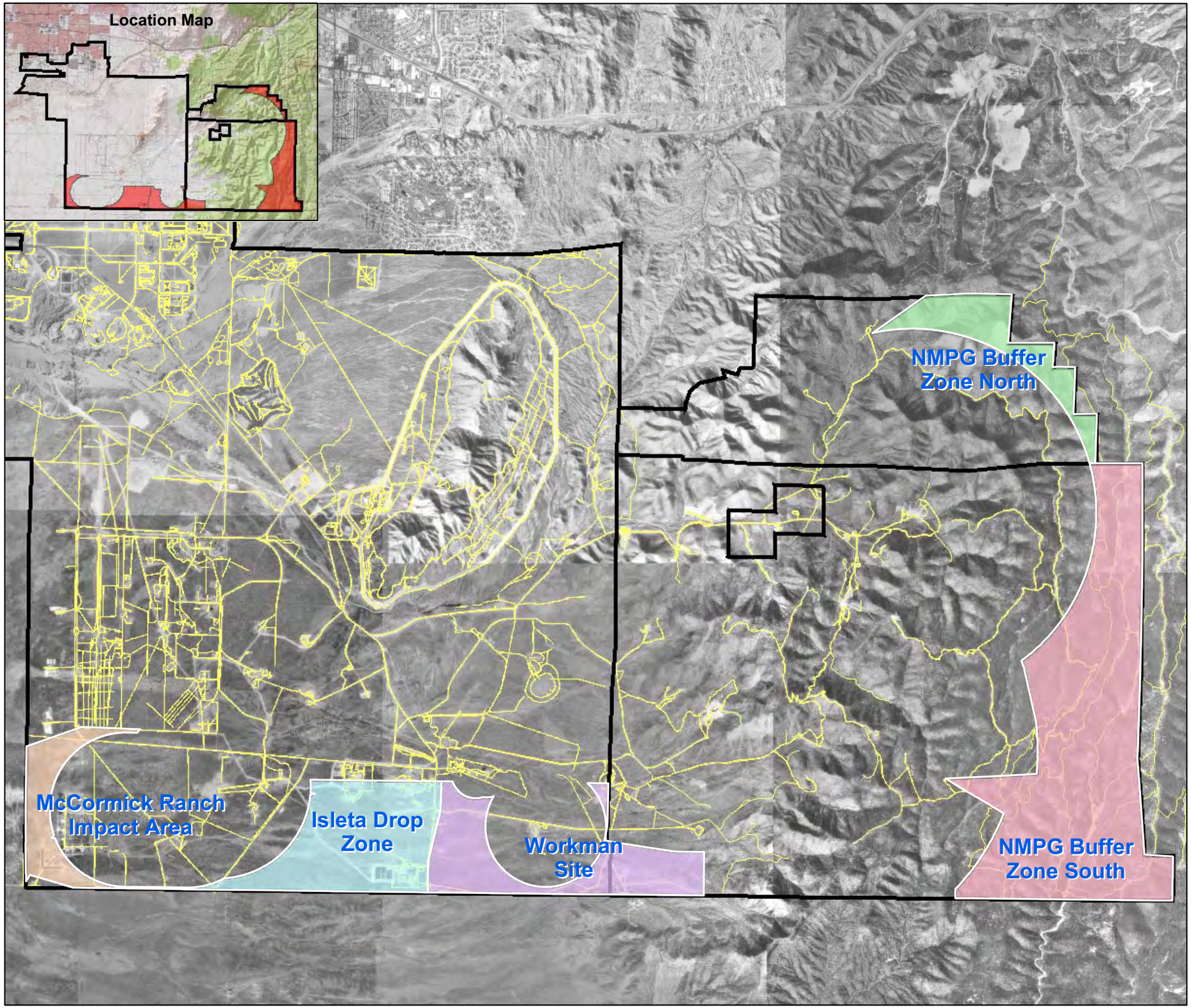

N

1 0.5 0 1 Miles

Data is projected to the UTM Coordinate System: Zone 13 North, NAD83, Units in Meters.

Kirtland AFB - Albuquerque, NM

Figure 12-1

AL120 Recommended Subdivision

Contract No. W912DY-04-D-006
Task Order No. DK01

Legend

- Roads
- KAFB Boundary

Revised Munitions Response Areas

- Isleta Drop Zone
- McCormick Ranch Impact Area
- NMPG Buffer Zone North
- NMPG Buffer Zone South
- Workman Site

USA Environmental, Inc.		US Army Corps Of Engineers Omaha District	
Drawn By: JAL		Scale: 1" = 1 mile	Rev: 1
Checked By:		Date Drawn: 1-12-2007	
Submitted By: DS		Revision Date: 02-06-2007	

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s:\CSE\Kirtland\Report\
Fig 12-1 AL120_Subdivision.mxd

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APPENDIX A. DEFINITIONS

All Other Sites - This generic cohort category was created due to the large number of sites within the Air Force MMRP that either could not be placed under any of the other six cohort types, or for which sufficient information was not readily available to allow an accurate classification.

After completing the CSE Phase I, the AF may be able to move certain MRAs from within this cohort type into one of the other six cohort types. Alternatively, the AF may seek to expand its MMRP cohorts to include the following types of MRAs:

- Bombing Ranges;
- Air-to-Air Ranges;
- Air-to-Ground Ranges;
- Artillery Ranges;
- Missile Ranges;
- Medium Caliber Ranges;
- Large Caliber Ranges;
- Aerial Rocket Ranges; and
- Munitions Storage Facilities.

With the exception of munitions storage facilities, the categories listed above primarily include those sites where ammunition of greater than .50-caliber and other ordnance types (i.e., bombs, missiles, rockets, projectiles, etc.) have been fired, launched, or dropped.

Applicable or Relevant and Appropriate Requirements (ARARs) - Applicable requirements are cleanup standards, standards of control, and other substantive environmental protection requirements promulgated under federal or state environmental law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Relevant and appropriate requirements are cleanup standards that, while not "applicable," address situations sufficiently similar to those encountered at a CERCLA site that their use is well suited to the particular site.

Boresight Ranges - Boresight ranges were used to align the fixed machine guns or cannon on an airplane, so that the rounds would impact at a desired point in front of the aircraft. The specific types of MEC and MC likely to be encountered are a function of the types of aircraft and armaments tested at the ranges. If the range was used to align aircraft-mounted machine guns, then it is anticipated that munitions of .50-caliber or less (i.e., small arms) would be present. If the range was used to align aerial cannon, then it is anticipated that munitions of 20-millimeter (mm) or larger would be present.

Chemical Agent (CA) - An agent that, through its chemical properties, produces lethal or other damaging effects on human beings, except that such term does not include riot control agents, chemical herbicides, smoke, and other obscuration materials. This definition is based on the definition of "chemical agent and munition" in 50 USC 1521(j)(1).

Chemical Warfare Material (CWM) - A general term that encompasses two subcategories of munitions, containing chemical agents, that are intended to kill, seriously injure, or incapacitate a person through its physiological effects, and two subcategories describing other forms of discarded chemical agents:

- **CWM explosively configured -** UXO or DMM that contain a CA fill and any explosive component. Examples are M55 rockets with CA, the M23 VX mine, and the M360 105mm GB artillery cartridge.
- **CWM nonexplosively configured -** UXO or DMM that contain a CA fill but that do not contain any explosive components. Examples are any chemical munition that does not contain explosive components and VX or mustard agent spray canisters.
- **CWM bulk container -** Discarded (e.g., buried) non-munitions-configured containers of CA (e.g., a ton container) and CAIS K941, toxic gas set M-1 and K942, toxic gas set M-2/E11.
- **Chemical Agent Identification Sets (CAIS) -** Military training aids containing small quantities of various CA and other chemicals. All forms of CAIS are scored the same in this rule, except CAIS K941, toxic gas set M-l; and CAIS K942, toxic gas set M-2/E11, which are considered forms of CWM bulk container, due to the relatively large quantities of agent contained in those types of sets.

Chemical Warfare Materiel Sites - Chemical warfare materiel (CWM) sites present unique challenges not encountered at sites within other MMRP cohorts. In addition to the explosive hazards posed by conventional MEC, CWM presents significant acute toxicity risks to human health, due to its chemical or biological filler (i.e., mustard gas, VX nerve agent, etc.). When CWM is present or suspected to be present at an MRA, explosive hazards are addressed and mitigated first, followed by non-stockpile CWM hazards. The U.S. Army has performed extensive testing and research determining the appropriate course of action for remediation of CWM sites.

Closed Range - A military range that has been taken out of service as a range and that either has been put to new uses that are incompatible with range activities or is not considered by the military to be a potential range area. A closed range is still under the control of a Component.

Conceptual Site Model (CSM) - The CSM is a description of a site and its environment that is based on existing knowledge. It describes sources of MEC or hazardous, toxic, and radioactive waste at a site; actual, potentially complete, or incomplete exposure pathways; current or reasonably anticipated future land use; and potential receptors. The source-receptor interaction is a descriptive output of a CSM. The CSM serves as a planning instrument, a modeling and data interpretation aid, and a communication device among the Project Team.

Defense Sites - Locations that are or were owned by, leased to, or otherwise possessed or used by DoD. The term does not include any operational range, operating storage or manufacturing facility, or facility that is used for or was permitted for the treatment or disposal of military munitions [10 USC 2710(e)(1)].

Department of Defense Components - The Office of the Secretary of Defense, the Military Departments, the Defense Agencies, the Department Field Activities, and any other Department organizational entity or instrumentality established to perform a government function.

Discarded Military Munitions (DMM) - Military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. The term does not include UXO, military munitions that are being held for future use or planned disposal, or military munitions that have been properly disposed of consistent with applicable environmental laws and regulations [10 USC 2710(e)(2)].

Explosive Ordnance Disposal (EOD) - The detection, identification, on-site evaluation, rendering safe, recovery, and final disposal of unexploded explosive ordnance. It may also include explosive ordnance that has become hazardous by damage or deterioration.

Facility - A building, structure, or other improvement to real property, in relation to work classification (10 USC 2801).

Formerly Used Defense Sites (FUDS) - Real property for which accountability rested with DoD prior to October 17, 1986, irrespective of current ownership or current responsibility within the federal government. All property transferred from DoD control prior to October 17, 1986, that was formerly owned by, leased by, possessed by, or otherwise under the jurisdiction of the Secretary of Defense or the Components, including governmental entities that are the legal predecessors of DoD or the Components and all properties where accountability rested with DoD but where the activities at the property were conducted by contractors (i.e., government-owned, contractor-operated properties) are FUDS. Only properties transferred from DoD control prior to October 17, 1986, are FUDS, unless:

- The property had already undergone a preliminary assessment of eligibility; and
- The final Inventory Project Report stating that the property was FUDS-eligible was signed prior to September 30, 2000; and
- The property was listed in the Restoration Management Information System (RMIS) as a FUDS property prior to September 30, 2000.

Hazardous Substance - (A) Any substance designated pursuant to Section 1321(b)(2)(A) of Title 33; (B) any element, compound, mixture, solution, or substance designated pursuant to Section 9602 of this title; (C) any hazardous waste having the characteristics identified under or listed pursuant to Section 3001 of the Solid Waste Disposal Act (42 USC 6921) [but not including any waste the regulation of which under the Solid Waste Disposal Act (42 USC 6901 et seq.) has been suspended by Act of Congress]; (D) any toxic pollutant listed under Section 1317(a) of Title 33; (E) any hazardous air pollutant listed under Section 112 of the Clean Air Act (42 USC 7412); and (F) any imminently hazardous chemical substance or mixture with respect to which the Administrator has taken action pursuant to Section 2606 of Title 15. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under subparagraphs (A) through (F) of this paragraph, and the term does not include natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas).

Installation [as defined by the RMIS Data Element Dictionary for a Federal Facility Identification (FFID)] - The FFID number is a unique identifier, assigned to an installation/property in RMIS. The 14-character aggregate string is used in RMIS as the key column for each data table and is used to track all associated records for each installation. An installation may have a single range or multiple ranges (and each range may have more than one site contained within its boundaries) and a single or multiple sites not associated with a range.

Material That Potentially Presents an Explosive Hazard - Any item that has been inspected by an UXO/EOD Technician and has been designation to be in 3X condition (cleaned and decontaminated, but all explosives not 100% removed). These items cannot be furnished to qualified DoD or commercial users or be subjected directly to open flame, drilling, or machining.

Military Installation - A base, camp, post, station, yard, center, or other activity under the jurisdiction of the Secretary of a Military Department (10 USC 2801).

Military Munitions - All ammunition products and components produced for or used by the armed forces for national defense and security, including ammunition products or components under the control of DoD, the Coast Guard, the Department of Energy, and the National Guard. The term includes confined gaseous, liquid, and solid propellants; explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries, including bulk explosives and chemical warfare agents; chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, and demolition charges; and devices and components of any item thereof. The term does not include wholly inert items, improvised explosive devices, and nuclear weapons, nuclear devices, and nuclear components, other than non-nuclear components of nuclear devices that are managed under the nuclear weapons program of the Department of Energy after all required sanitization operations under the Atomic Energy Act of 1954 (42 USC 2011 et seq.) have been completed [10 USC 101(e)(4)].

Military Range - Designated land and water areas set aside, managed, and used to research, develop, test, and evaluate military munitions, other ordnance, or weapon systems, or to train military personnel in their use and handling. Ranges include firing lines and positions, maneuver areas, firing lanes, test pads, detonation pads, impact areas, and buffer zones with restricted access and exclusionary areas [40 Code of Federal Regulations (CFR) 266.201].

Munitions and Explosives of Concern (MEC) - Military munitions that are (1) UXO, as defined in 10 USC 101(e)(5); (2) abandoned or discarded, as defined in 10 USC 2710(e)(2); or (3) MC (e.g., TNT, RDX) present in soil, facilities, equipment, or other materials in high enough concentrations so as to pose an explosive hazard.

Munitions Constituents (MC) - Any materials that originate from UXO, DMM, or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions [10 USC 2710(e)(4)].

Munitions Constituents Sites - This cohort includes MRAs where the presence of MC is likely, but MEC are not anticipated to be encountered. MC may include metals, explosives, propellants, pyrotechnic chemicals, and the intermediate compounds that result from environmental degradation of the munitions fillers. The type of MC encountered at an MRA is a function of past MEC usage, storage, and disposal practices. The likelihood of the potential presence or absence of MEC is confirmed during the CSE Phase I through HRRs, visual surveys, and interviews.

Munitions Response - Response actions, including investigation, removal actions, and remedial actions, to address the explosives safety, human health, or environmental risks presented by UXO, DMM, or MC.

Munitions Response Area (MRA) - Any area on a defense site, other than operational range areas, that is known or suspected to contain UXO, DMM, or MC and is comprised of at least one MRS. This includes areas formerly referred to as closed, transferred, or transferring ranges (e.g., former ranges and munitions burial areas).

Munitions Response Sites (MRS) - An MRS is a discrete location within an MRA that is known to require a munitions response. The entire acreage of the MRA must be accounted for in the subdivision into one or more MRSs. Every acre within an MRA is part of an MRS and is subject to the Military Munitions Response Prioritization Protocol.

Open Burn/Open Detonation Sites/Explosive Ordnance Disposal Ranges - Open burn/open detonation (OB/OD) operations are used to destroy excess, obsolete, or unserviceable munitions and

energetic materials. In OB operations, munitions are destroyed by self-sustained combustion that is ignited by an external source, such as flame, heat, or a detonation wave. In OD operations, detonatable explosives and munitions are destroyed by the detonation of an energetic charge. MEC and MC encountered at OB/OB sites are a function of the past disposal practices during the operational lifecycle of the site. MC commonly detected at former OB/OD sites include uncombusted explosives (i.e., TNT, RDX, HMX, and pentaerythritol tetranitrate (PETN)) and metals.

EOD ranges are areas that were used for the training of EOD unit personnel and/or for the disposal of MEC items by EOD personnel. MEC and MC encountered at EOD ranges are a function of the training activities and/or disposal operations conducted during the operational life cycle of the ranges.

Operational Range - A range that is under the jurisdiction, custody, or control of the Secretary of Defense and that is used for range activities, or although not currently being used for range activities, that is still considered by the Secretary to be a range and has not been put to a new use that is incompatible with range activities [10 USC 101(e)(3)].

Ordnance and Explosives (OE) - Military munitions that have been abandoned, expelled from demolition pits or burning pads, lost, discarded, or buried. These include dud-fired UXO, soil presenting explosive hazards, and buildings with explosives residues that present explosion hazards.

Other than Operational Range - All military ranges that do not meet the definition of an operational range. Other than operational ranges include former military ranges within active Installations, transferred properties, transferring properties, excessed ordnance plants, and areas never controlled by DOD.

Pollutant and Contaminant - These terms include, but are not be limited to, any element, substance, compound, or mixture, including disease-causing agents, which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformations, in such organisms or their offspring; except that the term pollutant or contaminant shall not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance and shall not include natural gas, liquefied natural gas, or synthetic gas of pipeline quality (or mixtures of natural gas and such synthetic gas).

Propellants - Propellants are explosives that can be used to provide controlled propulsion for projectiles, including bullets, mortar rounds, artillery rounds, rockets, and missiles. The MC commonly found in propellants include, but are not limited to, 2-4 dinitrotoluene (2-4 DNT), 2-6 dinitrotoluene (2-6 DNT), nitrocellulose, nitroglycerine, and nitroguanidine. Propellants do not constitute a unique site type, as this class of explosives may be found at sites within all of the MMRP cohorts.

Pyrotechnic/Practice Ordnance Sites - Pyrotechnics are used to send signals, illuminate areas, simulate weapons during training, and as ignition elements for some weapons. Pyrotechnics consist of a wide range of materials that, when combined, produce the desired effects of specific time delays, heat, noise, smoke, light or infrared radiation.

Practice ordnance is used to simulate the weight and flight characteristics of an actual weapon. Practice ordnance usually carries a small spotting charge (i.e., black powder) to allow observers to assess the accuracy of impact.

MEC and MC encountered at pyrotechnic/practice sites include, but are not limited to, practice bombs, various metals (aluminum, iron, and zinc), white phosphorous, and perchlorate.

Range Activities - Research, development, testing, and evaluation of military munitions, other ordnance, and weapons systems; and the training of members of the armed forces in the use and handling of military munitions, other ordnance, and weapons systems [10 USC 101(3)(2)].

Range Residue - Material, including, but not limited to, parts and sections of practice bombs, artillery, small arms, mortars, projectiles, bombs, missiles, rockets, rocket mortars, targets, grenades, incendiary devices, experimental items, demolition devices, and any other material fired on or discovered on a range.

Real Property - Real estate owned by the United States and under the control of DoD. It includes the land, right, title, and interest therein and improvements thereon. Rights and interest include leaseholds, easements, rights-of-way, water rights, air rights, and rights to lateral and subjacent support.

Relative Risk - The evaluation of individual sites to determine high, medium, or low relative risk to human health and the environment, based on contaminant hazards, migration pathways and receptors, in accordance with DoD's *Risk-Based Site Evaluation Primer*.

Risk Reduction - The movement of any site from a higher to lower relative risk category as a result of natural attenuation, interim remedial, remedial, or removal actions taken.

Removal - The cleanup or removal of released hazardous substances from the environment. Such actions may be taken in the event of the threat of release of hazardous substances into the environment, such actions as may be necessary to monitor, assess, and evaluate the release or threat of release of hazardous substances, the disposal of removed material, or the taking of such other actions as may be necessary to prevent, minimize, or mitigate damage to the public health or welfare or to the environment, which may otherwise result from a release or threat of release. The term includes, in addition, without being limited to, security fencing or other measures to limit access, provision of alternative water supplies, temporary evacuation and housing of threatened individuals not otherwise provided for, action taken under Section 9604(b) of this title, and any emergency assistance that may be provided under the Disaster Relief and Emergency Assistance Act (42 USC 5121 et seq.). The requirements for removal actions are addressed in 40 CFR 300.410 and 300.415. The three types of removals are emergency, time critical, and non-time critical removals.

Site (as defined in the RMIS Data Element Dictionary for a SITE ID) - A unique name given to a distinct area of an installation containing one or more releases or threatened releases of hazardous substances treated as a discrete entity or consolidated grouping for response purposes. Includes any building, structure, impoundment, landfill, storage container, or other site or area where a hazardous substance was or has come to be located, including formerly used sites eligible for building demolition/debris removal. Installations and ranges may have more than one site.

Scrap - Any item that has been inspected by a UXO/EOD Technician and designated to be in 5X condition (cleaned, decontaminated, and free of explosive safety hazard).

Small Arms Ranges - Small arms ranges include those sites where ammunition of .50 caliber or less and no longer than four inches is fired from rifles, shotguns, pistols and machine guns. Small arms ranges include the following:

- Pistol Ranges;

- Rifle Ranges; and
- Skeet and Trap Ranges.

The primary MEC items at small arms ranges are spent cartridges and clay target debris (in the case of skeet and trap ranges). The primary MC associated with small arms ranges are heavy metals, primarily lead, and polycyclic aromatic hydrocarbons (PAH), associated with the coal tar binding material in the clay targets used at skeet and trap ranges. As a result, small arms ranges are not anticipated to present explosive hazards (i.e., UXO, discarded military munitions (DMM), explosive soils) or MC associated with HE (i.e., 2,4,6-trinitrotoluene (TNT), hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX), octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX), etc.). The Air Force plans to implement presumptive remedies at small arms ranges.

Transferred Range - A property formerly used as a military range that is no longer under military control and had been leased by DoD, transferred, or returned from DoD to another entity, including federal entities. This includes a military range that is no longer under military control but was used under the terms of a withdrawal, EO, special-use permit or authorization, right-of-way, public land order, or other instrument issued by the federal land manager.

Transferring Range - A military range that is proposed to be transferred or returned from DoD to another entity, including federal entities. This includes a military range that is used under the terms of a withdrawal, executive order, act of Congress, public land order, special-use permit or authorization, right-of-way, or other instrument issued by the federal land manager or property owner. An operational or closed range will not be considered a "transferring range" until the transfer is imminent.

Unexploded Ordnance (UXO) - Military munitions that have been primed, fuzed, armed, or otherwise prepared for action, and have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material, and remain unexploded either by malfunction, design, or any other cause [10 USC 101(e)(5)].

UXO Technician – Contractor personnel performing the same or similar function as military EOD personnel and are graduates of one of the following schools or courses: U.S. Army Bomb Disposal School, Aberdeen Proving Ground, Maryland; U.S. Naval EOD School, Indian Head, Maryland; EOD Assistant’s Course, Redstone Arsenal, Alabama; EOD Assistant’s Course at Eglin Air Force Base, Florida; or a DoD-certified equivalent course.

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APPENDIX B. ACRONYMS AND ABBREVIATIONS

° F	degrees Fahrenheit
2,4,6-TNP	2,4,6-trinitrophenol
2,4-DANT	2,4-diamino-6-nitrotoluene
2,4-DNP	2,4-dinitrophenol
2,4-DNT	2,4-dinitrotoluene
2,6-DANT	2,6-diamino-4-nitrotoluene
2,6-DNT	2,6-dinitrotoluene
2-ADNT	2-amino-4,6-dinitrotoluene
4,6-DNH	4,6-dinitrohexanoate
4-ADNT	4-amino-2,6-dinitrotoluene
ABW	Air Base Wing
AF	United States Air Force
AFB	Air Force Base
AFHRA	Air Force Historical Research Agency
AFLU	Appropriate Future Land Use
AFMC	Air Force Materiel Command
AFRIMS	Air Force Restoration Information Management System
AFRL	Air Force Research Laboratory
AFSC	Air Force Space Command and Air Force Safety Center
AFSOC	Air Force Special Operations Command
AFSWC	Air Force Special Weapons Center
AFWL	Air Force Weapons Laboratory
Al	aluminum
AMC	Air Mobility Command
AOI	Area of Interest
ARAR	Applicable or Relevant and Appropriate Requirement
bgs	below ground surface
Bhate	Bhate Associates
BP	Black Powder
BuOrd	Bureau of Ordnance
CA	Chemical Agent
Ca	Calcium

CAIS	Chemical Agent Identification Sets
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulation
CH_3OH	methanol
CH_4	methane
CHE	Chemical Warfare Materiel Hazard Evaluation
CHF	Contamination Hazard Factor
CO_2	carbon dioxide
COC	Contaminant of Concern
Cr	chromium
Cr	Chromium
CSE	Comprehensive Site Evaluation
CSM	Conceptual Site Model
CTW	Crew Training Wing
CWM	Chemical Warfare Materiel
DEER	Directed Energy Experimental Range
DMM	Discarded Military Munitions
DNB	1,3-dinitrobenzene
DNX	hexahydro-1,3-dinitroso-5-nitro-1,3,5-triazine
DoD	United States Department of Defense
DOE	United States Department of Energy
DTIC	Defense Technical Information Center
ECP	Environmental Compliance Program
EHE	Explosive Hazard Evaluation
EM	Environmental Management
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
ER	Environmental Restoration
ERP	Environmental Restoration Program
ESS	Explosives Safety Submission
Fe	iron
FFID	Federal Facility Identification
FNH	Flashless Non-hygroscopic
ft	Feet
ft/day	Feet per day

FUDS	Formerly Used Defense Sites
GIS	Geographic Information System
GPS	Global Positioning System
H	High
H_20	Water
HCHO	formaldehyde
HCO3	Bicarbonate
HE	High Explosive
HeliMag	Helicopter-Mounted Magnetometry
HERTF	High Energy Research and Technology Facility
HHE	Human Health Evaluation
HMX	High Melting Explosives, octahydro-1,3,5,7- tetranitro-1,3,5,7-tetrazocine
HRR	Historical Records Review
HTRW	Hazardous, Toxic, and Radioactive Waste
HWB	Hazardous Waste Bureau
HWP	Hazardous Waste Permit
ICSM	Interim Conceptual Site Model
ID	Identification
IPS	Information Preservation System
ITRC	Interstate Technical Regulatory Council
K	potassium
K_{oc}	Organic carbon/water partition coefficient
K_{ow}	Octanol/water partition coefficient
L	Low
LiDAR	Light Detection and Ranging
LTM	Long-Term Monitoring
M	Middle
MAC	Military Airlift Command
MAP	Management Action Plan
MC	Munitions Constituents
MCE	Maximum Credible Event
MEC	Munitions and Explosives of Concern
MGFD	Munitions with the Greatest Fragmentation Distance
MIDAS	Munitions Items Disposition Action System
mm	Millimeter

MMRP	Military Munitions Response Program
MNX	hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine
MPF	Migration Pathway Factor
MPPEH	Material Potentially Presenting an Explosive Hazard
MR	Munitions Response
MRA	Munitions Response Area
MRS	Munitions Response Site
MRSPP	Munitions Response Site Prioritization Protocol
msl	Mean sea level
N_2	Nitrogen
N_2H_4	hydrazine
N_2O	nitrous oxide
Na	Sodium
NARA	National Archives and Records Administration
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
NDAI	No DoD Action Indicated
NFA	No Further Action
NH_4	ammonium
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMER	New Mexico Experimental Range
NMFRCD	New Mexico Forestry and Resource Conservation Division
NMPG	New Mexico Proving Ground
NO	Nitric oxide
NO_2	nitrite
NO_2	Nitrogen dioxide
NO_3	nitrate
NTIS	National Technical Information Service
NWC	Nuclear Weapons Center
OB/OD	Open Burn/Open Detonation
OE	Ordnance and Explosives
^oF	Degrees Fahrenheit
PA	Preliminary Assessment
PAH	Polynuclear aromatic hydrocarbon
Pb	lead

Pb	Lead
PD	Point Detonating
PDF	Adobe Portable Document Format
PEP	Propellants, Explosives, and Pyrotechnics
PETN	pentaerythritol tetranitrate
PETN	Pentaerthyrite Tetranitrate
RACER	Remedial Action Cost Engineering and Requirements
RCRA	Resource Conservation and Recovery Act
RDX	Royal Demolition Explosives, hexahydro-1,3,5-trinitro-1,3,5-triazine
Redox	Reduction/Oxidation
RF	Receptor Factor
RG	Record Group
RI	Remedial Investigation
RMIS	Restoration Management Information System
RRSE	Relative Risk Site Evaluation
SARA	Superfund Amendments and Reauthorization Act
Sb	antimony
SFS	Special Forces Squadron
Shaw	Shaw Environmental and Infrastructure, Inc.
SI	Site Investigation
SNL/NM	Sandia National Laboratories/New Mexico
SOO	Statement of Objectives
SUXOS	Senior UXO Supervisor
SVOC	Semi-Volatile Organic Compound
SWMU	Solid Waste Management Unit
TCRA	Time-Critical Removal Action
TechLaw (TLI)	TechLaw, Incorporated
Tetryl	2,4,6-trinitrophenyl-N-methylnitramine
TM	Technical Memorandum
TNB	1,3,5-trinitrobenzene
TNT	2,4,6-trinitrotoluene
TNT	Trinitrotoluene
TNX	hexahydro-1,3,5-trinitroso-1,3,5-triazine
UNM	University of New Mexico

URS	URS Corporation
USACE	United States Army Corps of Engineers
USAE	USA Environmental, Inc.
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VOC	Volatile Organic Compound
VT	Variable Timing
WAA	Wide Area Assessment
WWII	World War II
Zn	zinc

APPENDIX C. REFERENCES

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APPENDIX D. PHOTO-DOCUMENTATION LOG

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Photo 1. AL120 East (Otero Canyon Area), Vegetation in Northern Area

Photo 2. AL120 East (Otero Canyon Area), Underbrush in Northern Area

Photo 3. AL120 East (Otero Canyon Area), Open Field in Northern Area

Photo 4. AL120 East (Otero Canyon Area) 1 Gallon Thin Metal Can

Photo 5. Item ID 54-Projectile, 5-inch, MK 35 Series, No Fuzing, Fired

Photo 6. Item ID 54-Projectile, 5-inch, MK 35 Series, Rifling Extends Past Rotating Band

Photo 7. Item ID 55-Projectile, 5-inch, MK 41 Series, Fired, 2 Holes in Body

Photo 8. Item ID 55-Projectile, 5-inch, MK 41 Series, Fired, Filler Plug in Base

Photo 9. Item ID 60-Projectile, 5-inch, MK 35 Series, Fired, Filler Plug in Base

Photo 10. Item ID 76-Grenade Spoon, Possible from Smoke Grenade

Photo 11. Item ID 888-Projectile, 5-inch, MK 41 Series, No Fuzing, Fired

Photo 12. Item ID 888-Projectile, 5-inch, MK 41 Series, Base View

Photo 13. Item ID 888-Projectile, 5-inch, MK 41 Series, Nose View, Projectile Body Empty

Photo 14. Item ID 877-Projectile, 5-inch, MK 35 Series, No Fuzing, Rotating Band Missing

Photo 15. Item ID 877-Projectile, 5-inch, MK 35 Series, Base View with Filler Plug

Photo 16. Item ID 877-Projectile, 5-inch, MK 35 Series, Nose View, Crushed and Split

Photo 17. Item ID 876-Projectile, 5-inch, MK 41 Series, No Fuzing, Fired

Photo 18. Item ID 876-Projectile, 5-inch, MK 41 Series, Base View

Photo 19. Item ID 876-Projectile, 5-inch, MK 41 Series, Nose View, Projectile Empty

Photo 20. Item ID 875-Projectile, 5-inch, MK 35 Series, Nose Section

Photo 21. Item ID 875-Projectile, 5-inch, MK 35 Series, Nose View with Wooden Plug

Photo 22. Item ID 881-Projectile, 5-inch Base Ejection, MK 35 Series, No Fuzing, Fired

Photo 23. Item ID 881-Projectile, 5-inch Base Ejection, MK 35 Series, Base View

Photo 24. Item ID 887-Projectile, 5-inch, MK 35 Series, No Fuzing, Base Section Broken

Photo 25. Item ID 893-Projectile, 5-inch, MK 35 Series, Nose Fuzing Sheared Off

Photo 26. Item ID 897-Grenade spoon, Possible from Smoke Grenade

Photo 27. AL120 East (Area West of Otero Canyon), Appears to be Abandoned Mine Shaft

Photo 28. Item ID 920-81mm Mortar Body Fragment, Empty/Inert

Photo 29. AL120 East, View Looking Down to East End of Site ML125

Photo 30. ML125 East, View of Mountain Area

Photo 31. Item ID 1185-Piece of Heavy Case 5 in. Projectile Nose Section Fragment

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Photo 33. Item ID 98-Projectile, 5-inch, MK 41 Series, Base View

Photo 34. Item ID 98-Projectile, 5-inch, MK 41 Series, Nose View, Unknown Filler

Photo 35. Item ID 1190-Slap Flare, Fired/Expended

Photo 36. Item ID 1191-Projectile, 5-inch, MK 35 Series, Ogive Section Peeled Back

Photo 37. Item ID 1191-Projectile, 5-inch, MK 35 Series, Fired, Base View of Filler Plug

Photo 38. Item ID 1192-Projectile, 5-inch, MK 41 Series, Ogive Section Broken Off

Photo 39. Item ID 1192-Projectile, 5-inch, MK 41 Series, Fired, No Fuzing

Photo 40. Item ID 1196-Projectile, 5-inch, MK 35 Series, Fired, No Fuzing

Photo 41. ML125 East End, Unknown Opened Metal Containers, Pint and Quart Sizes

Photo 42. Item ID 1207-Projectile, 5-inch, MK 35 Series, Nose Section View

Photo 43. Item ID 1207-Projectile, 5-inch, MK 35 Series, No Fuzing, Fired, Empty/Inert

Photo 44. Item ID 1205-Projectile, 90mm, Fired, No Fuzing, Empty/Inert

Photo 45. Item ID 1205-Projectile, 90mm, Base View, Body Split to Base

Photo 46. Item ID 1210-Projectile, 5-inch, MK 35 Series, No Fuzing, Fired, Empty/Inert

Photo 47. Item ID 1210-Projectile, 5-inch, MK 35 Series, Base View

Photo 48. Item ID 1212-Projectile, 5-inch, MK 35 Series, Base View of Filler Plug

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Photo 50. Item ID 1215-Unknown Munitions Item, Side View

Photo 51. Item ID 1208-Projectile, 5-inch, No Fuzing, Fired, Nose Adapter View

Photo 52. ML125 East Area, View from Bottom of Mountainous Area

Photo 53. Item ID 1209-Projectile, 5-inch, MK 35 Series, Fired, Base Tracer Element View

Photo 54. Item ID 1231-Projectile, 76mm, Unknown Filler

Photo 55. Item ID 1231-Projectile, 76mm, No Fuzing, Fired

Photo 56. Item ID 1231-Projectile, 76mm, Base View

Photo 57. Item ID 1232-Projectile, 75mm, No Fuzing, Fired, Dual Rotating Band, Inert

Photo 58. Item ID 1233-Projectile, 3-inch, No Fuzing, Fired, Empty/Inert

Photo 59. Item ID 1233-Projectile, 3-inch, Base View

Photo 60. ML125 South Area, Possible Abandoned Mine Shaft

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Photo 64. Item ID 104-Projectile, 5-inch, MK50 Series Nose Fuze, Fired

Photo 65. ML125 Area, Site View in Mountainous Area.

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Photo 68. Item ID 128-Projectile, 3-inch, No Fuzing, Fired, Unknown Filler

Photo 69. Item ID 135 Fuze, MK 32, Fired, Condition Unknown

Photo 70. Item ID 141-Steel cylinder, 6-foot length, 20-inch diameter

Photo 71. Item ID 141-Steel cylinder, 6-foot length, 20-inch diameter, Unknown Use

Photo 72. Item ID 143-Unknown Solid Steel Item

Photo 73. Item ID 143-Unknown Solid Steel Item, Front View

Photo 74. Item ID 146-Projectile, 5-inch, No Fuzing, Fired

Photo 75. Item ID 146-Projectile, 5-inch, Possible Aluminum Booster Fragment Inside

Photo 76. Item ID 149-Grenade Fuze, Expended

Photo 77. Item ID 939-Rocket Motor, 5-inch, Fired, Base View, Expended/Inert

Photo 78. Item ID 939-Rocket Motor, 5-inch, Fired, Expended/Inert

Photo 79. Item ID 974-81mm Mortar Base Section Fragment, Expended/Inert

Photo 80. Item ID 939-Rocket Motor, 5-inch, Fired, Expended/Inert

Photo 81. Item ID 974-Grenade Body Fragment with Expended Fuze and Burster Tube

Photo 82. Item ID 970-Heavy Case Steel Fragment

Photo 83. Item ID 168-5-inch Rocket Motor Debris

Photo 84. Item ID 187-Smoke Grenade, Fired, Contains Some Smoke Mixture

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Photo 86. AL771 Area, Range-Related Debris, Possible Target Debris

Photo 87. MU772 Area, Unknown Item, Possible Aircraft Component

Photo 88. MU772 Area, 55 Gallon Drum, Empty

Photo 89. MU772 Area, Range-Related Debris, Possible Target debris

Photo 90. MU772 Area, Range-Related Debris, More Possible Target Debris

Photo 91. Item ID 175 – Grenade, 40mm, Riot Control, Fuzed, Fired

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Photo 93. ED770 Area, Possible Abandoned Firing point

Photo 94. ED770 Area, 55 Gallon Drum, Empty

Photo 95. ED770 Area, Abandoned Trench

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Photo 97. ED770 Area, Metal Debris/Clutter, Cans, Light Bulbs, etc. on Surface

Photo 98. Item ID 1258-Rocket Motor Debris, 5-inch, Inert

Photo 99. Item ID 1259-Rocket Motor Debris, 5-inch

Photo 100. AL-120 West (Isleta Drop Zone Area), Metal Debris/Clutter on Surface

Photo 101. AL120 West (Isleta Drop Zone Area), Surface Debris, Half of 55 Gallon Drum

Photo 102. AL771 Area (Old Cable Site), Steel cable on Surface

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Photo 105. AL771 Area, Mangled Steel Roofing Debris

Photo 106. AL120 West (Isleta Drop Zone Area), Marker, Possible Sample Location

Photo 107. Item ID 1147-Heavy Case 5-inch Projectile Fragment

Photo 108. Item ID 1156-UnKnown Imploded Munitions Item, Possible Disposal Kick-Out

Photo 109. Item ID 1156-Unknown Imploded Munitions Item, Top View

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Photo 111. Item ID 348-Propellant, Rocket Motor, Several Unfired Pieces in Area

Photo 112. Item ID 1132-Rocket Warhead, 3.5-inch H.E.A.T, Possibly Contains HE Filler

Photo 113. ML125 Area, Range-Related Debris, 4.2-inch Mortar Packaging Container Lid

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Photo 115. Item ID 1129-60mm Mortar Fragment

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Photo 119. ML125 Area, Range-Related Debris, Mortar Tube Mount

Photo 120. Item ID 1133-Munitions & Range-Related Debris Disposal Area

Photo 121. Item ID 1133-Munitions Disposal Area, Mostly 3.5-inch Bazooka Rockets

Photo 122. Item ID 1133-Munitions & Range-Related Debris Disposal Area

Photo 123. Item ID 1119-Projectile (Possible 57mm) Fragment, Nose View

Photo 124. Item ID 1119-Projectile (Possible 57mm) Fragment, Body View

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Photo 127. Item ID 356-VT Nose Fuze, Fired, Expended

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Photo 139. PT773 and PT783 Areas, Asphalt Pad between the Two Areas

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Photo 145. Item ID 1411-Small Arms Debris, Expended 7.62 Cartridge Cases and Links

Photo 146. PT773 Area, Concrete Pad with 2 off-center Possible Rail Mounts

Photo 147. PT773 Area, Concrete Pad with Close Up View of Possible Rail Mounts

Photo 148. SR780 Area, Steel Plate, 12”x12”x½”, Marks Indicate Explosive Event

Photo 149. SR780 Area, Steel Plate, 24”x10”x½”, Marks Indicate Explosive Event

Photo 150. SR780 Area, Steel Plate, 24”x10”x½”, Marks Indicate Explosive Event

Photo 151. SR780 Area, Steel Plate, ½" thick, Marks Indicate Explosive Event

Photo 152. SR780 Area, Steel Plate, ½" thick, Jagged Edges Indicate Explosive Event

Photo 153. SR780 Area, Steel plate, ½" thick, Jagged Edges Indicate Explosive Event

Photo 154. SR780 Area, Steel Plate, Marks Indicate Explosive Event, Notice Weld Bead

Photo 155. SR780 Area, Steel Plate, Notice Split at Weld Bead

Photo 156. SR780 Area, Steel Plate, Condition Indicates Explosive Event

Photo 157. SR764 Area, Misc. Metal Can Debris on Surface

Photo 158. Item ID 586-Projectile, 76mm, No Fuzing, Fired, Inert

Photo 159. Item ID 586-Projectile, 76mm, Nose View, Possible AP Round

Photo 160. SR763 Area, Aluminum Cone, Bottom View, 36-inch Diameter

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Photo 163. Item ID 1463-Projectile, 20mm, No Fuzing, Fired, Expended/Inert

Photo 164. DA782 East Area, Heavy Vegetation/Brush

Photo 165. AL769 Area, Possible Aerial Target Feature, 55-gallon Drums Stacked

Photo 166. AL769 Area, View of Possible Aerial Target in Cross or "X" Layout

Photo 167. ML774 Area (West of Tech Area 3), Unidentified 3”x10” Fiberglass Cylinder

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Photo 170. Item ID 1606-Heavy Case Munitions Fragment

Photo 171. Item ID 1576-Heavy Case Large Munitions Fragment

Photo 172. Item ID 1581-Unidentifiable Piece/Chunk of Thick Metal

Photo 173. Item ID 744-Projectile Fragment, 57mm, Empty/Inert

Photo 174. Item ID 737-Projectile, 57mm, No Fuzing, Fired

Photo 175. Item ID 747-Projectile Fragment, 5-inch, Empty/Inert

Photo 176. Item ID 748-VT Nose Fuze, Fired, Expended/Inert

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Photo 178. Item ID 752-Projectile, Base Ejection, 5-inch, No Fuzing, Fired, Empty/Inert

Photo 179. Item ID 1677-Projectile, 3-inch, No Fuzing, Fired, Empty/Inert

Photo 180. Item ID 1677-Projectile, 3-inch, No Fuzing, Base Section View

Photo 181. Item ID 1677-Projectile, 3-inch, Fired, Base Section Rotating Band View

Photo 182. Item ID 1677-Projectile, 3-inch, No Fuzing, Nose Section View

Photo 183. Item ID 1674-Large Projectile Heavy Case Fragment, Outside View

Photo 184. Item ID 1674-Large Projectile Heavy Case Fragment, Inside View

Photo 185. AL120 Area West, Range-Related Debris, Remnants of a Rail Car

Photo 186. AL120 Area West, Abandoned Pit, 6-foot Depth by 15-foot Diameter

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Photo 188. AL120 Area West, Steel and Concrete Structure, 1 of 2 Structures

Photo 189. AL120 Area West, Structure, Three 5-feet by 15-inch Square Concrete Slabs

Photo 190. AL120 Area West, Structure, 1-foot Diameter Steel Post with Brackets

Photo 191. AL120 Area West, Structure, Marks on All Sides Indicate Explosive Event

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KIRTLAND AIR FORCE BASE
ALBUQUERQUE, NEW MEXICO

Comprehensive Site Evaluation Phase I Report
Air Force Military Munitions Response Program
Volume 2 of 2

Final – February 2007

377 MSG/CEVR
2050 Wyoming Blvd. SE
Kirtland AFB, New Mexico 87117-5270

APPENDIX E. PROJECT SOURCE DATA

The project source data for the CSE Phase I at Kirtland AFB is provided in the enclosed DVD.

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APPENDIX F. ORDNANCE TECHNICAL DATA SHEETS

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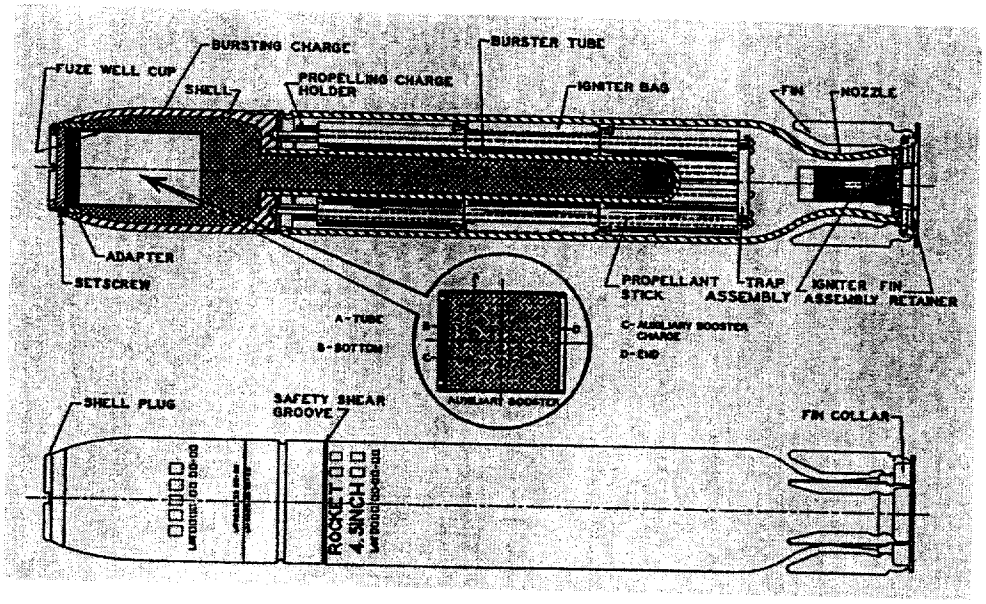
Rocket, HE, 4.5-inch, M8-series



General. There are four general types of 4.5-inch rockets, which may be distinguished by the type of stabilization:

1) Folding fin – Setback from firing cause these fins to open. The M8 represents this type.
2) Circular fins (shrouded) – The Navy beach-barrage rocket represents this type.
3) Fixed fin – These are launched from rails mounted on aircraft.
4) Spin stabilized – Rotation of the rocket stabilizes the flight.

The M8 is used against lightly fortified targets and personnel. It can be ground-launched or fired from launchers mounted on an aircraft. The M8 saw extensive use during World War II. Continued improvements to 4.5-inch rockets extended their service well into the 1950's, but the M8-series was replaced by the M16-series. The M8-series had a maximum range of 4,000 yards.

Head. The head consists of a shell body and a burster tube. The burster tube extends about 15 inches from the base of the shell body into the motor. In addition to increasing the explosive capacity of the head, the burster tube has the advantage of using the motor as an additional source of fragments. The bursting charge consists of 4.3 pounds of cast TNT.

Fuze. The standard impact fuze for the service rocket is a point-detonating rocket fuze M4A2 with auxiliary booster M1A1.

Motor. The basic components of the motor are the motor tube, propellant, the propellant support, and the igniter with electric squib and leads, nozzle closure, and nozzle and fin assembly.

Over-all length.....31.15 inches
Length of warhead..... 7.5 inches
Diameter.....4.5 inches
Weight.....38.1 pounds
Filler.....cast TNT
Fuze.....M4A2, PD
Propellant.....Double-base powder
Propellant weight.....4.65 pounds
Igniter.....Electric Squib

Summary of Propellants, Explosives & Pyrotechnics (PEP)
Rocket, 4.5-inch, HE, M8-series (circa 1943 – 1950's)

COMPONENT	PEP	QUANTITY
Warhead	TNT	4.3 – 4.5 pounds
Fuze, Point Detonating M4A2	No. 26 Primer: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT (5%)	Less than 1 grain*
	Relay charge: Lead azide	1.54 grains
	Delay charge: Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	1.23 grains
	Delay-relay assembly: Lead azide	.77 grains
	M17 Detonator: Intermediate charge, Lead azide + Tetryl	4.08 grains + 1.23 grains
	Booster, Tetryl	329 grains
M1 Auxiliary Booster	TNT	.84 - .87 pounds
Igniter	Percussion primer No. 28: • Potassium chlorate (50.5%) • Lead thiocyanate (23.8%) • PETN, Class B (14.2%) • Antimony sulfide (11.4%) • [remainder is gum solution]	1.9 grains
	Electric squib: Flash charge	3.5 grams

	composition: • Potassium chlorate (40%) • Lead thiocyanate (32%) • Charcoal (18%) • Egyptian lacquer (10%) Igniter charge, Black powder, Class 7: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	648 grains
Rocket motor	Ballistite: • Nitrocellulose (60%) • Nitroglycerine (39%) • Diphenylamine (.75%) • Graphite (.25%)	4.65 pounds

* 15.4 grains = 1 gram; 7,000 grains = 1 pound

In addition to the above constituents, some metal parts contain **aluminum**, **copper**, **cadmium**, **chromium** and **lead**.

References:

OS 9-69 *Ordnance School Text, Rockets and Launchers, all types,* February 1944

TM 9-1950, *Rockets*, July 1945

TM 9-1950, *Rockets*, July 1950

Rocket, 5-inch, Surface, Spin Stabilized HE - Mark Mod 0; Practice - Mark 17; Dummy - Mark 18

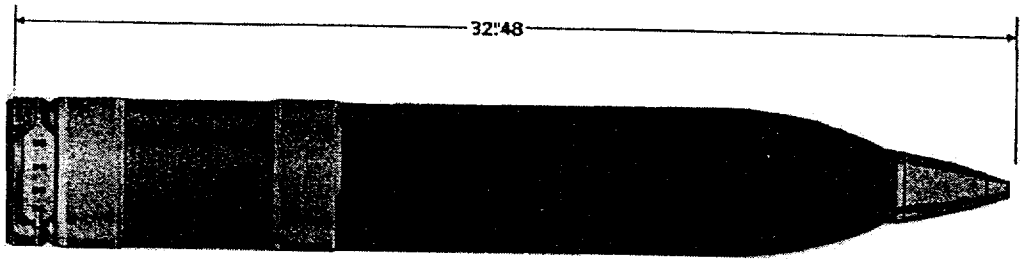


Figure 5-6. 5.0-Inch Rocket Mk 16 Mod 0 (Surface, HE, SS), External View.

General. There are four general types of 4.5-inch rockets, which may be distinguished by the type of stabilization:

1) Folding fin – Setback from firing cause these fins to open.
2) Circular fins (shrouded) – The Navy beach-barrage rocket represents this type.
3) Fixed fin – These are launched from rails mounted on aircraft.
4) Spin stabilized – Rotation of the rocket stabilizes the flight. The Mark 16 (often written "MK" or "Mk") represents this type.

High-explosive. The 5.0-inch surface Rocket Mark 16 Mod 0, fired from surface craft for use against shore installations, is capable of delivering more than 13 pounds of TNT on the target.

Practice. The practice round is the 5.0-inch Surface Rocket Mk 17 Mod 0, which consists of inert, plaster-filled 5.0 Inch Rocket Head Mk 13 all Mods and live-loaded 5.0-inch Rocket Motor Mk 6 Mod 1

Dummy. The dummy round is the 5.0-inch Surface Rocket Mk 18 Mod 0, which consists of inert, plaster-filled 5.0-inch Rocket Head Mk 13 all Mods and inert-loaded 5.0-inch Rocket Motor Mk 6 Mod 1.

Over-all length.....32.48 inches
Diameter.....4.97 inches
Weight.....54.30 pounds (nominal)
Filler
  Mk 16.....TNT (13.5 pounds)
  Mk 17 & Mk 18.....Plaster (inert)

Fuze ..... Nose Mk 30 Mod 3 or 4
Aux Detonator ..... Mk 52-2
Propellant ..... Solid
Propellant weight ..... 3.24 pounds
Igniter ..... Mk 120 Mods 0,1,or 3

Summary of Propellants, Explosives & Pyrotechnics (PEP)
Rocket, 5-inch, HE, Mk 16 (circa 1940 – 1950's)

COMPONENT	PEP	QUANTITY
Warhead	TNT	13.5 pounds
Fuze, Point Detonating Mk 30	Detonator Relay detonator	[unknown] [unknown]
Auxiliary Detonating Fuze, Mark 52	Detonator: Lead azide & Tetryl Booster lead-in: Tetryl Booster: Tetryl	Approx. 2.0 grains & .5 grains * Approx. 2.5 grains Approx. 385 grains
Igniter	Electric squib: Flash charge composition: • Potassium chlorate (40%) • Lead thiocyanate (32%) • Charcoal (18%) • Egyptian lacquer (10%) Igniter charge, Black powder, Class 7: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	Approx. 3.5 grams Approx. 600 grains
Rocket motor	Ballistite: • Nitrocellulose (60%) • Nitroglycerine (39%) • Diphenylamine (.75%) • Graphite (.25%)	3.24 pounds

* 15.4 grains = 1 gram; 7,000 grains = 1 pound

In addition to the above constituents, some metal parts contain **aluminum**, **copper**, **cadmium**, **chromium** and **lead**.

References:

NAVSEA OP 1415, *Rocket Assemblies,* May 1955

NAVORD OP 2211 Vol. 1, *Surface Rockets*, August 1966;

Cartridge, Caliber .50

Historical Notes. The caliber .50 military cartridge (known commercially as the .50 BMG or Browning Machine Gun) was adopted by the U.S. Army in 1923 for the M2 heavy machine gun, and later for the M3 aircraft machine gun and the more recent M85 machine gun. It is still in service today. The original M1923 loading used an 803-grain bullet. It was found to be too heavy and by 1934 it was replaced with the M1 Ball cartridge that used a 753-grain bullet. By World War II, the M2 Ball cartridge was loaded with a 711-grain bullet (nominal). The current M33 Ball cartridge utilizes a 688-grain bullet.

General. In general, a small-arms cartridge is identified as an assembly of a cartridge case, primer, a quantity of propellant within the cartridge case, and a bullet or projectile. Blank cartridges are sealed with paper closure disks in lieu of bullets. Dummy cartridges are composed of a cartridge case and a bullet.

Case. The cartridge case for all U.S. caliber .50 rounds is made of brass, although some foreign-made cases are steel.

Propellant. Cartridges are loaded with varying weights of propellant. This is to impart sufficient velocity to the projectile to obtain the required ballistic performance. These propellants are usually of the single base (nitrocellulose) type. The propellant grain configuration may be cylindrical with a single, lengthwise perforation, spheroid (ball) or flake. Most propellants are coated with a deterrent (to assist in controlling the rate of combustion) and with a final coating of graphite (to facilitate flow of propellant and eliminate static electricity in loading cartridges). The IMR 4814 propellant is a single-base type originally produced by DuPont and known as improved military rifle powder. It is composed of nitrocellulose with traces of diphenylamine and potassium sulfate added.

Primer. Cartridges contain percussion primer. The percussion primer of brass or gliding metal cup that contains a pellet of sensitive explosive material secured by a paper disk and a brass anvil. Most primers loaded after 1950 were non-corrosive and contain lead styphnate.

Bullets.

> *Ball.* The bullet consists of three parts: a gliding metal jacket, a soft steel core, and a point filler of antimony-lead alloy. The bullet is unpainted.
>
> *Tracer.* The bullet is the similar to the M1 with the addition of a tracer and igniter composition. The tip is painted orange.
>
> *Blank.* No bullet
>
> *Incendiary.* The bullet consists of four parts: a gliding metal jacket, a hollow steel

cylindrical core, an incendiary composition, and a lead base filler. The tip is painted light blue.

Armor-Piercing. The bullet consists of three parts: a gliding metal jacket, a tungsten-chrome steel core, and a point filler of lead hardened with antimony. The tip is painted black.

Armor-Piercing Incendiary. The bullet is similar to the armor-piercing bullet, except that the point filler is incendiary mixture instead of lead. The tip is painted aluminum.

Armor-Piercing Incendiary Tracer. The bullet consists of a hard steel core with compressed pyrotechnic mixture in the cavity in the base of the core, The core is covered by a gliding-metal jacket with incendiary mixture between the core point and jacket. The tip is painted aluminum and red

Dummy. The complete cartridge is inert. The cartridge case is tin-coated, has three holes drilled in the side and an empty primer pocket. The bullet may be tin-coated.

High Pressure Test. The cartridge case is distinguished from other cartridges by the tinned cartridge case. The bullet consists of a gliding metal jacket and a core made up of 2 slugs, a front and rear slug.

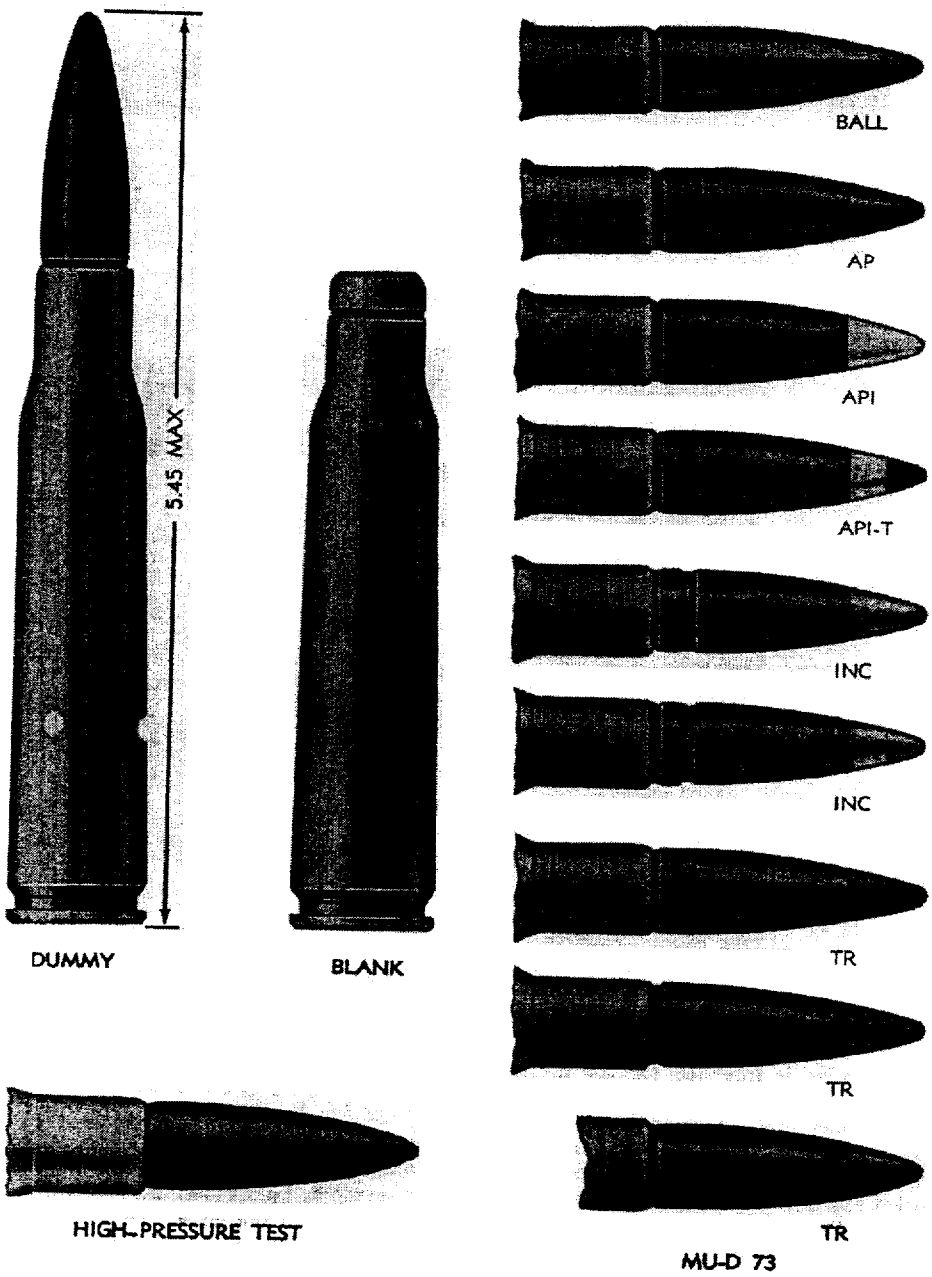


Figure 3-9. Caliber .50 cartridges.

Summary of Propellant, Explosives & Pyrotechnics (PEP)

Cartridge, Caliber .50, Ball, M1 (1934 – 1940)

COMPONENT	PEP	QUANTITY
Percussion primer No. 28	Primer composition FA90A: • Potassium chlorate (50.5%) • Lead thiocyanate (23.8%) • PETN, Class B (14.2%) • Antimony sulfide (11.4%) • [remainder is gum solution]	1.9 grains *
Propellant	Smokeless powder -- (Nitrocellulose with (13.15-13.25% nitrogen):	240 grains
Bullet	Mild steel core with lead-antimony point filler and cupro-nickel jacket	753 grains (total): • Core, 405 grains • Jacket, 266 grains • Point filler, 82 grains

Cartridge, Caliber .50, AP, M1 (1934 – 1940)

COMPONENT	PEP	QUANTITY
Percussion primer No. 28	Primer composition FA90A: • Potassium chlorate (50.5%) • Lead thiocyanate (23.8%) • PETN, Class B (14.2%) • Antimony sulfide (11.4%) • [remainder is gum solution]	1.9 grains
Propellant	Smokeless powder -- (Nitrocellulose with (13.15-13.25% nitrogen):	240 grains
Bullet	Chrome-tungsten steel core with lead-antimony point filler and cupro-nickel jacket	753 grains (total): • Core, 413 grains • Jacket, 266 grains • Point filler, 82 grains

Cartridge, Caliber .50, AP, M2 (WWII – onward)

COMPONENT	PEP	QUANTITY
Percussion primer No. 28 **OR** Percussion primer No. 50M (currently listed in MIDAS)	Primer composition FA90A: • Potassium chlorate (50.5%) • Lead thiocyanate (23.8%) • PETN, Class B (14.2%) • Antimony sulfide (11.4%) • [remainder is gum solution] Primer composition 5061W: • Barium Nitrate (43%) • Lead styphnate (38%) • Antimony sulfide (9%) • Calcium silicide (8%) • Tetracene (2%)	1.9 grains 2.25 grains
Propellant	Smokeless powder -- (Nitrocellulose with (13.15-13.25% nitrogen) **OR** WC 860 • Nitrocellulose (78.67%) • Nitroglycerine (9.5%) • Dibutylphthalate (8%) • Diphenylamine (1.13%) • Calcium carbonate (1%) • Potassium Nitrate (.8%) • Sodium sulfate (.5%) • Graphite (.4%)	250 grains 235 grains
Bullet	Crome-tungsten steel core with lead-antimony point filler and cupro-nickel jacket	718 grains (total): • Core, 410 grains • Jacket, 253 grains • Point filler, 56 grains

Cartridge, Caliber .50, Ball, M2 (WWII – onward)

COMPONENT	PEP	QUANTITY
Percussion primer No. 28 **OR** Percussion primer No. 50M (currently listed in MIDAS)	Primer composition FA90A: • Potassium chlorate (50.5%) • Lead thiocyanate (23.8%) • PETN, Class B (14.2%) • Antimony sulfide (11.4%) • [remainder is gum solution] Primer composition 5061W: • Barium Nitrate (43%) • Lead styphnate (38%) • Antimony sulfide (9%) • Calcium silicide (8%) • Tetracene (2%)	2 grains 2.25 grains
Propellant	Smokeless powder -- Nitrocellulose (13.15-13.25% nitrogen). Later loadings used IMR 4895: • Nitrocellulose (91.18%) • Dinitrotoluene (7.0% • Diphenylamine (.87%) • Potassium sulfate (.55%) • Graphite (.4%) **OR** WC 860 • Nitrocellulose (78.67%) • Nitroglycerine (9.5%) • Dibutylphthalate (8%) • Diphenylamine (1.13%) • Calcium carbonate (1%) • Potassium Nitrate (.8%) • Sodium sulfate (.5%) • Graphite (.4%)	250 grains 235 grains
Bullet	Mild steel core with lead-antimony point filler and cupro-nickel jacket	711.5 grains (total): • Core 402 grains • Jacket 253 grains • Point filler 56.5 grains

Cartridge, Caliber .50, Tracer, M1 (1931 – onward)

COMPONENT	PEP	QUANTITY
Percussion primer No. 28 **OR** Percussion primer No. 50M (currently listed in MIDAS) **OR** Percussion primer No. 35 (currently listed in MIDAS as an alternate)	Primer composition FA90A: • Potassium chlorate (50.5%) • Lead thiocyanate (23.8%) • PETN, Class B (14.2%) • Antimony sulfide (11.4%) [remainder is gum solution] Primer composition 5061W: • Barium Nitrate (43%) • Lead styphnate (38%) • Antimony sulfide (9%) • Calcium silicide (8%) • Tetracene (2%) Primer composition FA958: • Barium Nitrate (39%) • Lead styphnate (28%) • Antimony sulfide (12%) • Aluminum powder (10%) • PETN (8%) • Tetracene (3%)	2 grains 2.25 grains 1.9 grains
Propellant	Smokeless powder -- Nitrocellulose (13.15-13.25% nitrogen) Later loadings used IMR 4895: • Nitrocellulose (91.18%) • Dinitrotoluene (7.0% • Diphenylamine (.87%) • Potassium sulfate (.55%) • Graphite (.4%) **OR** IMR 5010 • Nitrocellulose (89.92%) • Dinitrotoluene (8.25%) • Diphenylamine (.88%) • Potassium sulfate (.55%) • Graphite (.4%)	240 grains 240 grains
Bullet	Lead-antimony core with cupro-	685 grains (total):

	nickel jacket	• Core, 207 grains • Jacket, 408 grains • Tracer, approx. 70 grains
Igniter composition (for tracer)	I-276: • Barium peroxide (83.98%) • Magnesium powder (15%) • Zinc stearate (1.02%)	10 - 11 grains
Tracer composition	R-256-3 (red): • Strontium nitrate (33.3%) • Strontium peroxide (26.7%) • Magnesium powder (26.7%) • Calcium resinate (8.3%) • Strontium oxalate (5%) **OR** R-256-2 (red): • Strontium nitrate (31.18%) • Magnesium powder (25.63%) • Strontium peroxide (24.66%) • Calcium resinate (7.90%) • Polyvinyl chloride (5.98%) • Strontium oxalate (4.63%)	60 grains 60 grains

Cartridge, Caliber .50, Tracer, M17 (July 1944 – onward)

COMPONENT	PEP	QUANTITY
Percussion primer No. 28 **OR** Percussion primer No. 50M (currently listed in	Primer composition FA90A: • Potassium chlorate (50.5%) • Lead thiocyanate (23.8%) • PETN, Class B (14.2%) • Antimony sulfide (11.4%) [remainder is gum solution] Primer composition 5061W: • Barium Nitrate (43%)	2 grains 2.25 grains

MIDAS) **OR** Percussion primer No. 37 (currently listed in MIDAS as an alternate)	• Lead styphnate (38%) • Antimony sulfide (9%) • Calcium silicide (8%) • Tetracene (2%) Primer composition 257: • Lead styphnate (37%) • Barium Nitrate (37%) • Antimony sulfide (13%) • Aluminum powder (8%) • PETN (5%) • Tetracene (4%)	2.5 grains
Propellant	Smokeless powder -- Nitrocellulose (13.15-13.25% nitrogen) Later loadings used IMR 4895: • Nitrocellulose (91.18%) • Dinitrotoluene (7.0% • Diphenylamine (.87%) • Potassium sulfate (.55%) • Graphite (.4%) **OR** IMR 5010 • Nitrocellulose (89.92%) • Dinitrotoluene (8.25%) • Diphenylamine (.88%) • Potassium sulfate (.55%) • Graphite (.4%)	240 grains 225 grains
Bullet	Lead-antimony core with cupro-nickel jacket	685 grains (total): • Core, 207 grains • Jacket, 408 grains • Tracer, approx. 70 grains
Igniter composition (for tracer)	I-276: • Barium peroxide (83.98%) • Magnesium powder (15%) • Zinc stearate (1.02%)	Approx. 11 grains

	OR I-280: • Strontium peroxide (76.5%) • Magnesium powder (15%) • Calcium resinate (8.5%)	11 grains
Tracer composition	R-237: • Strontium nitrate (32%) • Magnesium (grade A) (31%) • Potassium perchlorate (22%) • Strontium oxalate (10%) • Calcium resinate (5%) **OR** R-256-3 (red): • Strontium nitrate (33.3%) • Strontium peroxide (26.7%) • Magnesium powder (26.7%) • Calcium resinate (8.3%) • Strontium oxalate (5%) **OR** R-256-2 (red): • Strontium nitrate (31.18%) • Magnesium powder (25.63%) • Strontium peroxide (24.66%) • Calcium resinate (7.90%) • Polyvinyl chloride (5.98%) • Strontium oxalate (4.63%)	Approx. 50 - 60 grains 60 grains 60 grains

Cartridge, Caliber .50, Incendiary, M1 (December 1941 – onward)

COMPONENT	PEP	QUANTITY
Percussion primer No. 28 **OR**	Primer composition FA90A: • Potassium chlorate (50.5%) • Lead thiocyanate (23.8%) • PETN, Class B (14.2%) • Antimony sulfide (11.4%) • [remainder is gum solution]	2 grains

Percussion primer No. 50M (currently listed in MIDAS)	Primer composition 5061W: • Barium Nitrate (43%) • Lead styphnate (38%) • Antimony sulfide (9%) • Calcium silicide (8%) • Tetracene (2%)	2.25 grains
Propellant	• Smokeless powder -- Nitrocellulose (13.15-13.25% nitrogen). **OR** WC 860 • Nitrocellulose (78.67%) • Nitroglycerine (9.5%) • Dibutylphthalate (8%) • Diphenylamine (1.13%) • Calcium carbonate (1%) • Potassium Nitrate (.8%) • Sodium sulfate (.5%) • Graphite (.4%)	250 grains 233 grains
Bullet	Lead-antimony slug, steel tubular dowel and incendiary mixture encased by cupro-nickel jacket	633 grains (total): • Slug, 137 grains • Tubular dowel, 227 grains • Jacket, 235 grains • Incendiary mix, 34 grains
Incendiary mix	IM-11 • Barium nitrate (50%) • Magnesium powder (25%) • Aluminum powder (25%) **OR** IM-28 • Magnesium/aluminum alloy (50%) • Barium nitrate (40%) • Potassium perchlorate (10%)	34 grains Approx. 34 grains

	OR IM-68 • Magnesium/aluminum alloy (50%) • Potassium perchlorate (25%) • Barium nitrate (24%) • Zinc stearate (1%)	Approx. 34 grains

Cartridge, Caliber .50, Incendiary, M23 [T48] (October 1941 – onward)

COMPONENT	PEP	QUANTITY
Percussion primer No. 28 **OR** Percussion primer No. 50M (currently listed in MIDAS)	Primer composition FA90A: • Potassium chlorate (50.5%) • Lead thiocyanate (23.8%) • PETN, Class B (14.2%) • Antimony sulfide (11.4%) • [remainder is gum solution] Primer composition 5061W: • Barium Nitrate (43%) • Lead styphnate (38%) • Antimony sulfide (9%) • Calcium silicide (8%) • Tetracene (2%)	2 grains 2.25 grains
Propellant	• Smokeless powder -- Nitrocellulose (13.15-13.25% nitrogen). • **OR** IMR-4831 • Nitrocellulose (90.68%) • Dinitrotoluene (7.5%) • Diphenylamine (.87%) • Potassium Sulfate (.55%) • Graphite (.4%)	250 grains 237 grains
Bullet	Lead-antimony slug, steel tubular dowel and incendiary mixture encased by cupro-nickel jacket	500 grains (total):

Incendiary mix	IM-28 • Magnesium/aluminum alloy (50%) • Barium nitrate (40%) • Potassium perchlorate (10%)	45 - 90 grains

Cartridge, Caliber .50, API-T, M20 (September 1944 – onward)

COMPONENT	PEP	QUANTITY
Percussion primer No. 28 **OR** Percussion primer No. 50M (currently listed in MIDAS) **OR** Percussion primer No. 37 (currently listed in MIDAS as an alternate)	Primer composition FA90A: • Potassium chlorate (50.5%) • Lead thiocyanate (23.8%) • PETN, Class B (14.2%) • Antimony sulfide (11.4%) [remainder is gum solution] Primer composition 5061W: • Barium Nitrate (43%) • Lead styphnate (38%) • Antimony sulfide (9%) • Calcium silicide (8%) • Tetracene (2%) Primer composition 257: • Lead styphnate (37%) • Barium Nitrate (37%) • Antimony sulfide (13%) • Aluminum powder (8%) • PETN (5%) • Tetracene (4%)	2 grains 2.25 grains 2.5 grains
Propellant	Smokeless powder -- Nitrocellulose (13.15-13.25% nitrogen) Later loadings used IMR 4895: • Nitrocellulose (91.18%) • Dinitrotoluene (7.0% • Diphenylamine (.87%) • Potassium sulfate (.55%) • Graphite (.4%) **OR** WC 860	240 grains 233 grains

	• Nitrocellulose (78.67%) • Nitroglycerine (9.5%) • Dibutylphthalate (8%) • Diphenylamine (1.13%) • Calcium carbonate (1%) • Potassium Nitrate (.8%) • Sodium sulfate (.5%) • Graphite (.4%) **OR** IMR 5010 • Nitrocellulose (89.92%) • Dinitrotoluene (8.25%) • Diphenylamine (.88%) • Potassium sulfate (.55%) Graphite (.4%)	233 grains
Bullet	Lead-antimony core with cupro-nickel jacket	624 grains (total): • Core, 355 grains • Jacket, 235 grains • Incendiary mix, 18 grains • Tracer, approx. 14 grains
Incendiary mix	IM-11 • Barium nitrate (50%) • Magnesium powder (25%) • Aluminum powder (25%) **OR** IM-161: • Barium nitrate (40%) • Magnesium (25%) • Aluminum (25%) • Potassium perchlorate (7%) • Asphaltum (3%) **OR** IM-28 • Magnesium/aluminum alloy	15 grains 11.75 grains 14 grains

	(50%) • Barium nitrate (40%) Potassium perchlorate (10%)	
Igniter composition (for tracer)	I-276: • Barium peroxide (83.98%) • Magnesium powder (15%) • Zinc stearate (1.02%) **OR** I-280-2: • Strontium peroxide (76.5%) • Magnesium powder (15%) • Calcium resinate (8.5%)	Approx. 4 grains 11 grains
Tracer composition	R-237: • Strontium nitrate (32%) • Magnesium (grade A) (31%) • Potassium perchlorate (22%) • Strontium oxalate (10%) • Calcium resinate (5%) **OR** R-284: • Strontium nitrate (33.3%) • Strontium peroxide (26.7%) • Magnesium powder (20.7%) • Calcium resinate (8.3%) • Polyvinylchloride (6.0%) • Strontium oxalate (5%) **OR** R-256-5 (red): • Strontium nitrate (33.3%) • Strontium peroxide (26.7%) • Magnesium powder (20.7%) • Calcium resinate (6.7%) • Polyvinylchloride (6.0%) • Strontium oxalate (5.0%)	Approx. 14 grains 7 grains 7 grains

*15.4 grains = 1 gram; 7,000 grains = 1 pound

References:

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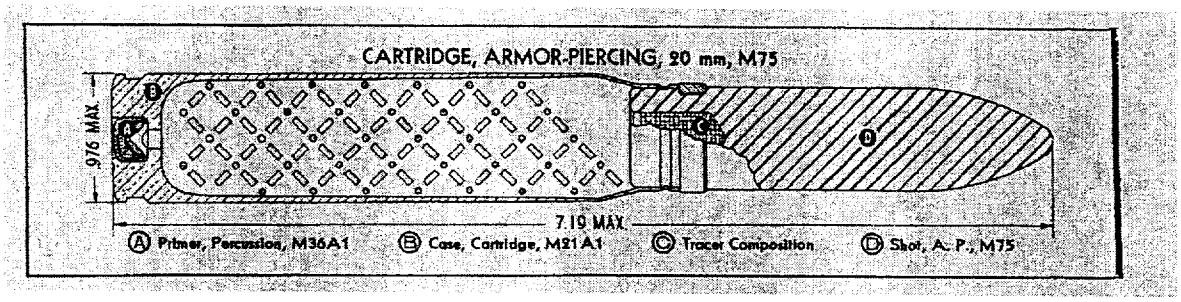
U.S. Army Defense Ammunition Center's "MIDAS" web site

Shell, 20mm, Armor Piercing-Tracer (AP-T), M75



Historical notes: During World War II, the Army used 20mm guns primarily as aircraft-mounted weapons, while the Navy had Oerlikon guns for anti-aircraft defense aboard ships. The M1 aircraft cannon was adopted from the British Hispano-Suiza guns in February of 1941 and the M75 shell was standardized in November of 1941. From this beginning, there have been many different weapons that fired a 20mm round, some of which are still in service today. The M75 shell could be fired out of the M1, AN-M2 and M3 aircraft guns that were mounted in a variety of fighter and bomber aircraft. By late1944, this round was already being replaced by the M95 cartridge.

Description: The M75 shell is of the armor-piercing tracer (AP-T) type. It is used against other aircraft or lightly armored ground and sea-borne targets. The projectile is machined out of cold-drawn bar steel. It is solid and contains no explosives, but does have a tracer element. The shell is of the "fixed" type with the cartridge case being permanently crimped to the projectile body. The propelling charge is non-adjustable and uses a percussion primer for ignition, giving a maximum range of 6,300 yards.

Overall Length ..... 7.22 inches
Projectile Length ..... 3.25 inches
Diameter ..... 20mm (.78 inches)
Total Weight ..... .639 pounds
Painting and markings ..... black with white markings

Summary of propellants, Explosives and Pyrotechnics (PEP)
Shell, 20mm, AP-T, M75 (1941- circa 1948)

COMPONENT	PEP	QUANTITY
Primer: M36A1 Percussion Primer	Priming composition FA-#90: • Potassium chlorate (53%) • Lead thiocyanate (25%)	2.1 grains*

	• Antimony sulfide (12%) • PETN (10%)	
Propellant, Improved Military Rifle	IMR 4895 (Nitrocellulose smokeless powder): • Nitrocellulose (91.18%) • Dinitrotoluene (7.0% • Diphenylamine (.87%) • Potassium sulfate (.55%) • Graphite (.4%)	480 grains
Fuze [none]	—	—
Projectile	Tracer composition [most likely R-256 (red)]: • Strontium nitrate (33.3%) • Strontium peroxide (26.7%) • Magnesium powder (26.7%) • Calcium resinate (8.3%) • Strontium oxalate (5%)	Approx. 5 grains

* 15.4 grains = 1 gram; 7,000 grains = 1 pound

References:

Complete Round Chart, #5981, 1 January 1940

OS 9-20, Ordnance School Text, *Artillery Ammunition,* Vol. 2, November 1942

OS 9-20, Ordnance School Text, *Artillery Ammunition,* Vol. 1, February 1943

Catalogue of Standard Ordnance Items, Second Edition, Volume III, Office of the Chief of Ordnance Technical Division, 1944

TM 9-1904, *Ammunition Inspection Guide*, 2 March 1944

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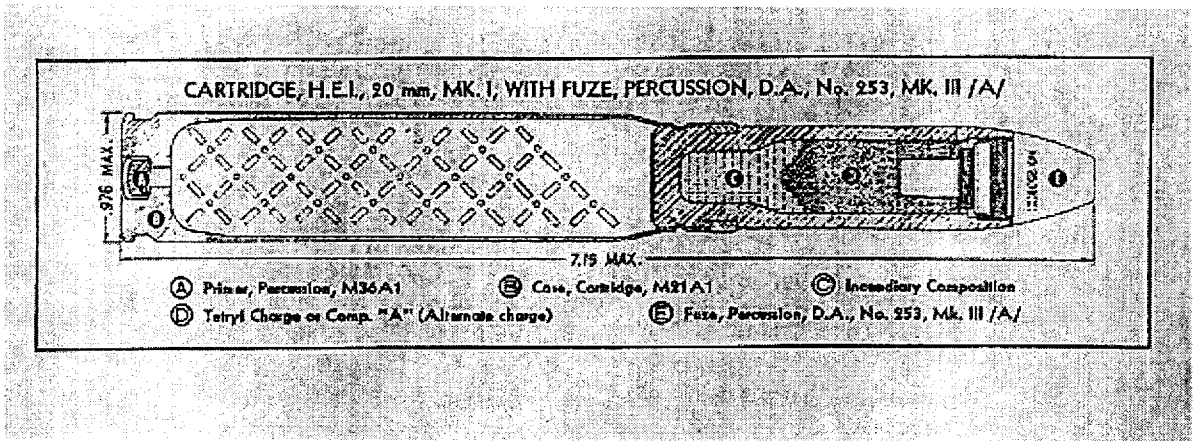
TM 9-1901, *Artillery Ammunition*, 11 September 1950

Primers, Pyrotechnic and Incendiary Compositions for Small Arms Ammunition, Frankford Arsenal P-1, October 1954

Small Arms Incendiary Ammunition, A Review of the History and Development, Volumes 1-4, Frankford Arsenal Report No R1407-1, December 1956

Shell, High-explosive Incendiary
20mm, Mark I



Historical notes: During World War II, the Army used 20mm guns primarily as aircraft-mounted weapons, while the Navy had Oerlikon guns for anti-aircraft defense aboard ships. The M1 aircraft cannon was adopted from the British Hispano-Suiza guns in February of 1941and the Mark 1 (or "MK 1") shell was standardized in August of 1941. From this beginning, there have been many different weapons that fired a 20mm round, some of which are still in service today. The MK 1 shell could be fired out of the M1 and AN-M2 aircraft guns that were mounted in a variety of fighter and bomber aircraft. By late1944, this round was already being replaced by the M97 cartridge.

Description: The MK 1 shell is of the high-explosive incendiary (HEI) type. It is used against other aircraft or light ground targets and personnel. The projectile contains an explosive charge as well as incendiary composition. A delay action percussion fuze is fitted. The shell is of the "fixed" type with the cartridge case being permanently crimped to the projectile body. The propelling charge is non-adjustable and uses a percussion primer for ignition. The maximum range is 5,100 yards.

Overall Length ..... 7.19 inches
Projectile Length ..... 3.22 inches
Diameter ..... 20mm (.78 inches)
Total Weight ..... .566 pounds
Painting and markings ..... Yellow ogive & red body with black markings

Summary of propellants, Explosives and Pyrotechnics (PEP)
Shell, 20mm, HEI, MK1 (1941- circa 1948)

COMPONENT	PEP	QUANTITY
Primer: M36A1 Percussion Primer	Priming composition FA-#90: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (12%) • PETN (10%)	2.1 grains*
Propellant, Improved Military Rifle	IMR 4895 (Nitrocellulose smokeless powder): • Nitrocellulose (91.18%) • Dinitrotoluene (7.0% • Diphenylamine (.87%) • Potassium sulfate (.55%) • Graphite (.4%)	.072 pounds (one reference lists 490 grains)
Fuze, Percussion, Delay Action, No 253, MK III	Detonator: Mercury fulminate Relay charge: Mercury Fulminate Booster: Tetryl	[unknown]
Projectile	Main charge: Tetryl **OR** Main charge: Composition A: • RDX (91%) • Wax (9%) Incendiary composition (most likely IM-11: • Magnesium-aluminum alloy, 50/50 (50%) • Barium nitrate (50%)	107.75 grains 100.3 grains 66.5 grains

* 15.4 grains = 1 gram; 7,000 grains = 1 pound

References:

Complete Round Chart, #5981, 1 January 1940

OS 9-20, Ordnance School Text, *Artillery Ammunition,* Vol. 2, November 1942

OS 9-20, Ordnance School Text, *Artillery Ammunition,* Vol. 1, February 1943

Catalogue of Standard Ordnance Items, Second Edition, Volume III, Office of the Chief of Ordnance Technical Division, 1944

TM 9-1904, *Ammunition Inspection Guide*, 2 March 1944

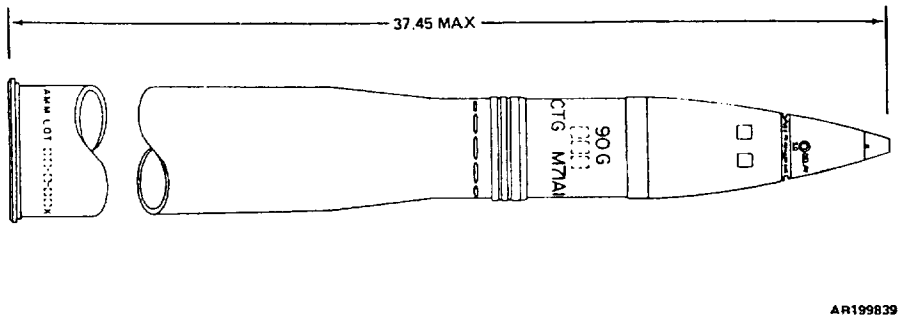
TM 9-1901, *Artillery Ammunition*, 29 June 1944

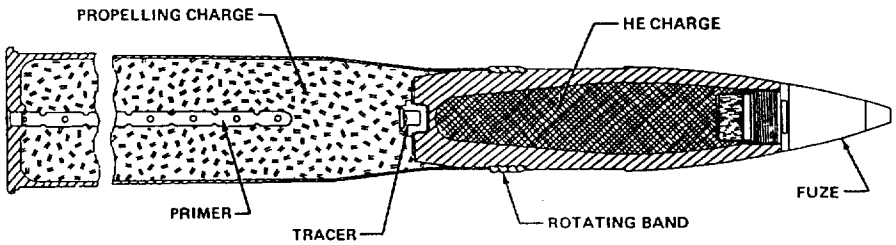
OP 1664, NAVSEA, *US Explosive Ordnance*, Volume 1, 28 May 1947

Primers, Pyrotechnic and Incendiary Compositions for Small Arms Ammunition, Frankford Arsenal P-1, October 1954

Small Arms Incendiary Ammunition, A Review of the History and Development, Volumes 1-4, Frankford Arsenal Report No R1407-1, December 1956

Cartridge, 90mm, HE, M71; HE-T, M71A1





Historical notes: Originally designed for anti-aircraft use, 90mm guns have been adapted for use against ground targets, to include being mounted as a tank gun. The M71 cartridge probably entered service in the early 1940's and replaced the M58 cartridge. It is still listed in current manuals. There are a number of cannons that can fire the M71. Tank guns include the M36, M41 and M54, while anti-aircraft guns include the M1 and M2 cannons. While they all use the same ammunition, differences in the chambers dimensions preclude full interchangeability. The maximum range is 19,560 yards.

Projectile: The hollow steel forged projectile has a boat-tailed base and a streamlined ogive. The fuze continues the streamline of the projectile. Fuze cavity may be normal or deep cavity type and can accept a host of fuze types, such as point detonating, mechanical time and proximity (VT). A tracer is threaded into the base of the M71A1. An M20A1 booster is used with certain fuzes as is a supplementary charge.

Components: The fuzed projectile is assembled to an M19 or M19B1 Cartridge Case containing M1, M6, or M15 propellant and a percussion primer.

Difference Between Models. M7A1 has a tracer; M7 does not. M7A1 has M1 propellant resulting in lower velocity; M71 has M6 or M15 propellant.

Overall Length ..... 37.45 to 37.44 inches
Projectile length.....16.53 inches
Diameter..... 90mm (3.54 inches)

Weight ..... 38.8 to 41.93 pounds
Fuzes ..... PD M48, M48A1, M51A4, M51A5, M557; MT M43A3; MTSQ M55A3, M500, M520 series, M564; VT
Color ..... Olive Drab with yellow markings

Summary of propellants, Explosives and Pyrotechnics (PEP)
Cartridge, 90mm, HE, M71 (circa 1940 – 1949)

COMPONENT	PEP	QUANTITY
Primer: Percussion Primer, 300-grain, M28A2	Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%)	1 grain*
	Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	300 grains
Propellant	Flashless nonhygroscopic smokeless powder: • Nitrocellulose (60%) • Nitroglycerine (39%) • Diphenylamine (.75%) • Graphite (.25%)	7.31 pounds
	OR	
	Propellant, M6 (approximate): • Nitrocellulose (87%) • Dinitrotoluene (10%) • Dibutylphthalate (3%) • Diphenylamine (1%)	7.31 pounds
	OR	
	Propellant, M15: • Nitroguanidine (54.7%) • Nitrocellulose (20%) • Nitroglycerine (19%) • Ethyl centralite (6.0%) • Cryolite (.3%)	7.31 pounds

Fuze, Pont detonating (PD), M48 **[one fuze of many that can be fitted]**	Detonator, M24: Primer mix: • Potassium chlorate (33.4%) • Antimony sulfide (33.3%) • Lead azide (28.3%) • Carborundum (5%) Lower charge: Lead azide Primer, percussion M54 assembly: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Delay holder assembly. Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%) Relay Assembly, M7: Intermediate charge, Lead azide	.86 grains 2.77 grains .17 grains .32 grains 1.43 grains
Projectile	TNT **OR** Ammonal: • TNT (67%) • Ammonium nitrate (22%) • Aluminum (11%) **OR** Composition B: • RDX (59.5%) • TNT (39.5%) • Wax (1%) **OR** 50/50 Amatol: • TNT (50%)	2.04 pounds or 1.6 (deep cavity) 1.95 pounds 2.15 pounds or 1.68 (deep cavity) Approx. 2 pounds

	• Ammonium nitrate (50%)	
Booster, M20 & M20A1 **[if used]**	Detonator, Lead azide Detonator lead pellet, Lead azide Booster charge, Tetryl	Approx. 2 grains Approx. 1 grain Approx 300 grains
Supplementary charge **[if used]**	TNT (98.5%) % Barium stearate (1.5%)	4.8 ounces

* 15.4 grains = 1 gram; 7,000 grains = 1 pound

Cartridge, 90mm, HE, M7A1 (1950 – present)

COMPONENT	PEP	QUANTITY
Primer: Percussion Primer, 300-grain, M28A2	Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	1 grain 300 grains
Propellant	Propellant, M1: • Nitrocellulose (85%) • Dinitrotoluene (9%) • Dibutylphthalate (5%) • Diphenylamine (1%)	5.33 pounds
Fuze, Point detonating, M557 **[one fuze of many that can be fitted]**:	Booster, M125A1, Pellet booster: • Tetryl (98%) • Calcium stearate (.75%) • Barium stearate (.75%) • Graphite (.5%) Detonator, M17: • Lead azide • Tetryl Detonator, M24: Primer mix: • Potassium chlorate (33.4%) • Antimony sulfide (33.3%)	351 grains 4.08 grains 1.23 grains .86 grains

	• Lead azide (28.3%) • Carborundum (5%) Lower charge: Lead azide Primer, percussion M54 assembly: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Delay holder assembly. Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%) Relay Assembly, M7: Intermediate charge, Lead azide	2.77 grains .17 grains .32 grains 1.43 grains
Projectile with Tracer	TNT **OR** Ammonal: • TNT (67%) • Ammonium nitrate (22%) • Aluminum (11%) **OR** Composition B: • RDX (59.5%) • TNT (39.5%) • Wax (1%) ---------- Tracer ignition composition K029: • Barium peroxide (80.5%) • Magnesium powder (16.5%) • Calcium resinate (2%) • Graphite (1%) Tracer R-45:	2.06 pounds 1.95 pounds 2.15 pounds ---------- 30 grains 35 grains

	• Strontium nitrate (56%) • Magnesium powder (18.5%) • Aluminum powder (18.5%) • Polyvinylchloride (7%)	
Booster, M20 & M20A1 **[if used]**	Detonator, Lead azide Detonator lead pellet, Lead azide Booster charge, Tetryl	Approx. 2 grains Approx. 1 grain Approx 300 grains
Supplementary charge **[if used]**	TNT	4.8 ounces

* 15.4 grains = 1 gram; 7,000 grains = 1 pound

References:

Complete Round Chart, #5981, 1 January 1940 [not listed]

OS 9-20, Ordnance School Text, *Artillery Ammunition,* Vol. 1, November 1942

OS 9-20, Ordnance School Text, *Artillery Ammunition,* Vol. 3, March 1943

TM 9-1904, *Ammunition Inspection Guide*, 2 March 1944

TM 9-1901, *Artillery Ammunition*, 29 June 1944

Complete Round Chart #5981, 1 March 1945

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TM 9-1300-203, *Artillery Ammunition*, 6 April 1967

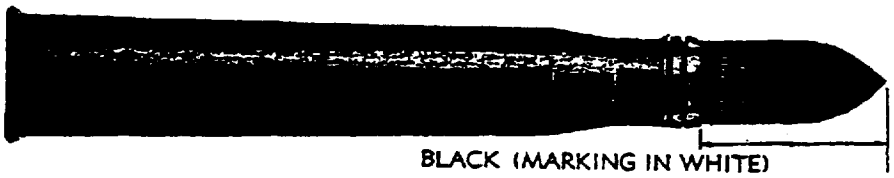
TM 43-0001-28, *Army Ammunition Data Sheets, Artillery Ammunition*, 25 April 1977

Explosives and Propellants Reference Guide, US Army Defense Ammunition Center and School, March 1994

TM 43-0001-28, *Army Ammunition Data Sheets, Artillery Ammunition*, 28 April 1994

U.S. Army Defense Ammunitions Center's "MIDAS" web site

Cartridge, 57mm, AP-T, M70



— CARTRIDGE; AP-T, M70, 57-mm Guns, M1 and 6 Pr. 7 Cwt. (British)

Historical notes: The 57mm Gun, M1 was adapted from the British 2.24-inch (6-pounder) Gun, Mark III, which was successfully employed as an anti-tank weapon. The U.S. version differs in having a shorter barrel, but ammunition is interchangeable. One reference from 1943 lists the 57mm as "limited standard," but the M70 continued to appear in a manual from 1950. The m70 projectile had a muzzle velocity of 2,950 feet per second and could penetrate 3.4 inches of homogeneous armor plate at 1,000 yards.

General: The M70 armor piercing (AP) projectile is a solid shot of hardened steel with a cavity machined into the base to receive a tracer. The tracer charge consists of approximately 73 grains of red tracer composition in the form of 3 solid pellets and 20 grains of igniter charge in one pellet. The tracer charge is sealed into the tracer cavity with a clear celluloid cup cemented into place. The tracer burns for about 3 seconds.

The complete round consists of the projectile and a cartridge case that contains the primer and propellant. The only difference between the M70 and the M76 target practice (TP) round is that the projectile of the M76 is made of a softer steel and is painted blue with white stenciling.

The M23A2 brass cartridge case is "standard"; M23A2B1 steel case is "substitute standard". The M1B1A2, 100-grain percussion primer is standard for use in 57-mm ammunition. The propellant consists of FNH powder poured loosely into the cartridge case.

Overall Length ..... 23.22 inches
Weight of complete round ..... 12.92 pounds
Projectile Length ..... 6.81 inches
Weight of projectile ..... 6.37 pounds
Diameter ..... 57mm (2.24 inches)
Color ..... Black with white markings

Summary of Propellants, Explosives and Pyrotechnics (PEP)
Cartridge, 57mm, AP-T, M70 (circa 1942 – early 1950's)

COMPONENT	PEP	QUANTITY
Primer, percussion, M1B1A2	Priming composition FA-#70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT (5%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	1 grain* 100 grains
Propellant	M1 Flashless Non-hygroscopic (FNH) [approximate %]: • Nitrocellulose (85%) • Dinitrotoluene (10%) • Dibutylphthalate (5%) • Diphenylamine (1%)	2.25 – 2.43 pounds
Tracer element	Red tracer mix: [most likely] • Strontium peroxide • Magnesium powder • Zinc stearate ---------- Ignition composition: [most likely] • Barium **or** Strontium peroxide • Calcium resinate	73 grains 20 grains
Fuze [none]	—	—
Projectile	—	—

* 15.4 grains = 1 gram; 7,000 grains = 1 pound

References:

OS 9-20, Vol. 1, *Artillery Ammunition*, November 1942

OS 9-20, Vol. 2, *Artillery Ammunition*, February 1943

Complete Round Chart #5981, May 1945

TM 9-1904, *Ammunition Inspection Guide*, 2 March 1944

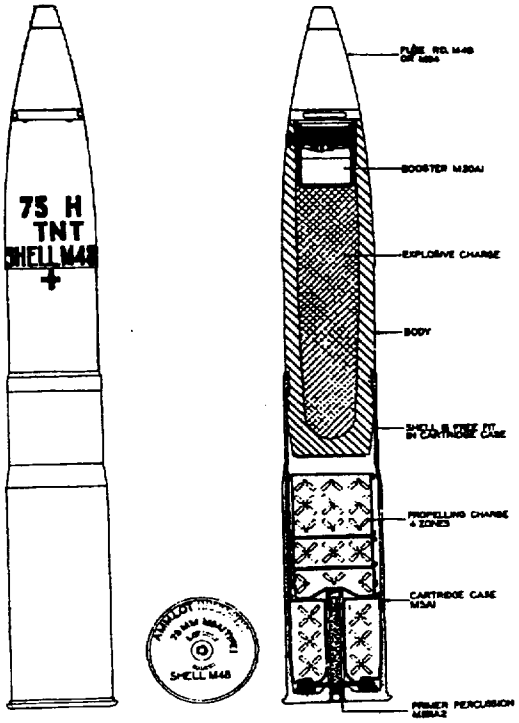
TM 9-1901, *Artillery Ammunition*, 29 June 1944

TM 9-1901, *Artillery Ammunition*, 11 September 1950

Primers, Pyrotechnic and Incendiary Compositions for Small Arms Ammunition, Frankford Arsenal P-1, October 1954

US Army Defense Ammunition Center's "MIDAS" web site

Shell, 75mm Howitzer, HE, M48



Shell, Semifixed, H.E., M48

Historical notes: Several variations of 75mm howitzers existed: the M1 and M1A1 were mounted on either a pack howitzer carriage, designed to be transported by mules, or mounted on a field howitzer carriage. The M48 cartridge was later adapted for use in 75mm guns, such as the M2 and M3, which were mounted in combat vehicles. Pack howitzers were used extensively in World War II and to some extent during the Korean War. Maximum range was 9,620 yards.

Description: The M48 is a high-explosive (HE) filled round used for fragmentation and blast effect. It is classified as "semi-fixed" because the propellant can be adjusted. The projectile is streamlined with a 9° tapered or boat-tailed base and a 7.5-caliber radius of ogive. The projectile is made of forged steel. It has a rotating band of gilding metal, a fringing groove; and a steel base cover spot welded to its base. It is also provided with a single groove, between the fringing grove and the boat-tail, for stab crimping of the cartridge case. The booster and fuze assemble directly to the nose of the shell, the booster being tightened in place by a set-screw, and the fuze by staking into notches cut in the rim of the nose.

The M48 can be fitted with a host of fuze types, including point detonating, mechanical time, and proximity (VT). A deep-cavity version of the projectile is required for VT fuzing.

Components: A complete round (cartridge) consists of the projectile, a fuze and a cartridge case. The cartridge case contains a percussion primer and the propellant. The projectile is loosely

assembled to the cartridge case so that the propellant can be adjusted.

Overall length ..... 23.5 inches
Projectile length (fuzed) ..... 15.05 inches
Overall weight ..... 18.24 pounds
Cartridge Case M5, M5A1B1
Fuzes M48-series, M51-series, M54, M55-series, M57
Painting and markings ..... Olive drab w/ yellow Markings

Summary of propellants, Explosives and Pyrotechnics (PEP)
Cartridge, 75mm, HE, M48 (circa 1940 – 1949)

COMPONENT	PEP	QUANTITY
Percussion Primer, M1B1A2	Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%)	1 grain*
	Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	100 grains
OR	----------	----------
Percussion Primer, M22A1	Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%)	1 grain
	Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	65-75 grains
OR	----------	----------
Percussion Primer, M31	Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%)	1 grain

	Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	150 grains
Propellant	Flashless nonhygroscopic smokeless powder: • Nitrocellulose (60%) • Nitroglycerine (39%) • Diphenylamine (.75%) • Graphite (.25%) **OR** Propellant, M1: • Nitrocellulose (85%) • Dinitrotoluene (9%) • Dibutylphthalate (5%) • Diphenylamine (1%) • Diphenylamine (1%)	2 pounds (up to) 2.6 pounds
Fuze, Point detonating (PD), M48 **[one of many fuzes that can be fitted]**	Detonator, M24: Primer mix: • Potassium chlorate (33.4%) • Antimony sulfide (33.3%) • Lead azide (28.3%) • Carborundum (5%) Lower charge: Lead azide Primer, percussion M54 assembly: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Delay holder assembly. Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%) Relay Assembly, M7: Intermediate charge, Lead azide	 .86 grains 2.77 grains .17 grains .32 grains 1.43 grains

Projectile	TNT **OR** 50/50 Amatol: • TNT (50%) • Ammonium nitrate (50%)	1.37 to1.49 pounds 1.4 pounds
Booster, M20 & M20A1 **[if used]** **OR** Booster, M21 **[if used]**	Detonator, Lead azide Intermediate charge, Tetryl Booster charge, Tetryl ---------- Detonator, Lead azide Intermediate charge, Tetryl Booster charge, Tetryl	Approx. 4 grains Approx. 5 grains Approx. 300 grains ---------- 4.08 grains 1.23 + 3.78 grains 351 grains
Supplementary charge **[if used]**	TNT (98.5%) % Barium stearate (1.5%)	4.8 ounces

* 15.4 grains = 1 gram; 7,000 grains = 1 pound

References:

Complete Round Chart, #5981, 1 January 1940

OS 9-20, Ordnance School Text, *Artillery Ammunition,* Vol. 1, November 1942

OS 9-20, Ordnance School Text, *Artillery Ammunition,* Vol. 3, March 1943

TM 9-1904, *Ammunition Inspection Guide*, 2 March 1944

TM 9-1901, *Artillery Ammunition*, 29 June 1944

Complete Round Chart #5981, 1 March 1945

TM 9-1901, *Artillery Ammunition*, 11 September 1950

TM 9-1300-203, *Artillery Ammunition*, 6 April 1967

TM 43-0001-28, *Army Ammunition Data Sheets, Artillery Ammunition*, 25 April 1977

Shell, 76mm, High Explosive, M42A1

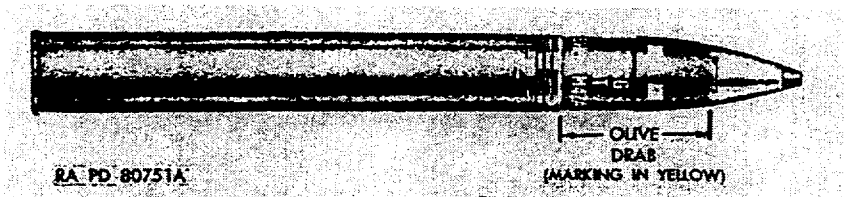


Figure 91. Shell, fixed, HE, M42A1, smokeless, w/fuze, PD, M51A5, 0.05-sec delay, for 76-mm guns.

Figure 92. Shell, fixed, HE, M42A1, reduced charge, smokeless, w/fuze, PD, M51A5, 0.05-sec delay, for 76-mm guns.

Historical notes: Fielded around 1943, the 76m guns M1, M1A1 and M1A2 are high velocity tank and anti-tank guns. They are designed to fire armor-piercing projectiles at higher velocities than are possible in 75mm guns. The caliber is actually 76.2mm (3 inches). The 76mm gun is a composite of the 3-inch gun tube and the 75mm tank gun breech ring and mechanism. Corresponding projectiles for the 76mm and 3-inch guns are the same, but the complete rounds are not interchangeable. Updated cartridges for 76mm guns are still listed in current manuals, as the M41 combat tank of the 1960's mounted the M32 76mm gun cannon.

General: This shell provides for fragmentation and blast effect against personnel and light materiel. The complete assembly consists of the standard cartridge case, and M40A1 primer, a 3.75-pound propelling charge of M6 powder, and a fuzed high-explosive shell. The shell body is a relatively thin-walled forged steel casing having an explosive charge cavity extending almost the full length of the body. The round gives smokeless performance when fired under average conditions. Some rounds on hand are assembled with the M51A4 or the M48A2 fuze, with 0.05 or 0.15-second delay, and with flashless or flashless-smokeless propelling charges. Otherwise, the rounds are the same and the same data apply. Maximum range is 14,360 yards.

Shell, Fixed, HE, M42A1 w/Fuze, MTSQ, M500: the round is identical except for the 75-second mechanical time and superquick fuze assembled. Some rounds are assembled with 25-second time and superquick fuze M55A3 and with flashless-smokeless propelling charge.

Shell, Fixed, HE, M42A1, Reduced Charge, Smokeless, w/ Fuze, PD, M51A5: the round is similar except that it has a reduced charge of propellant composed of M1 powder. This round is fitted with the M28A2 primer, which, with the reduced charge, gives smokeless performance under average conditions. Weight of complete round is 19.01 pounds, muzzle velocity is 1,500 fps, and maximum range is 8,805 yards. Some rounds on hand are fitted with the M48A2 or the M51A4 fuze and have a flashless-smokeless propelling charge.

Weight of complete round .....22.23 to 22.57 lbs.

Weight of the projectile, as fired .....12.66 to 12.87 lbs.
Length of complete round .....32.29 to 32.32 inches
Length of fuzed projectile .....12.26 to 12.36 inches
Painting and markings ..... Olive drab w/ yellow Markings

Summary of propellants, Explosives and Pyrotechnics (PEP)
Shell, 76mm, Fixed, M42A1(circa 1943 – 1949)

COMPONENT	PEP	QUANTITY
Percussion Primer, M28	Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	1 grain* 300 grains
OR	----------	----------
Percussion Primer, M40	Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	Approx. 1 grain 270 grains
Propellant	Flashless non-hygroscopic smokeless powder: • Nitrocellulose (60%) • Nitroglycerine (39%) • Diphenylamine (.75%) • Graphite (.25%) **OR** Propellant, M1:	3.75 pounds 3.75 pounds

	• Nitrocellulose (85%) • Dinitrotoluene (9%) • Dibutylphthalate (5%) • Diphenylamine (<1%) • Diphenylamine (<1%)	
Fuze, Point detonating (PD), M48 **[one of many fuzes that can be fitted]**	Detonator, M24: Primer mix: • Potassium chlorate (33.4%) • Antimony sulfide (33.3%) • Lead azide (28.3%) • Carborundum (5%) Lower charge: Lead azide Primer, percussion M54 assembly: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Delay holder assembly. Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%) Relay Assembly, M7: Intermediate charge, Lead azide	.86 grains 2.77 grains .17 grains .32 grains 1.43 grains
Projectile	TNT	.86 pounds
Booster, M20 & M20A1 **[if used]** **OR** Booster, M24 **[if used]**	Detonator, Lead azide Intermediate charge, Tetryl Booster charge, Tetryl ---------- Detonator, Lead azide Intermediate charge, Tetryl Booster charge, Tetryl	Approx. 4 grains Approx. 5 grains Approx. 300 grains ---------- Approx. 4 grains Approx. 5 grains 340 grains

* 15.4 grains = 1 gram; 7,000 grains = 1 pound

References:

OS 9-20, Ordnance School Text, *Artillery Ammunition,* Vol. 3, March 1943

TM 9-1901, *Artillery Ammunition*, 29 June 1944

Complete Round Chart #5981, 1 March 1945

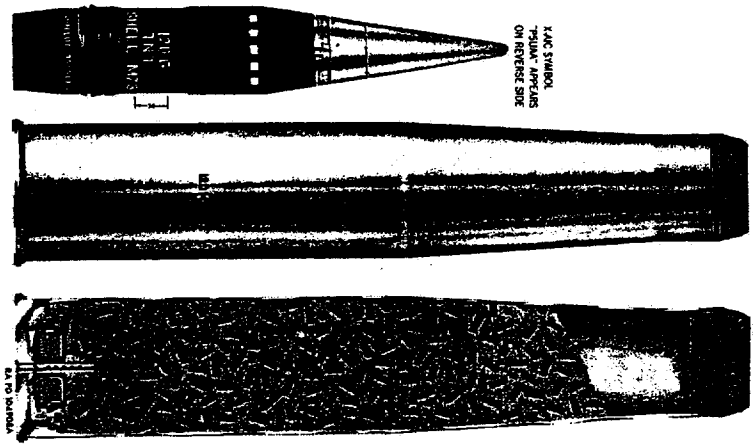
TM 9-1901, *Artillery Ammunition*, 11 September 1950

TM 9-1300-203, *Artillery Ammunition*, 6 April 1967

Explosives and Propellants Reference Guide, US Army Defense Ammunition Center and School, March 1994

U.S. Army Defense Ammunitions Center's "MIDAS" web site

Shell, 120mm, HE, M73



Historical notes: The 120mm AA Gun M1 is an antiaircraft weapon intended for protection of large rear areas against aircraft at altitudes up to 30,000 feet. Originally, it was called the 4.7-inch gun. It has a maximum horizontal range of 28, 275 yards.

General: The complete round for this gun is considered "separated" ammunition. The projectile and the propelling charge assembly are packed, shipped, and issued separately. In separated ammunition, unlike separate-loading ammunition, a cartridge case protects the nonadjustable propelling charge against moisture and foreign matter and prevents the loss of powder.

Fuze: The mechanical time (MT) fuzes M61 and M61A1 and the VT fuze T75E6 are used with this ammunition. The HE shell is assembled with MT fuze of the M61 series as shipped. This fuze permits selective time settings up to 30 seconds but has no impact element. The VT fuze is provided for use with deep-cavity HE shells.

Projectile: The shell has two bourrelets, one approximately at the center of the projectile and the other just to the rear of the rotating band. The rotating band, made of gliding metal, has two cannelures or grooves. The projectile is fitted with a base cover which prevents the hot gases generated by the burning propelling charge from coming in contact with bursting charge. Two projectiles are provided for this round, the Normal-Cavity HE shell and the Deep-Cavity HE shell. The shell are identical, the difference is the depth of the fuze cavity. The deeper cavity makes the shell adaptable for use with either a VT fuze or a standard fuze with supplementary charge.

Length (fuzed projectile).....24.06 inches
Weight (loaded projectile).....49.74 pounds
Length (cartridge case).....32.80 inches

Fuzes.....M61 Mechanical Time Fuze, with TNT supplement charge; T75E6 VT fuze.
Color.....Olive Drab with yellow marking

Summary of propellants, Explosives and Pyrotechnics (PEP)
Shell, 120mm, HE, M73 (1943 – circa 1968)

COMPONENT	PEP	QUANTITY
Percussion Primer, M1B1A2	Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	1 grain* 100 grains
OR	----------	----------
Percussion Primer, M40	Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	Approx. 1 grain 270 grains
Propellant	Igniter, black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%) Flashless non-hygroscopic smokeless powder: • Nitrocellulose (60%) • Nitroglycerine (39%) • Diphenylamine (.75%) • Graphite (.25%)	8 ounces 23.62 pounds

	OR Propellant, M1: • Nitrocellulose (85%) • Dinitrotoluene (9%) • Dibutylphthalate (5%) • Diphenylamine (<1%) • Diphenylamine (<1%)	3.75 pounds
Fuze, Mechanical Time, M61	Primer, percussion: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Black powder pellet: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%) Magazine charge, Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	Less than 1 grains* [unknown] [unknown]
Projectile	TNT **OR** 50/50 Amatol + TNT booster **OR** Trimonite: • Picric acid (88%) • Mononitronapthalene (12%)	5.26 pounds 4.8 pounds (Amatol) + .19 pounds TNT 5.42 pounds
Booster, M20 & M20A1 **OR**	Detonator, Lead azide Detonator lead pellet, Lead azide Booster charge, Tetryl ----------	Approx. 2 grains Approx. 1 grain Approx. 300 grains

Booster, M21 (data is for M21A4)	Detonator, Lead azide Intermediate charge, Tetryl Booster charge, Tetryl	---------- 4.08 grains 1.23 + 3.78 grains 351 grains
Supplementary charge	TNT	4.2 ounces

* 15.4 grains = 1 gram; 7,000 grains = 1 pound

References:

OS 9-20, Ordnance School Text, *Artillery Ammunition,* Vol. 3, March 1943

TM 9-1904, *Ammunition Inspection Guide*, 2 March 1944

TM 9-1901, *Artillery Ammunition*, 29 June 1944

Complete Round Chart #5981, 1 March 1945

TM 9-1901, *Artillery Ammunition*, 11 September 1950

Encyclopedia of Explosives, A Compilation of Principal Explosives, Their Characteristics, Processes of Manufacture, and Uses, 13 MAY 1960

TM 9-1300-203, *Artillery Ammunition*, 6 April 1967

Explosives and Propellants Reference Guide, US Army Defense Ammunition Center and School, March 1994

U.S. Army Defense Ammunitions Center's "MIDAS" web site

Navy 3"/50, Anti-aircraft (HE), Mark 31

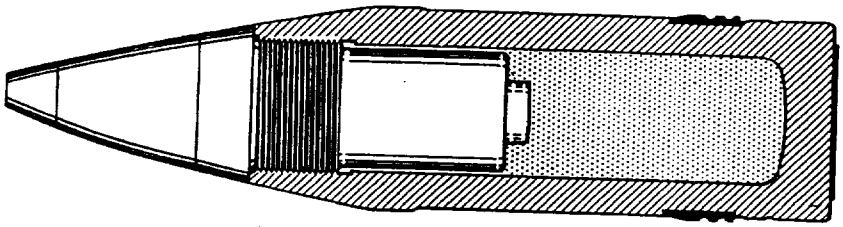


Figure 22. 3-inch A.A. Mk 31 Mod 1

Historical notes: There have been a variety of 3-inch guns, such as the U.S. Army's tank and anti-tank guns and the U.S. Navy's 3-inch guns. The Navy 3"/50 anti-aircraft (AA) gun was introduced in World War I to combat the threat from enemy aircraft. Ammunition continued to be improved and served through World War II. The Mark 30 (also written "MK30") was a special deep-cavity projectile to accept VT fuzes. No other fuzes may be assembled in the MK 31.

Projectile: The Projectile, MK 23 is of steel construction and uses a nose fuze. It cannot be fitted with a tracer. The fuzes are of the proximity or VT type. The filler is 0.74 pounds of TNT.

Components: The complete round consists of the MK 31 Projectile, a VT fuze with auxiliary detonating fuze, assembled to the MK 7 or MK 9 Cartridge Case with its propelling charge of NH smokeless powder, and a percussion primer.

Overall Length ..... 12.22 inches
Diameter ..... 2.98 inches
Weight of projectile ..... 12.90 pounds
Explosive Filler ..... .54 pounds TNT
Propellant ..... NH or FNH smokeless powder
Fuzes ..... VT, MK45 & MK58
Color ..... Yellow w/ black markings

Summary of Propellants, Explosives and Pyrotechnics (PEP)
3"/50 AA (HE), Mark 31 (1942 – circa 1947)

COMPONENT	PEP	QUANTITY
Primer, percussion, MK14	Priming composition: • Mercury fulminate (35%) • Potassium chlorate (35%)	.4 grain*

	• Antimony sulfide (30%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	113.5 grains
Propellant	M1 Flashless Non-hygroscopic (FNH) [approximate %]: • Nitrocellulose (85%) • Dinitrotoluene (10%) • Dibutylphthalate (5%) • Diphenylamine (1%)	4 pounds
Fuze, VT, Mark 45 **OR** Fuze, VT, Mark 58	Electric squib [most likely containing]: • Potassium chlorate (60%) • Diazodinitrophenol (20%) • Charcoal (15%) • Nitrostarch (5%) Electric squib [most likely containing]: • Potassium chlorate (60%) • Diazodinitrophenol (20%) • Charcoal (15%) • Nitrostarch (5%)	Approx. 2.5 grains Approx. 2.5 grains
Auxiliary Detonating Fuze, Mark 44	Detonator: Lead azide & Tetryl Booster lead-in: Tetryl Booster: Tetryl	1.6 grains & .46 grains 2.3 grains 385 grains
Projectile	Explosive charge: TNT **OR** Composition A: • RDX (91%) • Beeswax (9%)	.54 pounds .54 pounds

* 15.4 grains = 1 gram; 7,000 grains = 1 pound

References:

OP 4, *Ammunition*, September 1923

US Navy Bomb Disposal, *Projectiles and Fuzes*, 1 April 1943

OP 1212, *Projectile Fuzes*, 23 May 1945

US Navy Bomb Disposal, *U. S. Navy Projectiles and Fuzes*, 15 June 1945

OP 1664, NAVSEA, *US Explosive Ordnance*, Vol. 1, 28 May 1947

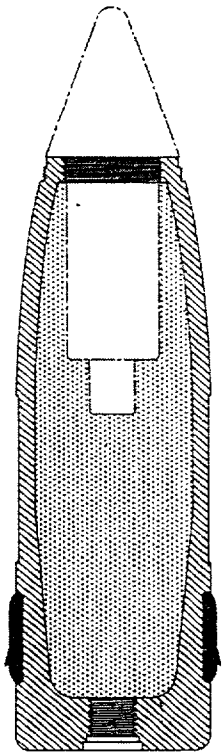
Primers, Pyrotechnic and Incendiary Compositions for Small Arms Ammunition, Frankford Arsenal P-1, October 1954

MIL-HDBK 137, *Fuze Catalog*, Vol. 2, Obsolete and Terminated Fuzes, 20 FEB 70

TM 9-1300-214, Military Explosives, 20 September 1984

US Army Defense Ammunition Center's "MIDAS" web site

Navy 5”/38, Anti-aircraft Common (HE), Mark 31



MK.31

5" A.A.COM. PROJECTILE

Historical notes: The Mark 31 (also written “MK31”) anti-aircraft (AA) common round is fired from the U.S. Navy 5”/38 gun. It was used throughout World War II to combat the threat from enemy aircraft. The Mark 31 was originally designed to accept the MK13 Base Fuze, but was later fitted exclusively with proximity (VT) fuzes.

Projectile: The Projectile, MK 31 is of steel construction and uses a nose fuze. The fuzes are of the proximity or VT type. It is not normally fitted with a tracer. For target practice, it can also be issued blind loaded and plugged (BL & P) or blind loaded with a tracer (BL & T).

Components: The complete round consists of the MK 31 Projectile, a VT fuze with auxiliary detonating booster, assembled to the MK 5 Cartridge Case with its propelling charge of NH smokeless powder, and a percussion primer.

Overall Length .....20.7 inches

Diameter.....4.97 inches
Weight of projectile.....55.12 pounds
Fuzes.....VT, MK32, MK40 & MK53
Color.....Yellow w/ black markings

Summary of Propellants, Explosives and Pyrotechnics (PEP)
3"/50 AA (HE), Mark 31 (1942 – circa 1947)

COMPONENT	PEP	QUANTITY
Primer, percussion, MK13	Priming composition: • Mercury fulminate (35%) • Potassium chlorate (35%) • Antimony sulfide (30%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	.4 grain* 4,081 grains (9.33 ounces)
Propellant	M1 Flashless Non-hygroscopic (FNH) [approximate %]: • Nitrocellulose (85%) • Dinitrotoluene (10%) • Dibutylphthalate (5%) • Diphenylamine (1%)	15 pounds
Fuze, VT, Mark 32 **OR** Fuze, VT, Mark 40 **OR** Fuze, VT, Mark 53	Electric squib [most likely containing]: • Potassium chlorate (60%) • Diazodinitrophenol (20%) • Charcoal (15%) • Nitrostarch (5%) Electric squib [most likely containing]: • Potassium chlorate (60%) • Diazodinitrophenol (20%) • Charcoal (15%) • Nitrostarch (5%)	Approx. 2.5 grains Approx. 2.5 grains

Auxiliary Detonating Fuze, Mark 17	Primer cap, Mercury fulminate	[less than 1 grain *]
	Detonator: Mercury fulminate & Tetryl	[unknown]
	Booster lead-in: Tetryl	Approx. 15 grains
	Booster: Tetryl	Approx. 375 grains
OR	----------	----------
Auxiliary Detonating Fuze, Mark 44	Detonator: Lead azide & Tetryl	1.6 grains & .46 grains
	Booster lead-in: Tetryl	2.3 grains
	Booster: Tetryl	385 grains
OR	----------	----------
Auxiliary Detonating Fuze, Mark 54	Primer mixture: • Lead styphnate (40%) • Lead azide (20%) • Barium nitrate (20%) • Antimony sulfide (15%) • Tetracene (5%)	1.15 grains
	Detonator: Lead azide & Tetryl	5.6 grains & .46 grains
	Booster lead-in: Tetryl	1.04 grains
	Booster lead-out: Tetryl	.272 grains
	Booster: Tetryl	Approx. 467 grains
Projectile	Explosive charge: Explosive D (Ammonium picrate) **OR**	7.25 pounds

	Composition A: • RDX (91%) • Beeswax (9%)	7.25 pounds

* 15.4 grains = 1 gram; 7,000 grains = 1 pound

References:

OP 4, *Ammunition*, September 1923

US Navy Bomb Disposal, *Projectiles and Fuzes*, 1 April 1943

OP 1212, *Projectile Fuzes*, 23 May 1945

US Navy Bomb Disposal, *U. S. Navy Projectiles and Fuzes*, 15 June 1945

OP 1664, NAVSEA, *US Explosive Ordnance*, Vol. 1, 28 May 1947

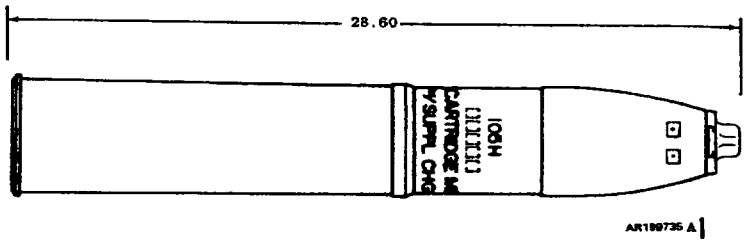
Primers, Pyrotechnic and Incendiary Compositions for Small Arms Ammunition, Frankford Arsenal P-1, October 1954

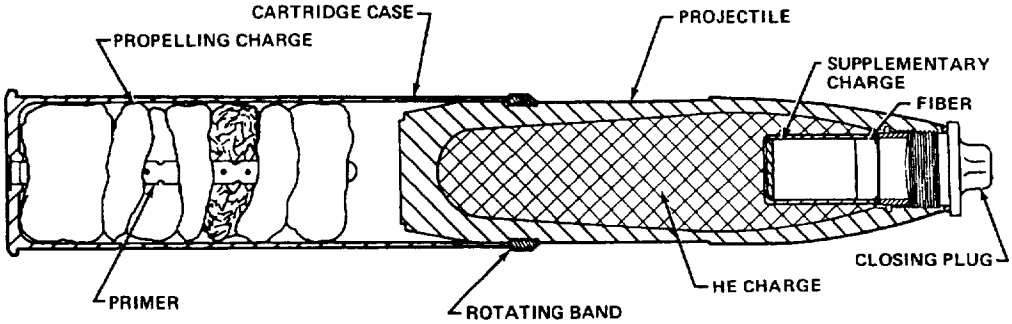
MIL-HDBK 137, *Fuze Catalog*, Vol. 2, Obsolete and Terminated Fuzes, 20 FEB 70

TM 9-1300-214, Military Explosives, 20 September 1984

US Army Defense Ammunition Center's "MIDAS" web site

Cartridge, 105mm, HE, M1





Historical notes: Although the U.S. Army used and experimented with 105mm howitzers during and after World War I, the cannons and ammunition were not fully fielded until after January of 1940. During World War II, there were two types of cannons: towed and self-propelled weapons. The M2, M2A1 and M3 were towed versions and the M4 was tank-mounted. The M3 was a lightweight version for airborne operations. The 105mm howitzer has undergone many evolutionary changes and is still in use today. The M1 cartridge is still listed in recent publications (2001).

Use: The projectile of this cartridge contains high explosives and is used for fragmentation, blast, and mining in support of ground troops and armored columns.

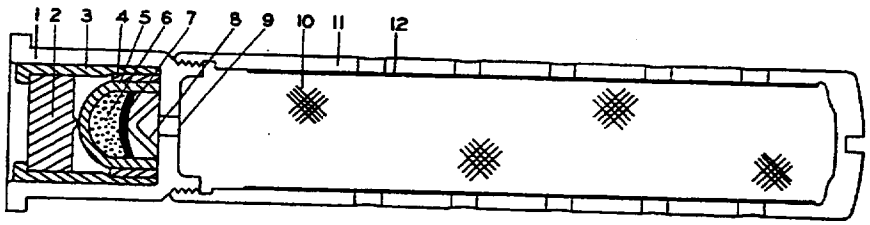
Description: The M1 cartridge is of the semi-fixed type, where the cartridge case is not permanently attached to the projectile; thus the propelling charge is adjustable. The projectile consists of a hollow steel forging with a boat-tail base, a streamlined ogive, and a gilding metal rotating band. A base cover is welded to the base of the projectile for added protection against the entrance of hot gases from the propelling charge during firing. The high explosive filler within the projectile may be either cast TNT or Composition B. A fuze cavity is either drilled or formed in the filler at the nose end of the projectile. This cavity may be either shallow or deep. A cavity liner, to preclude dusting of HE during transportation and handling, is seated in the cavity and expanded into the lower projectile fuze threads. A supplementary charge is placed in the fuze cavity of projectiles having deep cavities. Projectiles with shallow cavities or deep cavities containing a supplementary charge use only short intrusion fuzes, PD, or MT. Those

with deep cavities will accept the long intrusion proximity fuse after removing the supplementary charge.

Components:

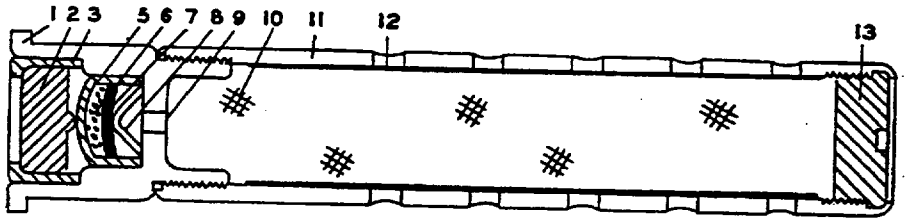
Cartridge case. The cartridge case contains a percussion primer assembly and seven individually bagged and numbered propelling charge increments. Cartridge case, M14 is made of brass, while the substitute-standard M14B1 is made of steel.

Primer. The 100-grain M1-series percussion primer assembly consists of a percussion ignition element and a perforated flash tube containing black powder.



M1

1. Body, primer head
2. Plug
3. Sleeve
4. Sleeve, primer cup
5. Primer cup
6. Primer composition
7. Paper disc
8. Anvil
9. Flash hole
10. Black powder (100-grains)
11. Case, brass
12. Paper liner
13. Plug, closing



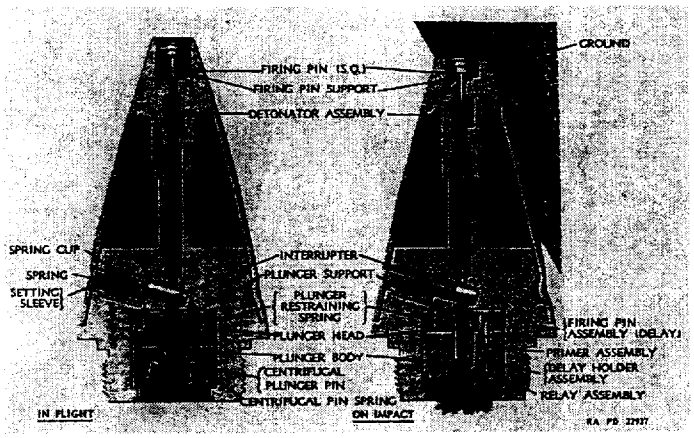
M1B1A1

Percussion Primers, M1 & M1B1

Propellant. The propellant consists of a base charge plus six increments. These seven numbered increment bags are tied together. They are assembled into the cartridge case, around the primer flash tube. The full charge (zone 7) gives a maximum range of 12,205 yards at 44° elevation.

Projectile. The Projectile consists of hollow steel forging with a boat-tailed base, streamlined ogive and gilding metal rotating band. Later versions of the projectile have a deep cavity to accept VT fuzes.

Fuzes. The M1 cartridge has used a variety of fuzes over time. Originally, it could be fitted with point-detonating (PD) fuzes M48, M48A1, M38A2, as well as mechanical time-and-superquick (MTSQ) fuze M54. Later, it could be fitted with proximity fuzes and the more recent electronic time fuzes. The M48 point-detonating fuze is a selective, superquick-delay, point-initiating fuze that may be set to either superquick action or with a .05-second delay. The fuze consists of a head which carries the superquick element, a body which carries the delay element, a setting device and threads assembling the fuze to the booster, a flash tube which forms a channel for the superquick detonation and holds the head in its proper position, an aluminum ogive which continues the contour of the projectile ogive and a delay plunger assembly.



Fuze, PD, M48

The M54 PD Fuze is a combination fuze, which is used in conjunction with the M20 booster to effect the functioning of a shell after a predetermined lapse of time, or upon impact. The fuze consists of a closing cap assembly, which carries the superquick element; a concussion (acting upon setback) plunger for initiating the burning of the time train; a body which carries two brass time-train rings; an interrupter; and a black powder magazine charge. The rear portion of the body is threaded for assembly to the mating threads of the booster.

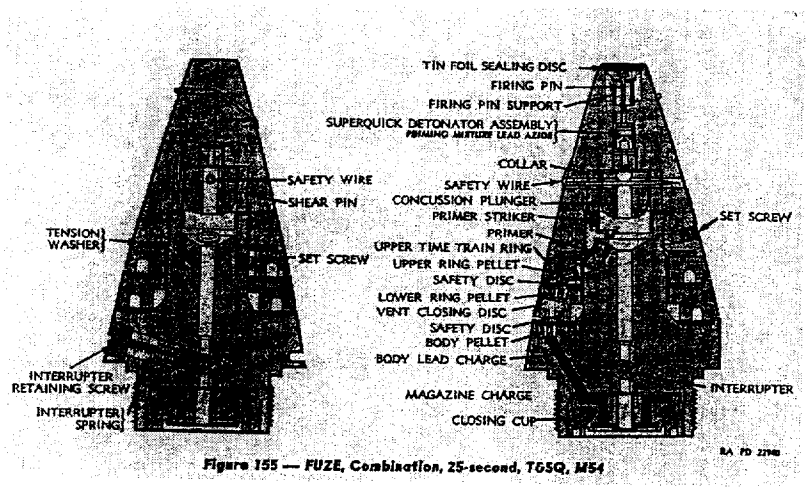


Figure 155 — FUZE, Combination, 25-second, T65Q, M54

Fuze, PD, M54

Booster. The M20 and M20A1 boosters are used in conjunction with the M48-series and M54 fuzes to effect functioning. They are bore-safe and contain a detonator, lead pellet and booster charge.

Cartridge Weight (total).....42.07 pounds
Cartridge Length .....31.07 inches
Projectile Weight..... 33.00 pounds
Projectile Length (fuzed)..... 19.63 inches
Color.....Olive drab w / yellow markings

Summary of propellants, Explosives and Pyrotechnics (PEP)
Cartridge, 105mm, HE, M1 (1940 – 1949)

COMPONENT	PEP	QUANTITY
Primer: Percussion Primer, 100-grain, M1 & M1B1	Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	[less than 1 grain]* 100 grains
Propellant	Flashless nonhygroscopic smokeless powder: • Nitrocellulose (60%)	Base charge: 11.94 ounces

	• Nitroglycerine (39%) • Diphenylamine (.75%) • Graphite (.25%)	Zone 2: 1.69 ounces Zone 3: 1.69 ounces Zone 4: 2.63 ounces Zone 5: 5.00 ounces Zone 6: 8.25 ounces Zone 7: 13.13 ounces [2 pounds 12.32 ounces total]
Fuze, Pont detonating (PD), M48:	Detonator, M24: Primer mix: • Potassium chlorate (33.4%) • Antimony sulfide (33.3%) • Lead azide (28.3%) • Carborundum (5%) Lower charge: Lead azide Primer, percussion M54 assembly: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Delay holder assembly. Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%) Relay Assembly, M7: Intermediate charge, Lead azide	.86 grains 2.77 grains .17 grains .32 grains 1.43 grains
Projectile	Cast TNT	4.80 pounds

	OR 50/50 Amatol: • TNT (50%) • Ammonium nitrate (50%)	4.84 pounds
Booster, M20 & M20A1	Detonator, Lead azide Detonator lead pellet, Lead azide Booster charge, Tetryl	Approx. 2 grains Approx. 1 grain Approx 300 grains

* 15.4 grains = 1 gram; 7,000 grains = 1 pound

Cartridge, 105mm, HE, M1 (1950 – present)

COMPONENT	PEP	QUANTITY
Primer: Percussion Primer, 300-grain, M28A2	Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	1 grain 300 grains
Propellant charge, M67†	Propellant, M1: • Nitrocellulose (85%) • Dinitrotoluene (9%) • Dibutylphthalate (5%) • Diphenylamine (1%)	Base charge: 8.6 ounces Zone 2: 1.4 ounces Zone 3: 2.5 ounces Zone 4: 3.8 ounces Zone 5: 5.8 ounces Zone 6: 8.8 ounces Zone 7: 14.3 ounces

		[2 pounds 13.2 ounces total]
Fuze, Point detonating, M557:	Booster, M125A1, Pellet booster: • Tetryl (98%) • Calcium stearate (.75%) • Barium stearate (.75%) • Graphite (.5%) Detonator, M17: • Lead azide • Tetryl Detonator, M24: Primer mix: • Potassium chlorate (33.4%) • Antimony sulfide (33.3%) • Lead azide (28.3%) • Carborundum (5%) Lower charge: Lead azide Primer, percussion M54 assembly: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Delay holder assembly. Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%) Relay Assembly, M7: Intermediate charge, Lead azide	351 grains 4.08 grains 1.23 grains .86 grains 2.77 grains .17 grains .32 grains 1.43 grains
Projectile	Cast TNT **OR** Composition B: • RDX (60%) • TNT (39%) • Wax (1%)	4.80 pounds (normal cavity) or 4.25 pounds (deep cavity) 5.08 pounds (normal cavity) or 4.60 pounds (deep cavity)

Supplementary charge	TNT	4.8 ounces

† The Zone 5 increment contains a sheet of lead foil, which acts as a decoppering agent in the bore of the cannon.

References:

Field Artillery Ammunition, Department of Materiel, Field Artillery School, Book 101, June 1932

Complete Round Chart, #5981, 1 January 1940 (not listed)

OS 9-20, Ordnance School Text, *Artillery Ammunition,* Vol. 1, November 1942

OS 9-20, Ordnance School Text, *Artillery Ammunition,* Vol. 3, March 1943

TM 9-1904, *Ammunition Inspection Guide*, 2 March 1944

TM 9-1901, *Artillery Ammunition*, 29 June 1944

Complete Round Chart #5981, 1 March 1945

TM 9-1901, *Artillery Ammunition*, 11 September 1950

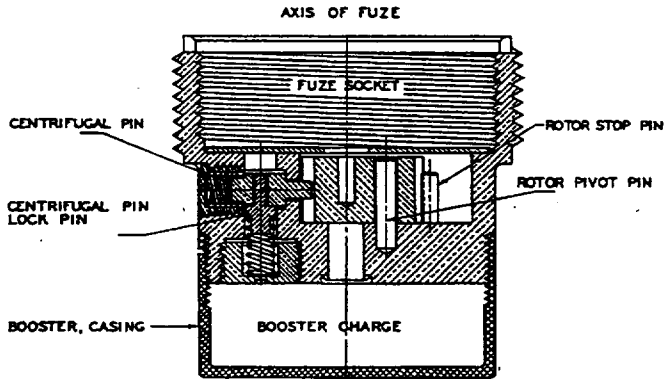
TM 9-1300-203, *Artillery Ammunition*, 6 April 1967

TM 43-0001-28, *Army Ammunition Data Sheets, Artillery Ammunition*, 25 April 1977

TM 43-0001-28, *Army Ammunition Data Sheets, Artillery Ammunition*, 28 April 1994

U.S. Army Defense Ammunitions Center's "MIDAS" web site

Booster, M20 & M20A1



General: By the 1940's, the design of projectiles advanced to the point where no adapters for fuzes were necessary. The booster is designed to take the pace of the adapter used in older projectiles. Furthermore, boosters provide a factor of safety by the use of an interrupter, which is activated by centrifugal force of rotation. The M20A1 is identical to the M20 except the diameter of the flash hole was enlarged from ⅛" to ¼".

The M20 booster is used with the following projectiles:

Shell, 75mm, HE, M48
Shell, 75mm, HE, M41 & M41A1
Shell, 3" Seacoast, HE, M42 & M42B2
Shell, 3" Anti-aircraft, HE, M42 & M42B2
Shell, 90mm, HE, M71
Shell, 105mm Gun, HE, M38A1
Shell, 105mm Howitzer, HE, M1
And in 120mm, 4.7" and 8" caliber rounds

Summary of Propellants, Explosives and Pyrotechnics (PEP)

COMPONENT	PEP	QUANTITY
Booster, M20 & M20A1	Detonator, Lead azide	Approx. 4 grains*
	Intermediate charge, Tetryl	Approx. 5 grains
	Booster charge, Tetryl	Approx. 300 grains

* 15.4 grains = 1 gram; 7,000 grains = 1 pound

References:

OS 9-20, Ordnance School Text, *Artillery Ammunition,* Vol. 1, November 1942

OS 9-20, Ordnance School Text, *Artillery Ammunition,* Vol. 3, March 1943

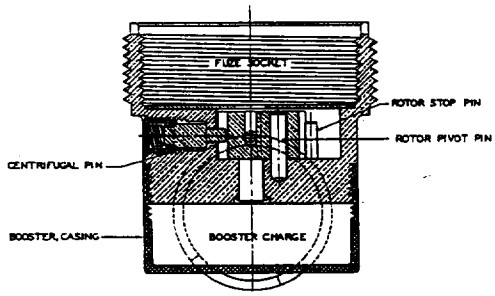
TM 9-1904, *Ammunition Inspection Guide*, 2 March 1944

TM 9-1901, *Artillery Ammunition*, 11 September 1950

Primers, Pyrotechnic and Incendiary Compositions for Small Arms Ammunition, Frankford Arsenal P-1, October 1954

US Army Defense Ammunition Center's "MIDAS" web site

Booster, M21-series



General: By the 1940's, the design of projectiles advanced to the point where no adapters for fuzes were necessary. The booster is designed to take the pace of the adapter used in older projectiles. Furthermore, boosters provide a factor of safety by the use of an interrupter, which is activated by centrifugal force of rotation. The M21 differs from the M20-series in that the centrifugal lock pin is omitted. The M21 is identical to the M21A1 except the diameter of the flash hole was enlarged from ⅛" to ¼".

The M20 booster is used with the following projectiles:

Shell, 75mm, HE, M48
Shell, 4.5" Gun, HE, M65
Shell, 8" Howitzer, HE, M106

Summary of Propellants, Explosives and Pyrotechnics (PEP)

COMPONENT	PEP	QUANTITY
Booster, M21 (data is for M21A4)	Detonator, Lead azide	4.08 grains*
	Intermediate charge, Tetryl	1.23 + 3.78 grains
	Booster charge, Tetryl	351 grains

* 15.4 grains = 1 gram; 7,000 grains = 1 pound

References:

OS 9-20, Ordnance School Text, *Artillery Ammunition,* Vol. 1, November 1942

TM 9-1904, *Ammunition Inspection Guide*, 2 March 1944

TM 9-1901, *Artillery Ammunition*, 29 June 1944

TM 9-1901, *Artillery Ammunition*, 11 September 1950

Primers, Pyrotechnic and Incendiary Compositions for Small Arms Ammunition, Frankford Arsenal P-1, October 1954

US Army Defense Ammunition Center's "MIDAS" web site

Fuze, Auxiliary Detonating, Mark 17

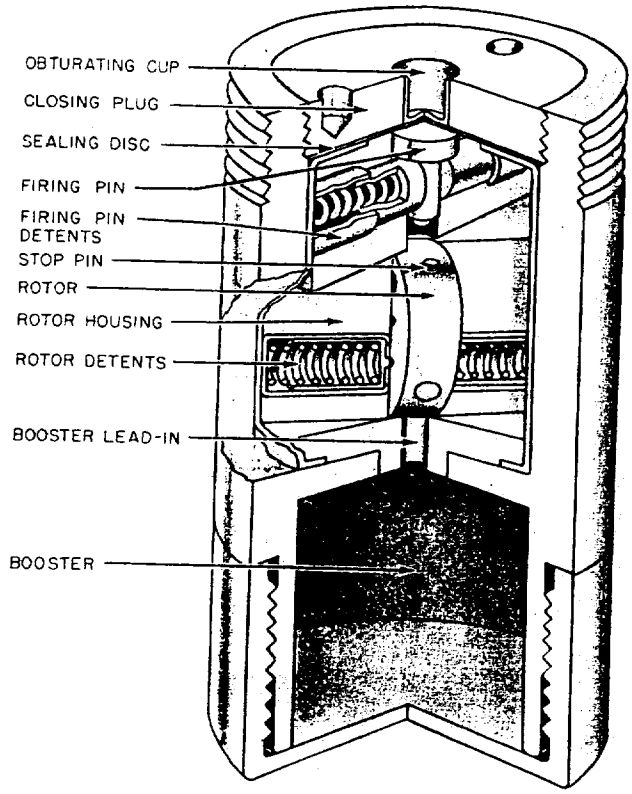


Figure 97. Auxiliary Detonating Fuze Mk 17 Mod 8

Historical notes: Auxiliary detonating fuzes are used in conjunction with a number of U.S. Navy point-detonating fuzes for 3-inch to 16-inch guns. The Mark 17 (sometimes written "MK17" or "Mk17") was also used in early VT fuzes during World War II. There were numerous modifications (MODS 0-17), largely representing different manufacturers. By the end of WWII, MODS 0-11 were obsolete, and eventually the Mark 17 was replaced by the Mark 46 and the Mark 54 Auxiliary detonating fuzes.

Description: The Mark 17 has steel body with a booster cap and plug closing the respective ends.

Function: When the projectile is fired from the gun, centrifugal force moves the firing pin detents and rotor detents outward, overcoming the holding forces and thereby releasing the firing pin and rotor. Then, centrifugal force, acting on the lead counterweights, will cause the rotor to turn until the detonator assembly is in line with the booster lead-in and firing pin. When the nose fuze functions, the gas pressure from it forces the obturating cup down, shearing the sealing disc adjacent to the firing pin and driving the firing pin down into the primer-detonator assembly, which fires the booster lead-in and the booster.

Overall Length .....2.5 inches
Largest diameter .....1.38 inches
Weight ..... .78 pounds
Fuzes used in ..... MK18, MK22, MK29, MK30 & MK32

Summary of Propellant, Explosives & Pyrotechnics (PEP)

COMPONENT	*PEP*	*QUANTITY*
Mark 17 Auxiliary Detonating Fuze	Primer cap, Mercury fulminate	[less than 1 grain *]
	Detonator: Mercury fulminate & Tetryl	[unknown]
	Booster lead-in: Tetryl	Approx. 15 grains
	Booster: Tetryl	Approx. 375 grains

* 15.4 grains = 1 gram; 7,000 grains = 1 pound
** Small fuze parts may contain aluminum, zinc, copper, lead, cadmium, silicon, manganese or magnesium

References

US Navy Bomb Disposal, *Projectiles and Fuzes*, 1 APR 43

OP 1212, *Projectile Fuzes*, 23 MAY 45

US Navy Bomb Disposal, *U.S. Navy Projectiles and Fuzes*, 15 JUN 45

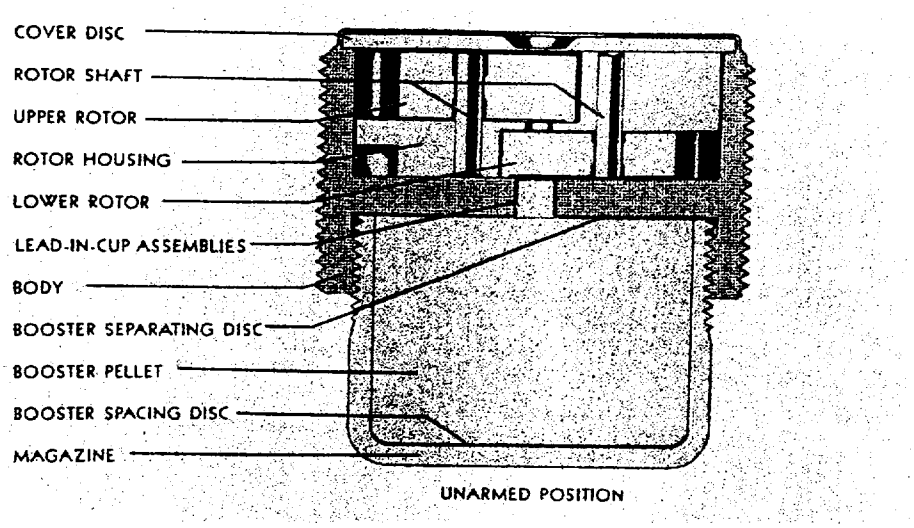
OP 1480, *VT Fuzes for Projectiles and Spin-stabilized Rockets*, 15 MAY 46

OP 1664, NAVSEA, *US Explosive Ordnance*, Vol. 1, 28 MAY 47

MIL-HDBK 137, *Fuze Catalog*, Vol. 2, Obsolete and Terminated Fuzes, 20 FEB 70

U.S. Army Defense Ammunition Center's "MIDAS" web site

Fuze, Auxiliary Detonating, Mark 44



Historical notes: Auxiliary detonating fuzes are used in conjunction with a number of point-detonating fuzes for U.S. Navy guns, U.S. Army gun cannons, as well as British anti-aircraft guns. The Mark 44 (sometimes written "MK44" or "Mk44") was also used in early VT fuzes during World War II. There were several modifications, largely representing different manufacturers. The Mark 44 was still in service in the late 1940's.

Description: The Mark 44 is of the twin rotors type, of which the main parts are: booster magazine, fuze body, rotor housing, rotors, detents and cover disc. The fuze body is brass. The Mark 44 differs from other auxiliary detonating fuzes in that it has no firing pin or primer mixture loading.

Function: When the projectile is fired from the gun, centrifugal force moves the two sets of rotor detents outward against their spring, unlocking the rotors. Then, centrifugal force, acting on the lead counterweights, will cause the rotor to turn until the detonator assembly is in line with the booster lead-in and firing pin. When the nose fuze functions, the gas pressure generated forces through the closing disc and fires the detonator, which initiates the booster lead-in and the booster.

Overall Length ..... 1.8 inches
Largest diameter ..... 1.5 inches
Weight ..... .47 pounds
Guns used in ..... U.S. Navy 3-inch to 16-inch guns and U.S. Army 90mm& 120mm guns and 75mm, 105mm, 155mm, 240mm & 8" howitzers. Also used with Army nose fuze M51A2 in spin-stabilized rockets.

Summary of Propellant, Explosives & Pyrotechnics (PEP)

COMPONENT	*PEP*	*QUANTITY*
Mark 44 Auxiliary Detonating Fuze **	Detonator: Lead azide & Tetryl	1.6 grains & .46 grains *
	Booster lead-in: Tetryl	2.3 grains
	Booster: Tetryl	385 grains

* 15.4 grains = 1 gram; 7,000 grains = 1 pound
** Small fuze parts may contain aluminum, zinc, copper, lead, cadmium, silicon, manganese or magnesium

References

US Navy Bomb Disposal, *Projectiles and Fuzes*, 1 APR 43

OP 1212, *Projectile Fuzes*, 23 MAY 45

US Navy Bomb Disposal, *U.S. Navy Projectiles and Fuzes*, 15 JUN 45

OP 1480, *VT Fuzes for Projectiles and Spin-stabilized Rockets*, 15 MAY 46

OP 1664, NAVSEA, *US Explosive Ordnance*, Vol. 1, 28 MAY 47

MIL-HDBK 137, *Fuze Catalog*, Vol. 2, Obsolete and Terminated Fuzes, 20 FEB 70

U.S. Army Defense Ammunition Center's "MIDAS" web site

Fuze, Auxiliary Detonating, Mark 54

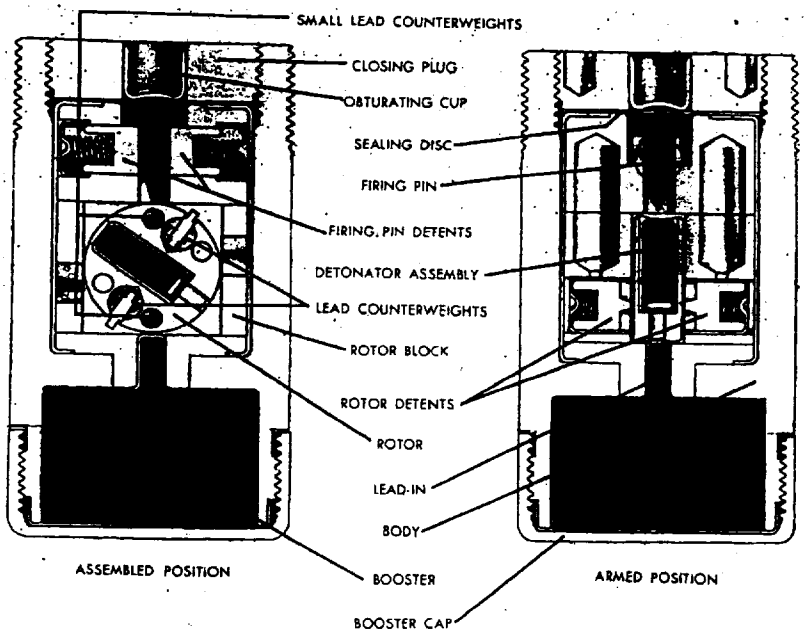


Figure 58.—Auxiliary Detonating Fuze Mk 54—Sectional View

Historical notes: Auxiliary detonating fuzes are used in conjunction with a number of U.S. Navy point-detonating fuzes for 3-inch to 16-inch guns. The Mark 54 (sometimes written "MK54" or "Mk54") was also used in early VT fuzes during World War II. The Mark 54 was still in service in the late 1940's.

Description: The Mark 54 is similar to the Mark 17 and Mark 46 Auxiliary Detonating Fuzes and has a steel body with a booster cap and plug closing the respective ends.

Function: When the projectile is fired from the gun, centrifugal force moves the firing pin detents and rotor detents outward, overcoming the holding forces and thereby releasing the firing pin and rotor. Then, centrifugal force, acting on the lead counterweights, will cause the rotor to turn until the detonator assembly is in line with the booster lead-in and firing pin. When the nose fuze functions, the gas pressure from it forces the obturating cup down, shearing the sealing disc adjacent to the firing pin and driving the firing pin down into the primer-detonator assembly, which fires the booster lead-in and the booster.

Overall Length .....2.5 inches
Largest diameter .....1.38 inches
Weight ..... .76 pounds

Summary of Propellants, Explosives & Pyrotechnics (PEP)

COMPONENT	*PEP*	*QUANTITY*
Mark 54 Auxiliary Detonating Fuze	Primer mixture: • Lead styphnate (40%) • Lead azide (20%) • Barium nitrate (20%) • Antimony sulfide (15%) • Tetracene (5%)	1.15 grains *
	Detonator: Lead azide & Tetryl	5.6 grains & .46 grains
	Booster lead-in: Tetryl	1.04 grains
	Booster lead-out: Tetryl	.272 grains
	Booster: Tetryl	Approx. 467 grains

* 15.4 grains = 1 gram; 7,000 grains = 1 pound
** Small fuze parts may contain aluminum, zinc, copper, lead, cadmium, silicon, manganese or magnesium

References

US Navy Bomb Disposal, *Projectiles and Fuzes*, 1 APR 43

OP 1212, *Projectile Fuzes*, 23 MAY 45

US Navy Bomb Disposal, *U.S. Navy Projectiles and Fuzes*, 15 JUN 45

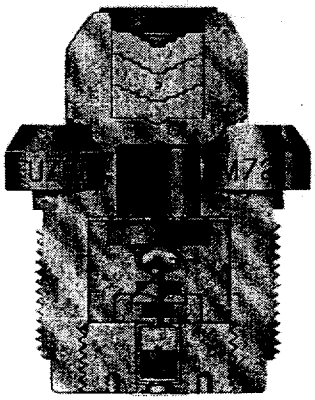
OP 1480, *VT Fuzes for Projectiles and Spin-stabilized Rockets*, 15 MAY 46

OP 1664, NAVSEA, *US Explosive Ordnance*, Vol. 1, 28 MAY 47

MIL-HDBK 137, *Fuze Catalog*, Vol. 2, Obsolete and Terminated Fuzes, 20 FEB 70

U.S. Army Defense Ammunition Center's "MIDAS" web site

Fuze, Base Detonating (BD), M72



Historical notes: The M72 base detonating (BD) fuze is used in the M86 57mm armor-piercing-capped projectile. The M86 was used extensively during World War II and to a limited extent during the Korean War.

Description: The M72 is similar to the M66 and M686 base detonating fuzes in its design and function. The fuze is made up of three parts: the body, a detonator assembly and a primer holder assembly.

Function: The tracer composition is ignited by the flash of the propelling charge. Upon impact, the forward force of the firing pin breaks a soft steel washer and strikes the primer. Action of the primer ignites the black powder delay pellet. This pellet initiates the explosives in the detonator assembly, which in turn cause the main charge of the projectile to explode.

Length .....2.167 inches
Weight ..... .86 pounds

Summary of Propellants, Explosives & Pyrotechnics (PEP)

COMPONENT	*PEP*	*QUANTITY*
M72 Base Detonating Fuze	Primer No. 26: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Detonator, M17 Assembly: • Lead azide	.45 grains * 4.08 grains

	• Tetryl Black powder delay pellet: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	1.23 grains [unknown]

* 15.4 grains = 1 gram; 7,000 grains = 1 pound
** Small fuze parts may contain aluminum, zinc, copper, lead, cadmium, silicon, manganese or magnesium

References:

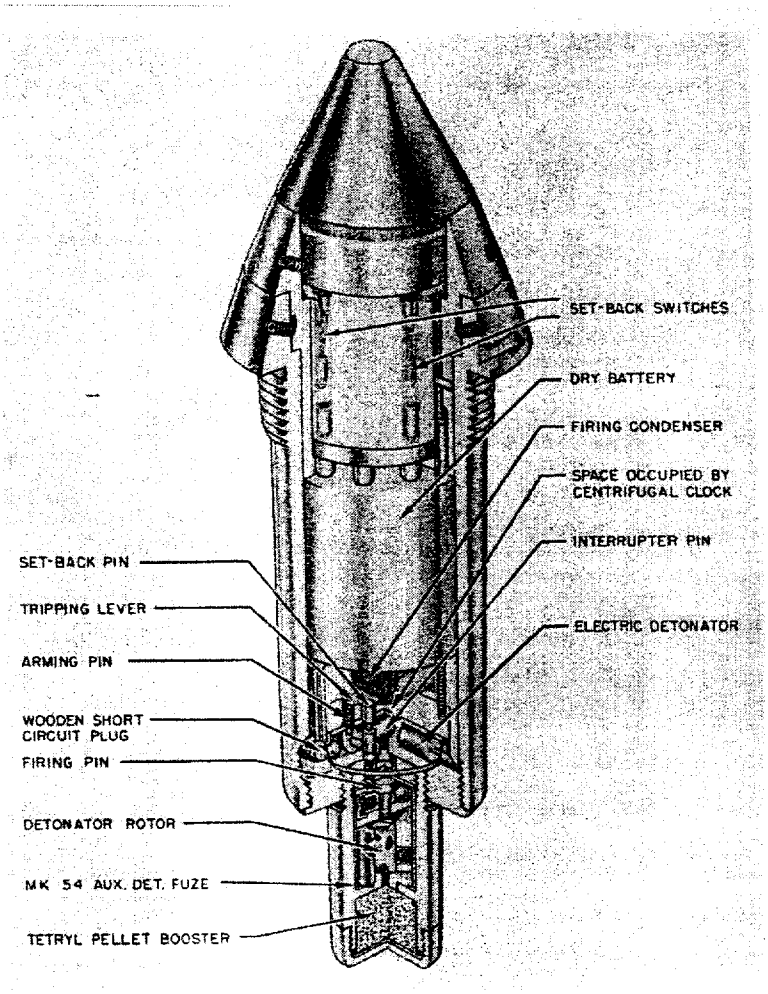
TM 9-1901, *Artillery Ammunition*, 29 June 1944

TM 9-1901, *Artillery Ammunition*, 11 September 1950

Primers, Pyrotechnic and Incendiary Compositions for Small Arms Ammunition, Frankford Arsenal P-1, October 1954

US Army Defense Ammunition Center's "MIDAS" web site

Fuze, VT, Mark 32



Historical notes: Even before the attack on Pearl Harbor, the U.S. Navy began experimenting with VT or proximity fuzes [note: the term "VT" has no significance or meaning as an abbreviation] to increase the hit probability of anti-aircraft guns. The 5"/38 gun was the Navy's primary anti-aircraft weapon and work began in earnest to develop a radio proximity fuze that would detonate a projectile near enough to an enemy plane without requiring timing or contact with the target. The result was the **Mark 32**, the world's first functional proximity fuze. The first Japanese plane was shot down with proximity-fuzed projectiles by the cruiser *USS Helena* in January 1943.

Difficulties arose when firing at low-flying aircraft. The radio signals returned back from waves caused premature detonation or even prevented the fuze from arming. A wave-suppression circuit was devised to reduce the sensitivity to spurious wave noises. The first fuze to use this feature was known as the Mark 40.

Development continued to reduce the size and complexity of the fuze that would be suitable for

use in Army artillery projectiles. The result was the Mark 45. Both the Mark 32 and Mark 45 were obsolete by 1947. The Mark 32 was eventually replaced by the Mark 53 and the Mark 45 was replaced by the Mark 58.

Description: The Mark 32 fuze has steel base rings, a black Lucite plastic nose ogive, an aluminum nose cap or button tip and a steel body cylinder. This fuze was designed to detonate when passing within the maximum influence radius of about 50 feet. A VT fuze is composed of six main subassemblies: fuze body, transmitter-receiver group, thyratron, reserve energizer, rear fitting and auxiliary detonating fuze. The Mark 32 VT Fuze originally used the Mark 17 Auxiliary Detonating Fuze, but later models incorporated the Mark 54 Auxiliary Detonating Fuze. This fuze uses a wet energizer that contains an electrolyte solution of unknown composition.

Function: A VT fuzed projectile radiates a continuous radio signal, which is reflected from a target. When the reflected signal reaches an appropriate value, a condenser is allowed to discharge through an electrical detonator called a squib. The blast from this squib operates a standard auxiliary detonating fuze, which in turn, detonates the main charge of the projectile. No setting is necessary or possible; they will detonate automatically if the projectile passes sufficiently close to the target.

Overall Length .....12 inches
Largest diameter .....3.3 inches
Weight ..... 6.81 pounds
Guns used in ..... 5"/25, 5"/38, 5"/51 AA

Summary of Propellant, Explosives & Pyrotechnics (PEP)

COMPONENT	*PEP*	*QUANTITY*
Fuze, VT, Mark 32**	Electric squib [most likely containing]: • Potassium chlorate (60%) • Diazodinitrophenol (20%) • Charcoal (15%) • Nitrostarch (5%)	Approx. 2.5 grains*
Mark 17 Auxiliary Detonating Fuze	Primer cap, Mercury fulminate Detonator: Mercury fulminate & Tetryl Booster lead-in: Tetryl Booster: Tetryl	[less than 1 grain] [unknown] Approx. 15 grains Approx. 375

		grains
OR		
Mark 54 Auxiliary Detonating Fuze	Primer mixture: • Lead styphnate (40%) • Lead azide (20%) • Barium nitrate (20%) • Antimony sulfide (15%) • Tetracene (5%)	1.15 grains *
	Detonator: Lead azide & Tetryl	5.6 grains & .46 grains
	Booster lead-in: Tetryl	1.04 grains
	Booster lead-out: Tetryl	.272 grains
	Booster: Tetryl	Approx. 467 grains

* 15.4 grains = 1 gram; 7,000 grains = 1 pound
** Small fuze parts may contain aluminum, zinc, copper, lead, cadmium, silicon, manganese or magnesium

References

US Navy Bomb Disposal, *Projectiles and Fuzes*, 1 APR 43

OP 1212, *Projectile Fuzes*, 23 MAY 45

US Navy Bomb Disposal, *U.S. Navy Projectiles and Fuzes*, 15 JUN 45

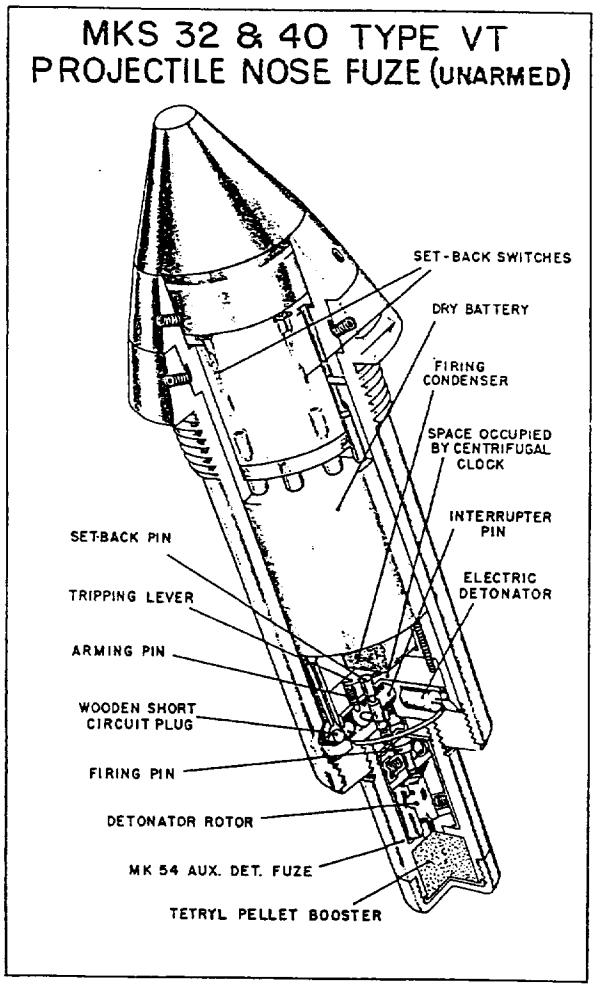
OP 1480, *VT Fuzes for Projectiles and Spin-stabilized Rockets*, 15 MAY 46

OP 1664, NAVSEA, *US Explosive Ordnance*, Vol. 1, 28 MAY 47

MIL-HDBK 137, *Fuze Catalog*, Vol. 2, Obsolete and Terminated Fuzes, 20 FEB 70

U.S. Army Defense Ammunition Center's "MIDAS" web site

Fuze, VT, Mark 40



Historical notes: Even before the attack on Pearl Harbor, the U.S. Navy began experimenting with VT or proximity fuzes [note: the term "VT" has no significance or meaning as an abbreviation] to increase the hit probability of anti-aircraft guns. The 5"/38 gun was the Navy's primary anti-aircraft weapon and work began in earnest to develop a radio proximity fuze that would detonate a projectile near enough to an enemy plane without requiring timing or contact with the target. The result was the Mark 32, the world's first functional proximity fuze. The first Japanese plane was shot down with proximity-fuzed projectiles by the cruiser *USS Helena* in January 1943.

Difficulties arose when firing at low-flying aircraft. The radio signals returned back from waves caused premature detonation or even prevented the fuze from arming. A wave-suppression circuit was devised to reduce the sensitivity to spurious wave noises. The first fuze to use this feature was known as the **Mark 40**. The Mark 40 was eventually replaced by the Mark 53.

Description: The Mark 40 fuze has steel base rings, a black Lucite plastic nose ogive, an aluminum nose cap or button tip and a steel body cylinder. This fuze was designed to detonate when passing within the maximum influence radius of about 50 feet. A VT fuze is composed of six main subassemblies: fuze body, transmitter-receiver group, thyratron, reserve energizer, rear fitting and auxiliary detonating fuze. The Mark 40 VT Fuze originally used the Mark 17 Auxiliary Detonating Fuze, but later models incorporated the Mark 54 Auxiliary Detonating Fuze. This fuze uses a wet energizer that contains an electrolyte solution of unknown composition.

Function: A VT fuzed projectile radiates a continuous radio signal, which is reflected from a target. When the reflected signal reaches an appropriate value, a condenser is allowed to discharge through an electrical detonator called a squib. The blast from this squib operates a standard auxiliary detonating fuze, which in turn, detonates the main charge of the projectile. No setting is necessary or possible; they will detonate automatically if the projectile passes sufficiently close to the target.

Overall Length .....12 inches
Largest diameter .....3.3 inches
Weight ..... 6.81 pounds
Guns used in ..... 5"/25, 5"/38, 5"/51 AA

Summary of Propellant, Explosives & Pyrotechnics (PEP)

COMPONENT	*PEP*	*QUANTITY*
Fuze, VT, Mark 40**	Electric squib [most likely containing]: • Potassium chlorate (60%) • Diazodinitrophenol (20%) • Charcoal (15%) • Nitrostarch (5%)	Approx. 2.5 grains*
Mark 17 Auxiliary Detonating Fuze --- **OR**	Primer cap, Mercury fulminate Detonator: Mercury fulminate & Tetryl Booster lead-in: Tetryl Booster: Tetryl ---	[less than 1 grain] [unknown] Approx. 15 grains Approx. 375 grains ---

Mark 54 Auxiliary Detonating Fuze	Primer mixture: • Lead styphnate (40%) • Lead azide (20%) • Barium nitrate (20%) • Antimony sulfide (15%) • Tetracene (5%)	1.15 grains *
	Detonator: Lead azide & Tetryl	5.6 grains & .46 grains
	Booster lead-in: Tetryl	1.04 grains
	Booster lead-out: Tetryl	.272 grains
	Booster: Tetryl	Approx. 467 grains

* 15.4 grains = 1 gram; 7,000 grains = 1 pound
** Small fuze parts may contain aluminum, zinc, copper, lead, cadmium, silicon, manganese or magnesium

References

US Navy Bomb Disposal, *Projectiles and Fuzes*, 1 APR 43

OP 1212, *Projectile Fuzes*, 23 MAY 45

US Navy Bomb Disposal, *U.S. Navy Projectiles and Fuzes*, 15 JUN 45

OP 1480, *VT Fuzes for Projectiles and Spin-stabilized Rockets*, 15 MAY 46

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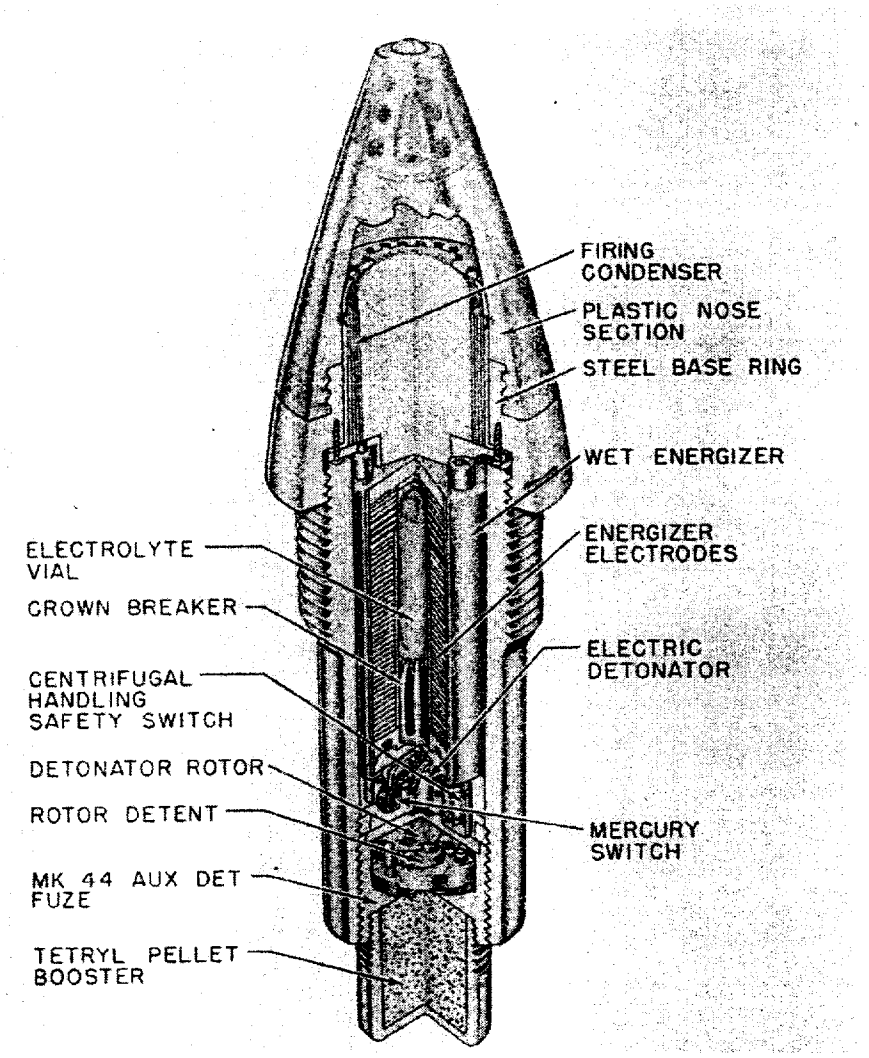
U.S. Army Defense Ammunition Center's "MIDAS" web site

Fuze, VT, Mark 45



Historical notes: Even before the attack on Pearl Harbor, the U.S. Navy began experimenting with VT or proximity fuzes [note: the term "VT" has no significance or meaning as an abbreviation] to increase the hit probability of anti-aircraft guns. The 5"/38 gun was the Navy's primary anti-aircraft weapon and work began in earnest to develop a radio proximity fuze that would detonate a projectile near enough to an enemy plane without requiring timing or contact with the target. The result was the Mark 32, the world's first functional proximity fuze. The first Japanese plane was shot down with proximity-fuzed projectiles by the cruiser *USS Helena* in January 1943.

Difficulties arose when firing at low-flying aircraft. The radio signals returned back from waves caused premature detonation or even prevented the fuze from arming. A wave-suppression circuit was devised to reduce the sensitivity to spurious wave noises. The first fuze to use this feature was known as the Mark 40.

Development continued to reduce the size and complexity of the fuze that would be suitable for use in Army artillery projectiles. The result was the **Mark 45**. Both the Mark 32 and Mark 45 were obsolete by 1947. The Mark 32 was eventually replaced by the Mark 53 and the Mark 45 was replaced by the Mark 58.

Description: The Mark 45 fuze has steel base rings, a green ethyl cellulose plastic nose ogive, an perforated steel nose cap and a steel body cylinder. This fuze was designed to detonate when passing within the maximum influence radius of about 50 feet. A VT fuze is composed of six main subassemblies: fuze body, transmitter-receiver group, thyratron, reserve energizer, rear fitting and auxiliary detonating fuze. The Mark 45 VT Fuze used the Mark 44 Auxiliary Detonating Fuze. This fuze uses a wet energizer that contains an electrolyte solution of unknown composition. It also contains a mercury switch.

Function: A VT fuzed projectile radiates a continuous radio signal, which is reflected from a target. When the reflected signal reaches an appropriate value, a condenser is allowed to discharge through an electrical detonator called a squib. The blast from this squib operates a standard auxiliary detonating fuze, which in turn, detonates the main charge of the projectile. No setting is necessary or possible; they will detonate automatically if the projectile passes sufficiently close to the target.

Overall Length .....7.7 inches
Largest diameter .....2.4 inches
Weight .....2.4 pounds
Guns used in .....75mm, 90mm, 105mm, 120mm, 155mm, 240mm, 8" & 3"/50

Summary of Propellant, Explosives & Pyrotechnics (PEP)

COMPONENT	*PEP*	*QUANTITY*
Fuze, VT, Mark 45**	Electric squib [most likely containing]: • Potassium chlorate (60%) • Diazodinitrophenol (20%) • Charcoal (15%) • Nitrostarch (5%)	Approx. 2.5 grains*
Fuze, Auxiliary Detonating, Mark 44	Mark 44 Auxiliary Detonating Fuze: Detonator: Lead azide & Tetryl Booster lead-in: Tetryl Booster: Tetryl	 1.6 grains & .46 grains * 2.3 grains 385 grains

* 15.4 grains = 1 gram; 7,000 grains = 1 pound
** Small fuze parts may contain aluminum, zinc, copper, lead, cadmium, silicon, manganese and magnesium

References

US Navy Bomb Disposal, *Projectiles and Fuzes*, 1 APR 43

OP 1212, *Projectile Fuzes*, 23 MAY 45

US Navy Bomb Disposal, *U.S. Navy Projectiles and Fuzes*, 15 JUN 45

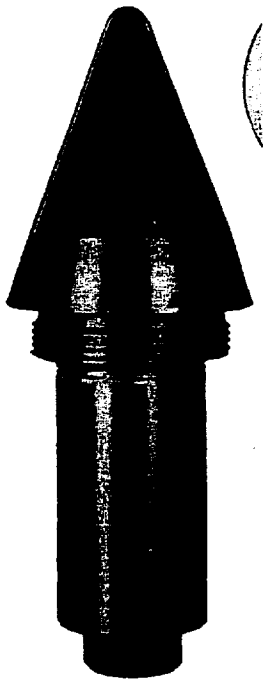
OP 1480, *VT Fuzes for Projectiles and Spin-stabilized Rockets*, 15 MAY 46

OP 1664, NAVSEA, *US Explosive Ordnance*, Vol. 1, 28 MAY 47

MIL-HDBK 137, *Fuze Catalog*, Vol. 2, Obsolete and Terminated Fuzes, 20 FEB 70

U.S. Army Defense Ammunition Center's "MIDAS" web site

Fuze, VT, Mark 53



MK 53 MODS 1&4

Historical notes: Even before the attack on Pearl Harbor, the U.S. Navy began experimenting with VT or proximity fuzes [note: the term "VT" has no significance or meaning as an abbreviation] to increase the hit probability of anti-aircraft guns. The 5"/38 gun was the Navy's primary anti-aircraft weapon and work began in earnest to develop a radio proximity fuze that would detonate a projectile near enough to an enemy plane without requiring timing or contact with the target. The result was the Mark 32, the world's first functional proximity fuze. The first Japanese plane was shot down with proximity-fuzed projectiles by the cruiser *USS Helena* in January 1943.

Difficulties arose when firing at low-flying aircraft. The radio signals returned back from waves caused premature detonation or even prevented the fuze from arming. A wave-suppression circuit was devised to reduce the sensitivity to spurious wave noises. The first fuze to use this feature was known as the Mark 40.

Development continued to reduce the size and complexity of the fuze that would be suitable for use in Army artillery projectiles. The result was the Mark 45. Both the Mark 32 and Mark 45 were obsolete by 1947. The Mark 32 was eventually replaced by the **Mark 53** and the Mark 45 was replaced by the Mark 58.

Description: The Mark 53 fuze has steel base rings, a green ethyl cellulose plastic nose ogive, an perforated steel nose cap and a steel body cylinder. This fuze was designed to detonate when passing within the maximum influence radius of about 50 feet. A VT fuze is composed of six

main subassemblies: fuze body, transmitter-receiver group, thyratron, reserve energizer, rear fitting and auxiliary detonating fuze. The Mark 53 VT Fuze used the Mark 44 Auxiliary Detonating Fuze. This fuze uses a wet energizer that contains an electrolyte solution of unknown composition. It also contains a mercury switch.

Function: A VT fuzed projectile radiates a continuous radio signal, which is reflected from a target. When the reflected signal reaches an appropriate value, a condenser is allowed to discharge through an electrical detonator called a squib. The blast from this squib operates a standard auxiliary detonating fuze, which in turn, detonates the main charge of the projectile. No setting is necessary or possible; they will detonate automatically if the projectile passes sufficiently close to the target.

Overall Length .....9.0 inches
Largest diameter .....3.3 inches
Weight .....4.79 pounds
Guns used in .....5"/25, 5"/38 & 5"/51

Summary of Propellant, Explosives & Pyrotechnics (PEP)

COMPONENT	*PEP*	*QUANTITY*
Electric squib	Electric squib [most likely containing]: • Potassium chlorate (60%) • Diazodinitrophenol (20%) • Charcoal (15%) • Nitrostarch (5%)	Approx. 2.5 grains*
Fuze, Auxiliary Detonating, Mark 44**	Mark 44 Auxiliary Detonating Fuze: Detonator: Lead azide & Tetryl Booster lead-in: Tetryl Booster: Tetryl	1.6 grains & .46 grains * 2.3 grains 385 grains

* 15.4 grains = 1 gram; 7,000 grains = 1 pound
** Small fuze parts may contain aluminum, zinc, copper, lead, cadmium, silicon, manganese and magnesium

References:

US Navy Bomb Disposal, *Projectiles and Fuzes*, 1 APR 43

OP 1212, *Projectile Fuzes*, 23 MAY 45

US Navy Bomb Disposal, *U.S. Navy Projectiles and Fuzes*, 15 JUN 45

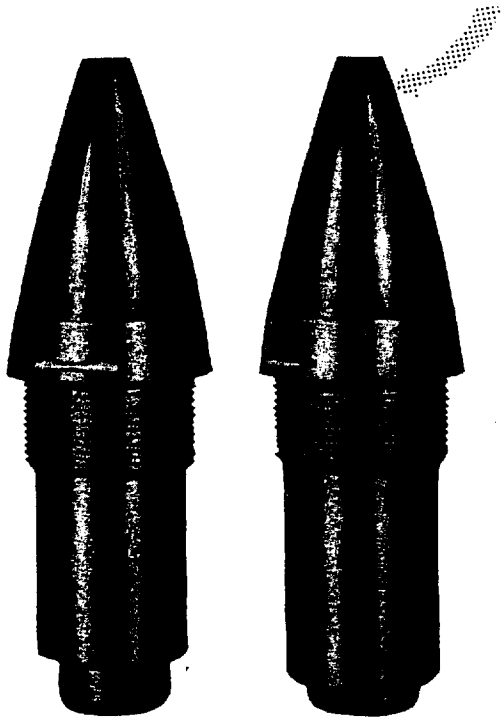
OP 1480, *VT Fuzes for Projectiles and Spin-stabilized Rockets*, 15 MAY 46

OP 1664, NAVSEA, *US Explosive Ordnance*, Vol. 1, 28 MAY 47

MIL-HDBK 137, *Fuze Catalog*, Vol. 2, Obsolete and Terminated Fuzes, 20 FEB 70

U.S. Army Defense Ammunition Center's "MIDAS" web site

Fuze, VT, Mark 58



MK 58 MOD 2 MK 58 MODS 3 & 4

Historical notes: Even before the attack on Pearl Harbor, the U.S. Navy began experimenting with VT or proximity fuzes [note: the term "VT" has no significance or meaning as an abbreviation] to increase the hit probability of anti-aircraft guns. The 5"/38 gun was the Navy's primary anti-aircraft weapon and work began in earnest to develop a radio proximity fuze that would detonate a projectile near enough to an enemy plane without requiring timing or contact with the target. The result was the Mark 32, the world's first functional proximity fuze. The first Japanese plane was shot down with proximity-fuzed projectiles by the cruiser *USS Helena* in January 1943.

Difficulties arose when firing at low-flying aircraft. The radio signals returned back from waves caused premature detonation or even prevented the fuze from arming. A wave-suppression circuit was devised to reduce the sensitivity to spurious wave noises. The first fuze to use this feature was known as the Mark 40.

Development continued to reduce the size and complexity of the fuze that would be suitable for use in Army artillery projectiles. The result was the Mark 45. Both the Mark 32 and Mark 45 were obsolete by 1947. The Mark 32 was eventually replaced by the Mark 53 and the Mark 45 was replaced by the **Mark 58**.

Description: The Mark 58 fuze has steel base rings, a green ethyl cellulose plastic nose ogive, an perforated steel nose cap and a steel body cylinder. This fuze was designed to detonate when passing within the maximum influence radius of about 50 feet. A VT fuze is composed of six

main subassemblies: fuze body, transmitter-receiver group, thyratron, reserve energizer, rear fitting and auxiliary detonating fuze. The Mark 58 VT Fuze used the Mark 44 Auxiliary Detonating Fuze. This fuze uses a wet energizer that contains an electrolyte solution of unknown composition. It also contains a mercury switch.

Function: A VT fuzed projectile radiates a continuous radio signal, which is reflected from a target. When the reflected signal reaches an appropriate value, a condenser is allowed to discharge through an electrical detonator called a squib. The blast from this squib operates a standard auxiliary detonating fuze, which in turn, detonates the main charge of the projectile. No setting is necessary or possible; they will detonate automatically if the projectile passes sufficiently close to the target.

Overall Length .....8.5 inches
Largest diameter .....2.4 inches
Weight .....1.98 pounds
Guns used in .....3"/50

Summary of Propellant, Explosives & Pyrotechnics (PEP)

COMPONENT	*PEP*	*QUANTITY*
Fuze, VT, Mark 58**	Electric squib [most likely containing]: • Potassium chlorate (60%) • Diazodinitrophenol (20%) • Charcoal (15%) • Nitrostarch (5%)	Approx. 2.5 grains*
Fuze, Auxiliary Detonating, Mark 44	Mark 44 Auxiliary Detonating Fuze: Detonator: Lead azide & Tetryl Booster lead-in: Tetryl Booster: Tetryl	 1.6 grains & .46 grains * 2.3 grains 385 grains

* 15.4 grains = 1 gram; 7,000 grains = 1 pound
** Small fuze parts may contain aluminum, zinc, copper, lead, cadmium, silicon, manganese and magnesium

References:

US Navy Bomb Disposal, *Projectiles and Fuzes*, 1 APR 43

OP 1212, *Projectile Fuzes*, 23 MAY 45

US Navy Bomb Disposal, *U.S. Navy Projectiles and Fuzes*, 15 JUN 45

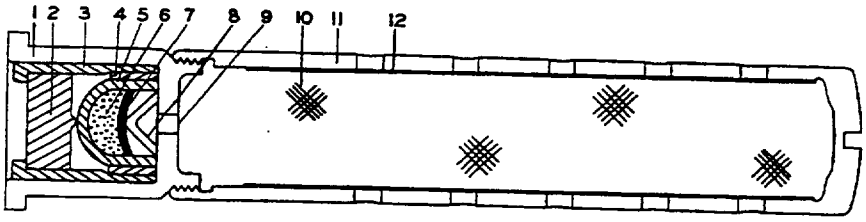
OP 1480, *VT Fuzes for Projectiles and Spin-stabilized Rockets*, 15 MAY 46

OP 1664, NAVSEA, *US Explosive Ordnance*, Vol. 1, 28 MAY 47

MIL-HDBK 137, *Fuze Catalog*, Vol. 2, Obsolete and Terminated Fuzes, 20 FEB 70

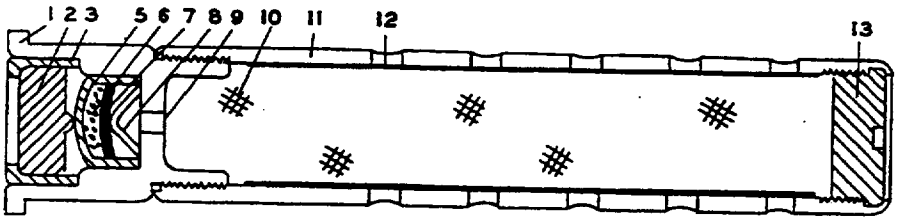
U.S. Army Defense Ammunition Center's "MIDAS" web site

Primer, Percussion, M1 & M1B1



M1

1. Body, primer head
2. Plug
3. Sleeve
4. Sleeve, primer cup
5. Primer cup
6. Primer composition
7. Paper disc
8. Anvil
9. Flash hole
10. Black powder (100-grains)
11. Case, brass
12. Paper liner
13. Plug, closing



M1B1A1

General: When used in connection with gun ammunition, the term "primer" means the small tube of sensitive explosive which initiates the burning propellant charge. Primers are threaded into the base of the cartridge case in case-gun ammunition. For bag guns, the primer is inserted in the primer lock of the breech plug. Primers are classified according to the means of activating them as follows:

Percussion – impact-fired
Electrical – fired by electricity
Combination – fired by either percussion or electricity

Description: The M1 percussion primer is used with 75mm and 105mm howitzers and 3-inch anti-aircraft guns. It basically replaced the MKI percussion primer. The M1 differs from the M1B1 in the design of the brass tube that screws onto the primer head. The M1 is essentially the same as the M23A1 and functions the same: when the firing pin of the cannon strikes the firing plug, it ignites the primer mixture. The resulting flame ignites the black powder charge, which in turn ignites the propellant in the cartridge case.

Length ..... 3.71 inches
Diameter, head ..... .62 inches

Weight ..... 872.5 grains
Used in ..... 75mm and 105mm Howitzer, 3" & 120mm gun ammunition

Summary of Propellants, Explosives and Pyrotechnics (PEP)

COMPONENT	PEP	QUANTITY
Primer, percussion, M1 & M1B1	Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	Less than 1 grain* 100 grains

* 15.4 grains = 1 gram; 7,000 grains = 1 pound

References:

TR 1355-75A, Mobile Artillery Ammunition, 75mm, 21 November 1927

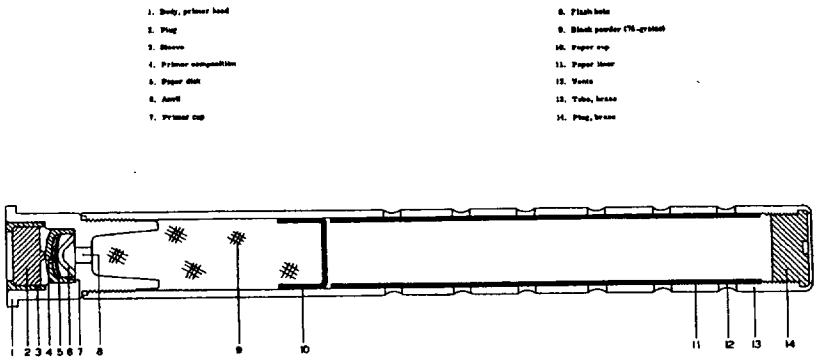
TR 1370-A, *Miscellaneous Ammunition; Ammunition, General*, 24 March 1930

OS 9-20, Ordnance School Text, *Artillery Ammunition,* Vol. 1, February 1943

TM 9-1904, *Ammunition Inspection Guide*, 2 March 1944

TM 9-1901, *Artillery Ammunition*, 29 June 1944

Primer, Percussion, M22-series



General: When used in connection with gun ammunition, the term "primer" means the small tube of sensitive explosive which initiates the burning propellant charge. Primers are threaded into the base of the cartridge case in case-gun ammunition. For bag guns, the primer is inserted in the primer lock of the breech plug. Primers are classified according to the means of activating them as follows:

Percussion – impact-fired
Electrical – fired by electricity
Combination – fired by either percussion or electricity

Description: The M22 percussion primer is used with 75mm and 105mm howitzers and 3-inch anti-aircraft guns. The M22A1 differs from the M22 in the design of the brass tube that screws onto the primer head. The M22A2 differs from others in that it contains only 65 grains of black powder, compared to 75 grains. The M22A3 features a lengthened firing plug. The M22-series is essentially the same as the M23A1 and functions the same: when the firing pin of the cannon strikes the firing plug, it ignites the primer mixture. The resulting flame ignites the black powder charge, which in turn ignites the propellant in the cartridge case.

Length ..... 7.68 inches
Diameter, head ..... .62 inches
Weight ..... 1,693.2 grains
Used in ..... 75mm and 105mm
Howitzer and 3" anti-aircraft gun ammunition

Summary of Propellants, Explosives and Pyrotechnics (PEP)

COMPONENT	PEP	QUANTITY
Primer, percussion, M22-	Priming composition #70:	Less than 1 grain*

series	• Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	65 - 75 grains

* 15.4 grains = 1 gram; 7,000 grains = 1 pound

References:

TR 1355-75A, Mobile Artillery Ammunition, 75mm, 21 November 1927

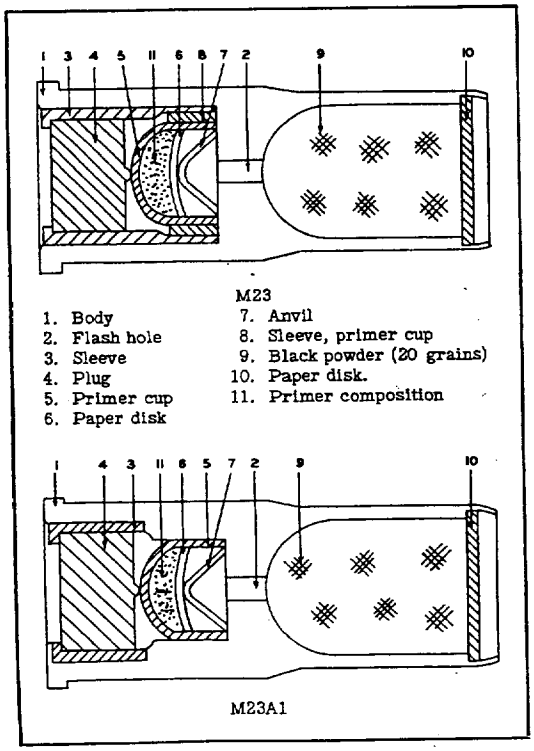
TR 1370-A, *Miscellaneous Ammunition; Ammunition, General*, 24 March 1930

OS 9-20, Ordnance School Text, *Artillery Ammunition,* Vol. 1, February 1943

TM 9-1904, *Ammunition Inspection Guide*, 2 March 1944

TM 9-1901, *Artillery Ammunition*, 29 June 1944

Primer, Percussion, M23-series



General: When used in connection with gun ammunition, the term "primer" means the small tube of sensitive explosive which initiates the burning propellant charge. Primers are threaded into the base of the cartridge case in case-gun ammunition. For bag guns, the primer is inserted in the primer lock of the breech plug. Primers are classified according to the means of activating them as follows:

Percussion – impact-fired
Electrical – fired by electricity
Combination – fired by either percussion or electricity

Description: The M23 percussion primer is used with 37mm, 40mm and 75mm ammunition. The M23A1 differs from the M23 in the elimination of the sleeve of the primer cup. In the M23A2, the thickness of the firing plug was increased. When the firing pin of the cannon strikes the firing plug, it ignites the primer mixture. The resulting flame ignites the black powder charge, which in turn ignites the propellant in the cartridge case.

Length ..... 1.15 inches
Diameter, head ..... .62 inches
Weight ..... 345.0 grains

Used in ..... 37mm, 40mm & 75mm ammunition

Summary of Propellants, Explosives and Pyrotechnics (PEP)

COMPONENT	PEP	QUANTITY
Primer, percussion, M23-series	Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%)	Less than 1 grain*
	Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	65 - 75 grains

* 15.4 grains = 1 gram; 7,000 grains = 1 pound

References:

TR 1355-75A, Mobile Artillery Ammunition, 75mm, 21 November 1927

TR 1370-A, *Miscellaneous Ammunition; Ammunition, General*, 24 March 1930

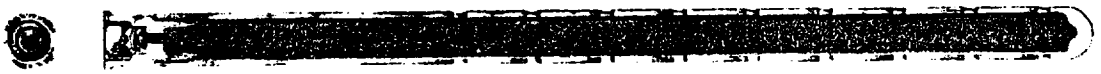
OS 9-20, Ordnance School Text, *Artillery Ammunition,* Vol. 1, February 1943

TM 9-1904, *Ammunition Inspection Guide*, 2 March 1944

TM 9-1901, *Artillery Ammunition*, 29 June 1944

TM 9-1901, *Artillery Ammunition*, 11 September 1950

Primer, Percussion, M28-series



PRIMER, PERCUSSION, M28A2 RA PD 80883A

General: When used in connection with artillery ammunition, the term "primer" means the small tube of sensitive explosive which initiates the burning propellant charge. Primers are threaded into the base of the cartridge case in case-gun ammunition. For bag guns, the primer is inserted in the primer lock of the breech plug. Primers are classified according to the means of activating them as follows:

Percussion – impact-fired
Electrical – fired by electricity
Combination – fired by either percussion or electricity

Description: The M28 percussion primer is used with 75mm recoilless rifle, 105mm howitzer, 76mm, 90mm, 105mm guns and 3-inch anti-aircraft guns. It superseded the M21 percussion primer. The M28-series is similar to the M1B1A2 and functions the same as the M23A2: when the firing pin of the cannon strikes the firing plug, it ignites the primer mixture. The resulting flame ignites the black powder charge, which in turn ignites the propellant in the cartridge case.

Length ..... 10.26 inches
Diameter, head ..... .62 inches
Weight ..... 2,316.2 grains
Used in ..... 75mm recoilless rifle, 105mm howitzer, 76mm, 90mm, 105mm guns and 3-inch anti-aircraft gun ammunition

Summary of Propellants, Explosives and Pyrotechnics (PEP)

COMPONENT	PEP	QUANTITY
Primer, percussion, M28-series	Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%)	1 grain*
	Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	300 grains

* 15.4 grains = 1 gram; 7,000 grains = 1 pound

References:

TR 1355-75A, Mobile Artillery Ammunition, 75mm, 21 November 1927

TR 1370-A, *Miscellaneous Ammunition; Ammunition, General*, 24 March 1930

OS 9-20, Ordnance School Text, *Artillery Ammunition,* Vol. 1, February 1943

TM 9-1904, *Ammunition Inspection Guide*, 2 March 1944

TM 9-1901, *Artillery Ammunition*, 29 June 1944

TM 9-1901, *Artillery Ammunition*, 11 September 1950

Primer, Percussion, M31-series

PRIMER, PERCUSSION, M31A2

General: When used in connection with gun ammunition, the term "primer" means the small tube of sensitive explosive which initiates the burning propellant charge. Primers are threaded into the base of the cartridge case in case-gun ammunition. For bag guns, the primer is inserted in the primer lock of the breech plug. Primers are classified according to the means of activating them as follows:

Percussion – impact-fired
Electrical – fired by electricity
Combination – fired by either percussion or electricity

Description: The M31-series percussion primer is used in place of the M22-series with super-charged 75mm guns. The M31-series is similar to the M22-series and functions the same way: when the firing pin of the cannon strikes the firing plug, it ignites the primer mixture. The resulting flame ignites the black powder charge, which in turn ignites the propellant in the cartridge case.

Length ..... 7.68 inches
Diameter, head ..... .62 inches
Weight ..... 1,782.2 grains
Used in ..... 75mm supercharged gun ammunition

Summary of Propellants, Explosives and Pyrotechnics (PEP)

COMPONENT	PEP	QUANTITY
Primer, percussion, M31-series	Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%) • Antimony sulfide (17%) • TNT, Grade III (5%)	1 grain*
	Black powder: • Potassium nitrate (74%)	150 grains

	• Charcoal (15.6%) • Sulfur (10.4%)	

* 15.4 grains = 1 gram; 7,000 grains = 1 pound

References:

TR 1355-75A, Mobile Artillery Ammunition, 75mm, 21 November 1927

TR 1370-A, *Miscellaneous Ammunition; Ammunition, General*, 24 March 1930

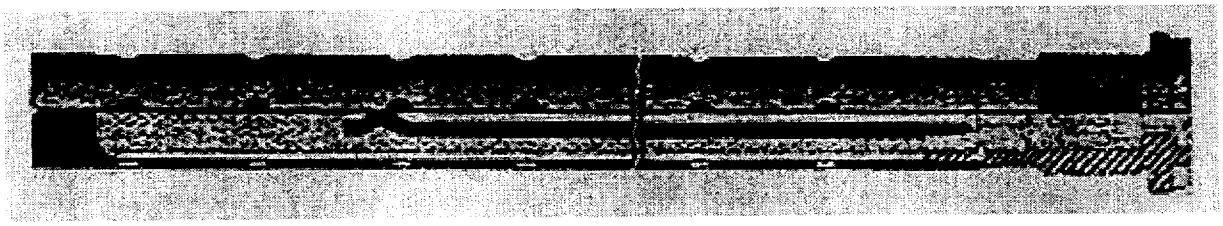
OS 9-20, Ordnance School Text, *Artillery Ammunition,* Vol. 1, February 1943

TM 9-1904, *Ammunition Inspection Guide*, 2 March 1944

TM 9-1901, *Artillery Ammunition*, 29 June 1944

TM 9-1901, *Artillery Ammunition*, 11 September 1950

Primer, Combination Mark 13



General: When used in connection with gun ammunition, the term "primer" means the small tube of sensitive explosive which initiates the burning propellant charge. Primers are threaded into the base of the cartridge case in case-gun ammunition. For bag guns, the primer is inserted in the primer lock of the breech plug. Primers are classified according to the means of activating them as follows:

Percussion – impact-fired
Electrical – fired by electricity
Combination – fired by either percussion or electricity

Large-sized primers have a main tube, or body; an ignition tube; and a cap, or caps. Activation of the cap, sets off the powder in the ignition tube, which then ignites the powder outside the ignition tube. The ignition tube and the main tube have holes spaced along their length, to provide even burning and ignition over a wider area of the next respective charge.

Percussion caps have a hammer-and –anvil construction to insure Impact over a wide area of the explosive.

Electric caps consist of a platinum or other resistance wire "bridge" wrapped with gun cotton. Heat from the bridges ignites the gun cotton for firing.

Over-all length.....9.745 inches
Diameter.....0.538 inches
Material.....Brass
Guns used in .....U.S. Navy 4"/50, 5"/25, 5"/38, 5"/51 and 6"/47 case guns.

Summary of Propellants, Explosives and Pyrotechnics (PEP)

COMPONENT	PEP	QUANTITY
Primer, percussion, MK13	Priming composition:	.4 grain*

	• Mercury fulminate (35%) • Potassium chlorate (35%) • Antimony sulfide (30%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	4,081 grains (9.33 ounces)

* 15.4 grains = 1 gram; 7,000 grains = 1 pound

References:

OP 4, *Ammunition*, September 1923

US Navy Bomb Disposal, *Projectiles and Fuzes*, 1 April 1943

OP 1212, *Projectile Fuzes*, 23 May 1945

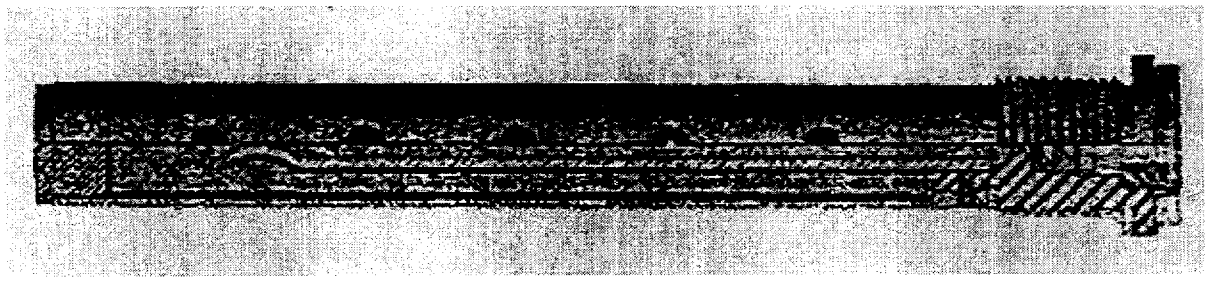
US Navy Bomb Disposal, *U. S. Navy Projectiles and Fuzes*, 15 June 1945

OP 1664, NAVSEA, *US Explosive Ordnance*, Vol. 1, 28 May 1947

Primers, Pyrotechnic and Incendiary Compositions for Small Arms Ammunition, Frankford Arsenal P-1, October 1954

US Army Defense Ammunition Center's "MIDAS" web site

Primer, Percussion, Mark 14



General: When used in connection with gun ammunition, the term "primer" means the small tube of sensitive explosive which initiates the burning propellant charge. Primers are threaded into the base of the cartridge case in case-gun ammunition. For bag guns, the primer is inserted in the primer lock of the breech plug. Primers are classified according to the means of activating them as follows:

Percussion – impact-fired
Electrical – fired by electricity
Combination – fired by either percussion or electricity

The Mark 14 (or "MK14") is used with U.S. Navy 3"/50 projectiles.

Over-all length.....5.021 inches
Diameter.....0.55 inches
Material.....Brass
Guns used in .....3"/50

Summary of Propellants, Explosives and Pyrotechnics (PEP)

COMPONENT	PEP	QUANTITY
Primer, percussion, MK14	Priming composition: • Mercury fulminate (35%) • Potassium chlorate (35%) • Antimony sulfide (30%)	.4 grain*
	Black powder: • Potassium nitrate (74%) • Charcoal (15.6%)	113.5 grains

	• Sulfur (10.4%)	

* 15.4 grains = 1 gram; 7,000 grains = 1 pound

References:

OP 4, *Ammunition*, September 1923

US Navy Bomb Disposal, *Projectiles and Fuzes*, 1 April 1943

OP 1212, *Projectile Fuzes*, 23 May 1945

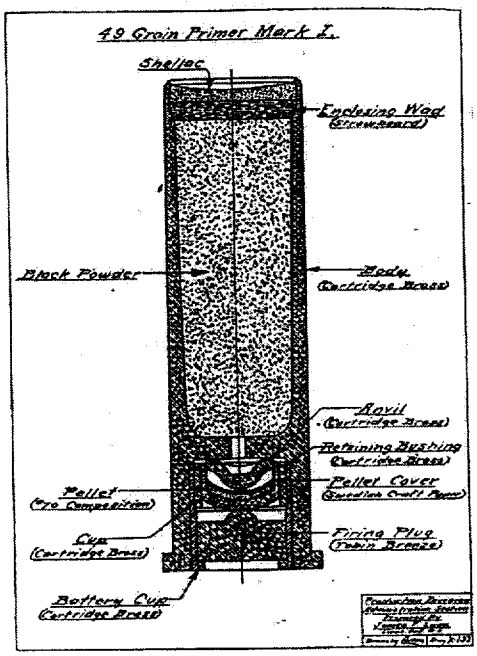
US Navy Bomb Disposal, *U. S. Navy Projectiles and Fuzes*, 15 June 1945

OP 1664, NAVSEA, *US Explosive Ordnance*, Vol. 1, 28 May 1947

Primers, Pyrotechnic and Incendiary Compositions for Small Arms Ammunition, Frankford Arsenal P-1, October 1954

US Army Defense Ammunition Center's "MIDAS" web site

Primer, Percussion, Mark I



General: When used in connection with gun ammunition, the term "primer" means the small tube of sensitive explosive which initiates the burning propellant charge. Primers are threaded into the base of the cartridge case in case-gun ammunition. For bag guns, the primer is inserted in the primer lock of the breech plug. Primers are classified according to the means of activating them as follows:

Percussion – impact-fired
Electrical – fired by electricity
Combination – fired by either percussion or electricity

Description: The Mark I (or "MKI") is used with artillery ammunition such as the shells for the M1916 75mm gun. The MKI is often called the "49-grain percussion primer, Mark I." It differs from other primers in having a firing plug that receives the blow from the firing pin of the cannon and transmits it to the percussion composition.

Summary of Propellants, Explosives and Pyrotechnics (PEP)

COMPONENT	PEP	QUANTITY
Primer, percussion, MKI	Priming composition #70: • Potassium chlorate (53%) • Lead thiocyanate (25%)	Less than 1 grain*

	• Antimony sulfide (17%) • TNT, Grade III (5%) Black powder: • Potassium nitrate (74%) • Charcoal (15.6%) • Sulfur (10.4%)	49 grains

* 15.4 grains = 1 gram; 7,000 grains = 1 pound

References:

Handbook of Ordnance Data, 15 November 1918

Field Artillery Ammunition, Department of Materiel, Field Artillery School, Document No. 7, 1922

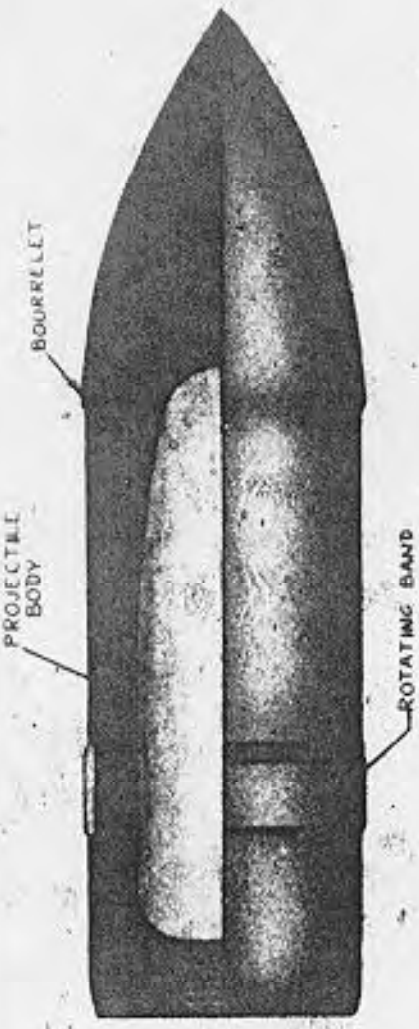
TR 1355-75A, Mobile Artillery Ammunition, 75mm, 21 November 1927

TR 1370-A, *Miscellaneous Ammunition; Ammunition, General*, 24 March 1930

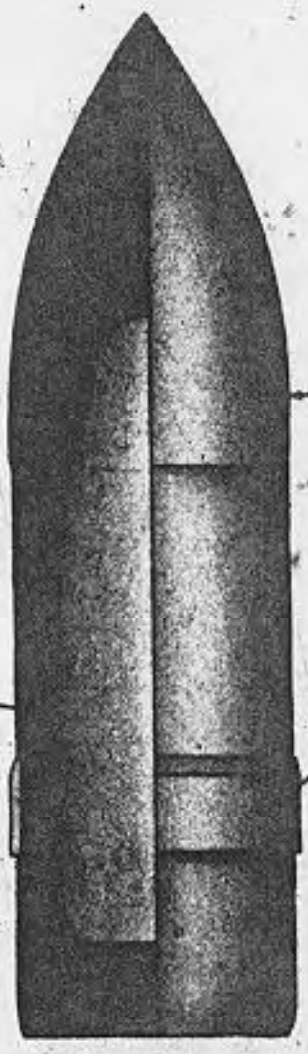
OS 9-20, Ordnance School Text, *Artillery Ammunition,* Vol. 1, February 1943

PROJECTILE DATA

NATIONALITY: U.S. NAVY	INFORMATION DATE: April, 1943
CALIBER: 6 Pounder	CLASSIFICATION: Common
TARGET: Used in Coast Guard guns, landing forces, etc.	



MK. III, MOD 3



MK. III, MOD 4

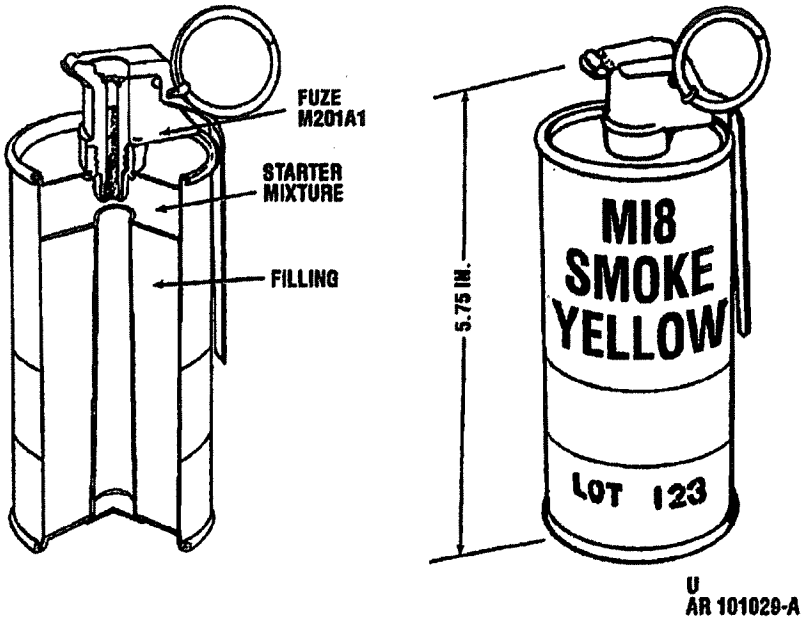
NATIONALITY: U.S. NAVY	INFORMATION DATE: April, 1943
CALIBER: 6 Pounder	CLASSIFICATION: Common
TARGET: Used in Coast Guard guns, landing forces, etc.	

1.	OVERALL LENGTH -	8.45"
2.	DIAMETER OF BASE	2.224"
3.	DISTANCE FROM BASE TO BAND	1.493"
4.	WIDTH OF BAND	.787"
5.	DIAMETER OF BOURRELET	2.239"
6.	TYPE OF FILLER	Black Powder
7.	WEIGHT OF FILLER	.24 lbs
8.	WEIGHT OF LOADED PROJECTILE	6.00 lbs
9.	CHARGE-WEIGHT RATIO	4.00 %
10.	TYPE OF GUN USED IN	6 Pdr.
11.	FUZES WHICH MAY BE USED IN PROJECTILE	Base: Mk. 8; Mk. 8 Mods 1, 2, 3, 4 & 5; Mk. 2 Mods 8 & 9.
12.	TRACER	In fuze
13.	CARTRIDGE CASE	Mk. 1
14.	PRIMER	Mk. 10 Mods 8 & 9

15. REMARKS:

This ammunition is used in Coast Guard guns. The bursting charge is Black Powder and T.N.T. or Black Powder alone. Black Powder is very sensitive and this should be kept in mind when unscrewing the fuze as some of the powder may have fallen down into the threads and the friction would cause detonation.

GRENADE, HAND: SMOKE, M18



Type Classification:

Std. LCC-A, AMCTC 3450

Use:

Colored Smoke Hand Grenade M18 is used for ground-to-air or ground-to-ground signaling.

Description:

The grenades may be filled with any one of four smoke colors: red, green, yellow or violet. Each grenade will emit smoke for 50 to 90 seconds. The grenade body is of thin sheet metal and is filled with red, green, yellow or violet smoke composition. The filler is topped with a starter mixture.

The hand grenade fuze M201A1 is a pyrotechnic delay-igniting fuze. The body contains a primer, first-fire mixture, pyrotechnic delay column, and ignition mixture. Assembled to the body are a striker, striker spring, safety lever, and safety pin with pull ring. The split end of the safety pin has an angular spread.

Safety clips are not required with these grenades.

Tabulated Data:

Grenade (with fuze):

Model(s)	M18
Body	Sheet metal
Weight	19 oz
Length	5.75 in.
Diameter	2.5 in.
Color	Light green w/black markings
Packing	1 per container; 16 per packing box.

Filler:

Type	Smoke composition
Weight	11-1/2 oz

Fuze:

Model(s)	M201A1
Type	Pyrotechnic delay-igniting
Primer	M39A1
Ignition mixture	Iron oxide, titanium, zirconium
Delay time	0.7-2 seconds
Weight	1.5 oz
Length	3.9 in.
Color	Gray or olive drab w/ black markings
Packing	Not separately issued
Safety device	Pull ring and safety pin

Federal Supply Code

DODACs:
Red 1330-G950
Green 1330-G940
Yellow.....1330-G945
Violet 1330-G955

Unit of Issue:

Each grenade packed .....1 per container; 16 per packing box.

Packing Data:

*Packing:
Weight (with contents) .....34.0 lb
Dimensions .....15.5 in. x 14.0 in. x 9.0 in.
Cube .....1.1 cu ft

NOTE
See DOD Consolidated Ammunition Catalog for additional information including NSNs.

Shipping and Storage Data:

Hazard class/division and storage compatibility group 1.4G
UNO serial number 0303
UNO proper shipping name .....Ammunition, smoke
DOT class.....Class C explosive
DOT marking .....SMOKE GRENADES, HANDLE CAREFULLY - KEEP FIRE AWAY

Functioning:

Removal of the safety pin permits release of the safety lever. When the safety lever is released, it is forced away from the grenade body by a striker acting under the force of a striker spring. The striker rotates on its own axis and strikes the percussion primer. The primer initiates the first fire mixture. The fuze delay element, ignition mixture, and grenade starter mixture and filler are initiated in turn by the preceding component. The pressure sensitive tape is blown off the emission holes and the colored smoke emits from these holes.

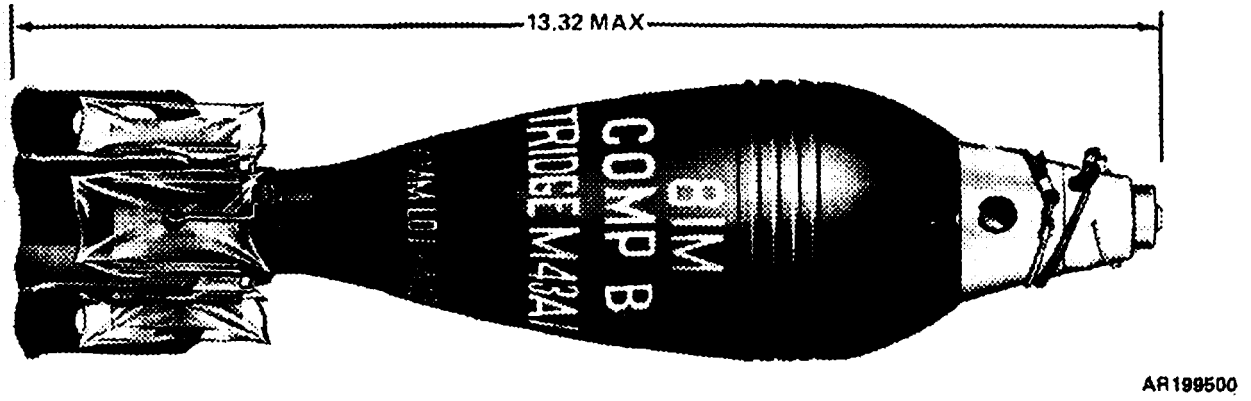
References:

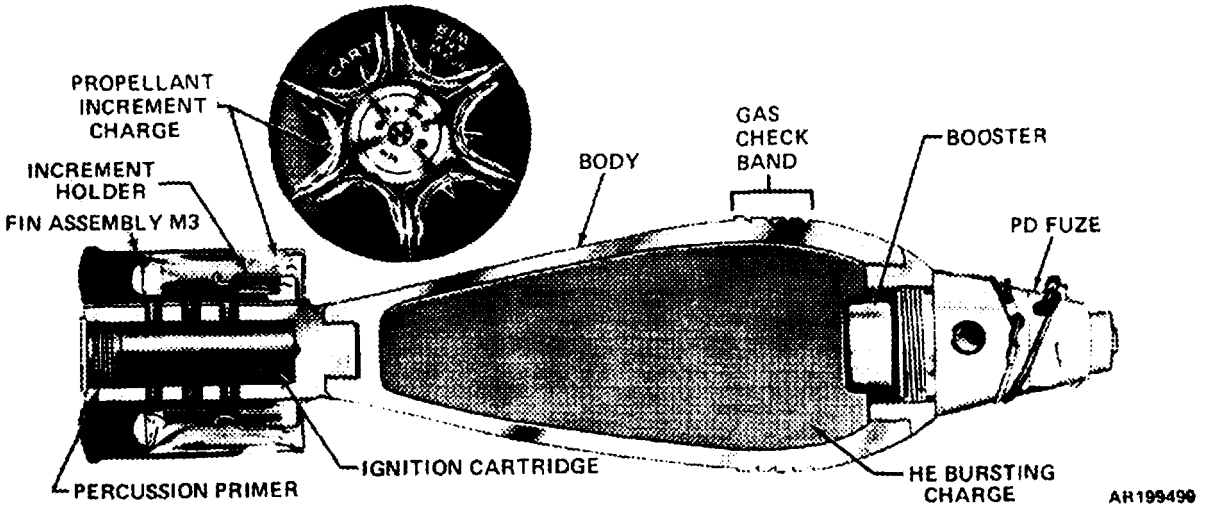
TM 9-1330-200
TM 9-1330-200-12
TM 9-1330-200-34
FM 23-30

Drawings:

Assembly 13-19-37
Fuze.....13-10-22
Packing (inner).....13-9-44
Packing (outer).....13-19-83

CARTRIDGE, 81 MILLIMETER: HE, M43A1 AND M43A1B1





Type Classification:

OBS 11756003.

Use:

This cartridge is used against personnel and light materiel, providing both fragmentation and blast effect.

Description:

The complete round consists of a projectile body, a point-detonating fuze, a tin assembly a propellant charge, and an ignition charge with a percussion primer. The projectile body is of forged steel, and is threaded internally at the nose to accept the fuze and at the base to accept the fin assembly. The projectile body is filled with Composition B high explosive.

Functioning:

When the cartridge is loaded, it slides down the mortar tube until the percussion primer in the ignition cartridge strikes the firing pin in the base cap of the mortar. The primer ignites the ignition cartridge, and the cartridge ignites the propellant charge. Rapidly expanding gases from the burning propellant expel the projectile from the tube and propel it to the target. The projectile is fin-stabilized in flight. The PD fuze functions on impact detonating the fuze booster charge and, in turn, the high explosive charge. The bursting charge shatters the projectile body, producing near optimum fragmentation and blast effect at the target.

Difference Between Models:

The two cartridges differ only in some minor metal parts.

Tabulated Data:

Complete Round:
- HE
- Weight: 07.5 lb
- Length: 13.32 in.
- Cannon used with: M1, M9, M29A1

Projectile:
- Body material: Forged steel
- Color: Olive drab w/yellow markings
- Filler and weight: Comp. B, 01.29 lb

Components:
- Ignition cartridge: M8 or M6
- Propellant charge: M1A1
- Percussion primer: M34
- Fin assembly: M3
- Fuze: PD, M525 series PD, M717

Temperature Limits:

Firing:
- Lower limit: -40°F
- Upper limit: +125°F

Storage:
- Lower limit: -80°F (for period not more than 3 days)
- Upper limit: +160°F (for period not more than 4 hr/day)

*Packing: 1 round in fiber containers; 4 containers in wooden box

*Packing box:
- Weight: 49.8 lb
- Dimensions: 17-3/4 x 9-11/16 x 10-15/32 in-
- Cube: 1.0 cu ft

*NOTE: See DOD Consolidated Ammunition catalog for complete packing data including NSN'S.

Shipping and Storage Data:

UNO serial number: 0321
Quantity-distance class: (08) 1,2
Storage compatibility group: E
Dot shipping class: A
DOT designation: AMMUNITION FOR CANNON WITH EXPLOSIVE PROJECTILES
DODAC: 1315-C225
Drawing number: 9218433

Ballistics:

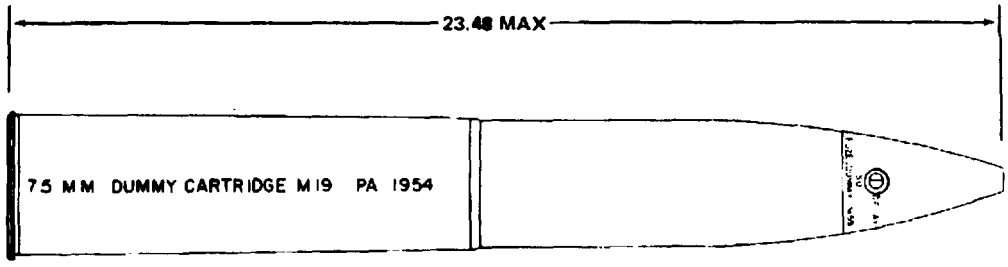
Charge	Muzzle Velocity (fps)	Maximum (m)	Range (yd)
** 0	238	517	565
1	351	1029	1111
2	443	1511	1649
3	519	1947	2120
4	590	2349	2560
5	656	2700	2950
6	719	3016	3290
7	779	3292	3590
8	834	3701	4050

**Charge 0 is the ignition cartridge only; Charge 1 is the ignition cartridge and one increment charge; Charge 8 is the ignition cartridge and eight increment charges.

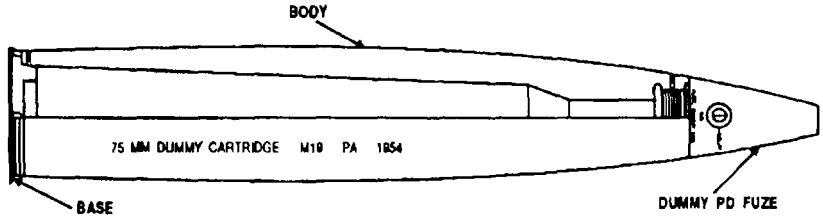
References:

AMC-P 700-3-3
SB 700-20
TM 9-3071-1
TM 9-1300-251-20

CARTRIDGE, 75-MILLIMETER: DUMMY, M19 OR M19B1



AR199745



U
AR 199744

Type Classification:

Obsolete OTCM 37119 dtd 1959.

Use:

Cartridge M19 or the alternative M19B1 is a dummy cartridge used for training purposes. The cartridge is used with 75-mm pack Howitzer M1A1.

Description:

The Cartridge M19 consists of a malleable iron body simulating a service round with projectile, cartridge case and a steel base; all assembled with a dummy fuze. The alternate dummy Cartridge M19B1 has a bronze body. The cartridge base has a plug simulating a primer. The dummy fuze simulates the weight and contour of a PD service fuze.

Functioning:

The cartridge is inert and nonfunctioning.

Tabulated Data:

Complete round:	
Type	Dummy
Weight	18.24 lb
Length	23.48 in.
Cannon used with	M1A1
Projectile:	
Body material:	
M19	Iron
M19B1	Bronze
Color:	
Old mfg.	Black or blue w/white markings
New mfg.	Bronze w/white markings
Fuze	Dummy M59

*Packing ---------- 1 round per fiber container; 2 fiber containers in wooden box

*Packing Box:
Weight ---------- 48 lb
Dimensions ---------- 28-11/16 x 9-11/16 x 6-15/32 in.
Cube ---------- 1.04 cu ft

*NOTE: See DOD Consolidated Ammunition Catalog for complete packing data including NSN's.

Shipping and Storage Data:

DOT desiccation ---------- DRILL CARTRIDGES INERT
DODAC ---------- 1315-C033
Drawing number ---------- 72-3-8

References:

SB 700-20
AMC-P 700-3-3
TM 9-1300-251-20

Fuzes.....Mk 18 Mods 2, 3, and 4
Mk 50 all Mods
Mk 63 Mod 0

The Fuze Mk 18 may be used in all Mods of this projectile; the Fuzes Mk 50 and Mk 63 are used only in the Mod 6 projectile.

Illuminating Contents Mk 3 are used in projectiles Mods 1–5; the Illuminating Contents Mk 4 Mod 4 are used in the Mod 6 projectile.

Part I — Chapter I — Section 4

5-INCH PROJECTILES

Figure 28. 5-inch Special Common Mk 38 Mods 1—3

5-inch Special Common Mk 38 Mods 1, 2, and 3

Guns used in.....5"/38
Over-all length, inches.....20.7
Diameter of base, inches.....4.985
Distance base to band, inches.....2.43
Width of band, inches.....2.25
Diameter at bourrelet, inches.....4.985
Filling.....Explosive D
Weight of filling, pounds.....2.04
Weight of loaded projectile, pounds....55.18
Charge/weight ratio.....3.69%
Cartridge Case.....Mk 5
Primer.....Mk 13 and all Mods
Tracer.....Mk 9
Fuzes.....Base — Mk 20 and all Mods

Figure 29. 5-inch Special Common Mk 42 Mods 0 and 1

5-inch Special Common Mk 42 Mods 0 and 1

Guns used in.....5"/54
Over-all length, inches.....26.0
Without windshield.....15.605
Diameter of base, inches.....4.26
Distance base to band, inches.....3.75
Width of band, inches.....2.25

Diameter at bourrelet, inches.....4.985
Filling.....Explosive D
Weight of filling, pounds.....2.14
Weight of loaded projectile, pounds.....70
Charge/weight ratio 3.06%
Cartridge Case .....Mk 6
Primer.....Mk 13 and all Mods
Tracer.....Mk 5 (probably)
Fuzes.....Base — Mk 64 Mod 0

The Tracer Mk 9 may possibly be used in this projectile, although the Mk 5 is the preferred assembly.

5-inch Special Common Mk 46 Mods 1 and 2

Guns used in.....5"/38
Over-all length, inches
With cap 20.70
Without cap 12.485
Diameter of base, inches.....4.985
Distance base to band, inches.....2.43
Width of band, inches.....2.25
Diameter at bourrelet, inches.....4.985
Filling .....Explosive D
Weight of filling, pounds.....2.04
Weight of loaded projectile, pounds....55.18
Charge/weight ratio.....3.69%
Cartridge Case .....Mk 5

Figure 30. 5-inch Special Common Mk 46 Mods 1 and 2

Primer.....Mk 13 and all Mods
Tracer .....Mk 9
Fuzes.....Base — Mk 20 Mods 0–2

5-inch Common Mk 15 Mods 12—14

(All but Mod 14 are obsolete.)

Guns used in.....5"/50 (bag)
5"/51 (bag)
5"/51 (case)
Over-all length, inches.....17.0
Diameter of base, inches.....4.96
Distance base to band, inches.....0.65
Width of band, inches.....1.67
Diameter at bourrelet, inches.....4.985
Filling.....Black powder and TNT
Weight of filling, pounds.....1.70
Weight of loaded projectile, pounds.....50.0
Charge/weight ratio.....3.46%
Cartridge Case.....Bag gun
Primer .....Mk 15 Mod 1
Tracer.....Integral in fuze
Fuzes.....Base — Mk 10 Mod 4 (B.I.F.)

When used in the 5"/51 case gun, Cartridge Case Mk 3 and Primer Mk 13 and all Mods are employed.

The Base Fuze Mk 10 Mod 9 may be used if the Mk 10 Mod 4 is unavailable.

The Mod 14 projectile may be issued B.L. & P. or B.L. & T. with adapter and Tracer Mk 6 Mod 1 for target practice.

Figure 31. 5-inch Common Mk 15 Mods 12 and 14

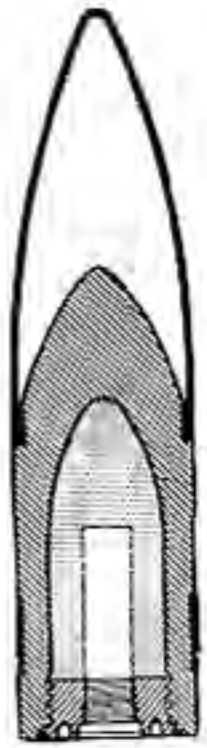


Figure 32. 5-inch Common Mk 32 Mods 1—4

5-inch Common Mk 32 Mods 1—4

Guns used in.....5"/38
Over-all length, inches
With cap & windshield.....20.7
Without cap & windshield.....13.6
Diameter of base, inches.....4.973
Distance base to band, inches.....2.43
Width of band, inches.....2.25
Diameter at bourrelet, inches.....4.985
Filling.....Explosive D
Weight of filling, pounds.....2.58
Weight of loaded projectile, pounds....54.00
Charge/weight ratio.....5.0%
Cartridge Case.....Mk 5
Primer.....Mk 13 and all Mods
Tracer.....Mk 9
Fuzes.....Base — Mk 20 and all Mods

5-inch H.C. Mk 39 Mods 1 and 2

Guns used in.....5"/51
Bag or case gun
Over-all length, inches
With nose fuze.....17.0
Without nose fuze.....13.18
Diameter of base, inches.....4.985
Distance base to band, inches.....1.15
Width of band, inches.....2.0
Diameter at bourrelet, inches.....4.985
Filling.....Explosive D
Weight of filling, pounds.....3.65
Weight of loaded projectile, pounds.....50.0
Charge/weight ratio.....7.0%
Cartridge Case.....Bag gun
Primer.....Mk 15 Mod 1
Tracer.....Mk 5 Mod 1
Fuzes
Base.....Mk 28 and Mods
Nose.....Mk 29 Mods 2 and 3 (P.D.F.)
Mk 18 Mods 2, 3, and 4 (M.T.F.)
Mk 50 and all Mods (M.T.F.)
Mk 63 Mod 0 (M.T.F.)
Steel Nose Plug
Auxiliary Detonating Fuze
Mk 17 and Mods
Mk 46 Mod 0
Mk 54 Mod 0 and 1

Only a very few 5"/51 guns are in service in the fleet.

When employed in the 5"/51 case gun, Cartridge Case Mk 3 and Primer Mk 13 and all Mods are used.

The Auxiliary Detonating Fuze Mk 54 is replacing the Mk 17 and Mk 46 in all assemblies.

Figure 33. 5-inch H.C. Mk 39 Mods 1 and 2

Figure 34. 5-inch H.C. Mk 41 Mod 0

5-inch H.C. Mk 41 Mod 0

Guns used in.....5"/54
Over-all length, inches.....26.0
Without nose fuze.....22.28
Diameter of base, inches.....4.26
Distance base to band, inches.....3.75
Width of band, inches.....2.25
Diameter at bourrelet, inches.....4.985
Filling.....Explosive D
Weight of filling, pounds.....7.59
Weight of loaded projectile, pounds.....70
Charge/weight ratio.....10.84%
Cartridge Case.....Mk 6
Primer.....Mk 13 and all Mods
Tracer.....Mk 9 (probably)
Fuzes
Base.....Mk 28 and all Mods
Nose.....Mk 25 Mod 1 (M.T.F.)
Mk 30 Mods 2 and 3 (P.D.F.)
Mk 59 Mod 0 (V.T.F.)
Auxiliary Detonating Fuze
Mk 43 Mod 1
Mk 44 Mods 0 and 1

The Tracer Mk 5 may be used in this projectile, although the Mk 9 is the preferred assembly.

When the V.T. Fuze Mk 59 is employed, the projectile adapter is removed, and no base fuze or tracer is employed. The base is closed by a gas-checked base-fuze plug.

When the V.T. Fuze Mk 59 is used in this projectile, the Auxiliary Detonating Fuze Mk 44 is used instead of the Mk 43. With all other types of nose fuzing, the Auxiliary Detonator Mk 43 is employed.

5-inch A.A. Common Mk 28 Mod 9 (Obsolete)

Guns used in.....5"/25
Over-all length, inches
With nose fuze.....20.70
Without nose fuze.....16.945
Diameter of base, inches.....4.973
Distance base to band, inches.....2.43
Width of band, inches.....2.0
Diameter at bourrelet, inches.....4.985
Filling.....Exp. D, Comp. A
Weight of filling, pounds.....7.33

Figure 35. 5-inch A.A. Common Mk 28 Mod 9

Weight of loaded projectile, pounds.....51.7
Charge/weight ratio.....14.0%
Cartridge Case.....Mk 4
Primer.....Mk 13 and all Mods
Tracer .....None
Fuzes
Nose.....Mk 32 all Mods (V.T.F.)
Mk 40 all Mods (V.T.F.)
Auxiliary Detonating Fuze
Mk 17 and Mods
Mk 46 Mod 0
Mk 54 Mod 0

This projectile is fuzed with V.T. fuzes only. The projectile adapter is removed, and a gas-checked base plug is inserted. No tracer or base fuze is used with this projectile.

The Fuze Mk 40 and Mods is currently replacing the Mk 32 and Mods in all assemblies. The Auxiliary Detonating Fuze Mk 54 is replacing the Fuzes Mk 17 and Mk 46 in all assemblies.

This round is also issued B.L. & P. or B.L. & T. with the Tracer Mk 6 and adapter, or a cut-off Base Fuze Mk 13 for target practice.

5-inch A.A. Common Mk 31 Mods 1—11

Guns used in.....5"/38
Over-all length, inches
With nose fuze.....20.7
Without nose fuze.....16.625
Diameter of base, inches.....4.97
Distance base to band, inches.....2.43
Width of band, inches.....2.25
Diameter at bourrelet, inches.....4.985
Filling.....Exp. D, Comp. A
Weight of filling, pounds.....7.25
Weight of loaded projectile, pounds....55.12
Charge/weight ratio.....13.33%
Cartridge Case .....Mk 5
Primer .....Mk 13 and all Mods
Tracer .....None
Fuzes
Nose.....Mk 32 and all Mods (V.T.F.)
Mk 40 and all Mods (V.T.F.)
Mk 53 and all Mods (V.T.F.)
Auxiliary Detonating Fuze
Mk 17 and all Mods
Mk 44 Mod 0 and 1
Mk 46 Mod 0
Mk 54 Mod 0 and 1

The Mk 31 projectile was originally designed to receive the Base Fuze Mk 13, which is now obsolete. The projectile will now be found fitted only with V.T. fuzes and a plug in the base.

The Nose Fuze Mk 40 is replacing the Mk 32 and Mods. With these fuzes, the projectile adapter will be removed, and the Auxiliary Detonating Fuze Mk 54 will be employed, replacing the previously used Auxiliary Detonating Fuzes Mk 17 and Mk 46.

When the V.T. Fuze Mk 53 is used, the projectile adapter is removed and the Auxiliary Detonating Fuze Mk 44 employed.

This projectile is also issued B.L. & P. or B.L. & T. with an adapter and the Tracer Mk 6, or Cut-off Base Fuze Mk 13, for target practice.

5-inch A.A. Common Mk 34 Mod 10

Guns used in.....5"/38
Over-all length, inches
With nose fuze.....20.7
Without nose fuze.....17.2
Diameter of base, inches.....4.97
Distance base to band, inches.....2.43
Width of band, inches.....2.25
Diameter at bourrelet, inches.....4.985
Filling.....Exp. D, Comp. A
Weight of filling, pounds.....7.25
Weight of loaded projectile, pounds....55.18
Charge/weight ratio 13.33%
Cartridge Case.....Mk 5
Primer.....Mk 13 and all Mods
Tracer .....Mk 9
Fuzes
Base .....Mk 28 and all Mods
Nose.....Mk 18 Mods 2, 3, and 4 (M.T.F.)
Mk 50 Mods 0–4 (M.T.F.)
Mk 29 Mods 2 and 3 (P.D.F.)
Mk 32 and all Mods (V.T.F.)
Mk 40 and all Mods (V.T.F.)
Mk 63 Mod 0 (M.T.F.)
Auxiliary Detonating Fuze
Mk 17 and all Mods
Mk 46 Mod 0
Mk 54 Mods 0 and 1

This projectile consists of a Projectile Mk 31 Mod 10 modified to receive a Base Fuze Mk 28.

The Auxiliary Detonating Fuze Mk 54 is replacing the Auxiliary Detonating Fuzes Mk 17

and Mk 46 in all assemblies.

The V.T. Fuze Mk 40 and its Mods are replacing the Mk 32 and Mods. When these fuzes are used in this projectile, no base fuze or tracer is employed. The projectile adapter is removed, and a gas-checked fuze-hole plug is fitted in the base.

5-inch A.A. Common Mk 35 Mods 1—12

Guns used in ..... 5"/38 (case)
5"/51 (bag)
Over-all length, inches
With nose fuze 20.70
Without nose fuze 17.225
Diameter of base, inches 4.973
Distance base to band, inches 2.43
Width of band, inches 2.25
Diameter at bourrelet, inches 4.985
Filling ..... Exp. D, Comp. A
Weight of filling, pounds 7.25
Weight of loaded projectile, pounds 55.18
Charge/weight ratio 13.1%
Cartridge Case ..... Mk 5
Primer ..... Mk 13 and all Mods
Tracer ..... Mk 9
Fuzes
Base ..... Mk 28 and all Mods
Nose ..... Mk 18 Mods 2, 3, and 4 (M.T.F.)
Mk 50 and all Mods (M.T.F.)
Mk 61 Mod 0 (M.T.F.) (See below.)
Mk 29 Mods 2 and 3 (P.D.F.)
Mk 32 and all Mods (V.T.F.)
Mk 40 and all Mods (V.T.F.)
Mk 53 and all Mods (V.T.F.)
Mk 63 Mod 0 (M.T.F.)
Auxiliary Detonating Fuze
Mk 17 and all Mods
Mk 44 Mods 0 and 1
Mk 46 Mod 0
Mk 54 Mods 0 and 1

The Nose Fuze Mk 40 is replacing the Mk 32 when used in the 5"/38 gun. With the 5"/51 bag gun, however, Nose Fuze Mk 32 Mod 40, rather than the Nose Fuze Mk 40, is employed. When these fuzes are used, the projectile adapter is removed, a gas-checked base fuze plug, with no tracer, is fitted into the base, and

Figure 36. 5-inch A.A. Common Mk 35 Mods 1—12

the Auxiliary Detonating Fuze Mk 54 is employed.

When the V.T. Fuze Mk 53 is used, the base is fitted with a gas-checked base-fuze plug, with no tracer, the projectile adapter is removed, and the Auxiliary Detonating Fuze Mk 44 is employed.

The Auxiliary Detonating Fuze Mk 54 is replacing the Fuzes Mk 17 and Mk 46 in all assemblies.

With the 1200 f/s I.V. reduced charge for the 5"/38 gun, Nose Fuzes Mk 61 and Mk 29 Mods 2 and 3 with the Auxiliary Detonating Fuze Mk 54 will be employed.

All Mods of this projectile, except Mod 6, may be issued B.L. & P. or B.L. & T. with the Tracer Mk 9 and adapter for target practice.

When these projectiles are used in the 5"/51 bag gun, the Primer Mk 15 Mod 1 is used.

5-inch A.A. Common Mk 36 Mods 1—4

Guns used in ..... 5"/25
Over-all length, inches
With nose fuze 20.70
Without nose fuze 17.225
Diameter of base 4.973
Distance base to band, inches 2.43
Width of band, inches 2.00

Diameter at bourrelet, inches 4.985
Filling . . . . . Exp. D, Comp. A
Weight of filling, pounds 7.25
Weight of loaded projectile, pounds 53.85
Charge/weight ratio 13.5%
Cartridge Case . . . . . Mk 4, Mk 4 Mod 2
Primer . . . . . Mk 13 and all Mods
Tracer . . . . . Mk 9
Fuzes
Base . . . . . Mk 28 and all Mods
Nose . . . . . Mk 18 Mods 2, 3, and 4 (M.T.F.)
Mk 50 and all Mods (M.T.F.)
Mk 29 Mods 1, 2, and 3 (P.D.F.)
Mk 32 and all Mods (V.T.F.)
Mk 40 and all Mods (V.T.F.)
Mk 53 and all Mods (V.T.F.)
Mk 63 Mod 0 (M.T.F.)
Auxiliary Detonating Fuze
Mk 17 and all Mods
Mk 46 Mod 0
Mk 44 Mod 0 and 1
Mk 54 Mod 0

When the V.T. fuzes are used, the projectile adapter is removed, and a gas-checked base-fuze plug, with no tracer, is fitted into the base.

V.T. fuzes are authorized for use in Mods 2–4 only of this projectile.

The Auxiliary Detonating Fuze Mk 54 is replacing the Auxiliary Detonating Fuzes Mk 17 and the Mk 46. The Auxiliary Detonating Fuze Mk 44 is used only in conjunction with the V.T. Fuze Mk 53.

All Mods of the Projectile Mk 36 are authorized for use with A.P. steel nose caps and for designation as "H.C." projectiles.

All Mods of the Projectile Mk 36 may also be issued B.L. & P. or B.L. & T. with the Tracer Mk 9 and adapter for target practice.

5-inch A.A. Common Mk 47 Mods 0 and 1

Guns used in . . . . . 5"/38
Over-all length, inches
With nose fuze 20.70
Without nose fuze 52.43
Diameter of base, inches 4.985
Distance base to band, inches 1.93
Width of band, inches 2.25
Diameter at bourrelet, inches 4.985
Filling . . . . . Explosive D
Weight of filling, pounds 7.11
Weight of loaded projectile, pounds 55.18
Charge/weight ratio 7.7%
Cartridge Case . . . . . Mk 5
Primer . . . . . Mk 13, all Mods
Tracer . . . . . Mk 9
Fuzes . . . . . Same as Mk 35

The Mod 1 differs from the Mod 0 in that the band seat has different knurling.

Only a few thousand of these A.A. Common Projectiles Mk 47 were made.

The Mk 47 was made to furnish a heavier projectile for some newer light-weight fuzes, hence maintaining a standard ballistic weight. However, it has been fuzed exactly like the Mk 35 up to the present time.

5-inch Illuminating Mk 25
(a) Mods 1, 3, 4, 5, 6
(b) Mod 2 (Obsolete)

Guns used in . . . . . (a) 5"/51 (bag or case)
(b) 5"/25 (case)
Over-all length, inches
With nose fuze 19.975
Without nose fuze 15.865
Diameter of base, inches 4.948
Distance base to band, inches 2.43
Width of band, inches 2.0
Diameter at bourrelet, inches 4.985
Filling . . . . . Expelling charge is black powder; flare, magnesium.
Weight of filling . . . . Expelling charge is 2.5 ounces.
Weight of loaded projectile, pounds 54.5
Cartridge Case . . . . . (a) Mk 3
(b) Mk 4, Mk 4 Mod 3
Primer . . . . . Mk 13 and all Mods
Fuzes
Nose . . . . . Mk 18 Mods 2, 3, and 4
Mk 50 and all Mods
Mk 63 Mod 0

The Mod 2 projectile, used in the 5"/25 gun, is identical to the Mod 1, except for modification of the rotating band.

When these projectiles are used in the 5"/51 bag gun, the Primer Mk 15 Mod 1 is used, and the Nose Fuzes Mk 50 and Mk 63 may be employed.

Use of the Nose Fuzes Mk 50 and Mk 63 is not authorized with rounds used in the 5"/25 and 5"/51 case guns.

The Illuminating Contents Mk 3 are used with projectiles Mods 1 through 4; projectiles Mods 5 and 6 are assembled with Illuminating Contents Mk 4 Mod 5 when used in the 5"/51 bag gun, Illuminating Contents Mk 3 when used in the 51"/51 case gun.

5-inch Illuminating and 5-inch W.P. Mk 27 Mods 1—10

Guns used in.....5"/25
Over-all length, inches
With nose fuze.....20.0
Without nose fuze.....15.8
Diameter of base, inches.....4.968
Distance base to band, inches.....1.93
Width of band, inches.....2.00
Diameter at bourrelet, inches.....4.985
Filling.....Expelling charge is black powder; flare, magnesium.
Weight of filling....Expelling charge is 2.5 ounces.
Weight of loaded projectile
53.65 pounds — Mods 1–4
54.50 pounds — Mods 5–10
Cartridge Case.....Mk 4, Mk 4 Mod 2
Primer.....Mk 13 and all Mods
Fuzes
Nose.....Mk 63 Mod 0
Mk 18 Mods 2, 3, 4
Mk 50 and all Mods

Mods 1, 2, 3, 4 have a band diameter of 5.10 inches, and Mods 5, 6, 7, 8, 9, and 10 have a band diameter of 5.12 inches.

The Illuminating Contents Mk 4 Mod 5 are used in this projectile.

The 5-inch W.P. projectile utilizes the Mk 27 body with incendiary contents.

5-inch Illuminating Mk 30 Mods 1—8

Guns used in.....5"/38
Over-all length, inches
With nose fuze.....20.0
Without nose fuze.....15.8
Diameter of base, inches.....4.968
Distance base to band, inches.....2.43
Width of band, inches.....2.25

Figure 37. 5-inch Illuminating Mk 30 Mods 1—8

Diameter at bourrelet, inches.....4.985
Filling.....Expelling charge is black powder; flare, magnesium.
Weight of filling....Expelling charge is 2.5 ounces.
Weight of loaded projectile, pounds.....54.5
Cartridge Case.....Mk 5
Primer.....Mk 13 and all Mods
Fuzes
Nose.....Mk 63 Mod 0
Mk 18 Mods 2, 3, 4
Mk 50 and all Mods

The Illuminating Contents Mk 4 Mod 5 are used in this projectile.

5-inch Illuminating Mk 43 Mod 0

Guns used in.....5"/54
Over-all length, inches.....26.0
Without nose fuze.....22.28
Diameter of base, inches.....4.973
Diameter at bourrelet, inches.....4.985
Filling.....Expelling charge is black powder; flare, magnesium.
Weight of filling....Expelling charge is 2.5 ounces.
Weight of loaded projectile, pounds.....70
Cartridge Case.....Mk 6

Primer.....Mk 13 and all Mods
Fuzes.....Nose—Mk 25 Mod 1

The Illuminating Contents Mk 4 Mod 5 are used in this projectile, modified to use a lengthened spacer sleeve.

This projectile is identical to the 5-inch Illuminating Projectile Mk 48, except that the latter has a double rotating band.

5-inch Illuminating Mk 44 Mod 1

Guns used in.....5"/38
Over-all length, inches
With nose fuze.....19.97
Without nose fuze.....16.465
Diameter of base, inches.....4.973
Distance base to band, inches.....2.43
Width of band, inches.....2.25
Diameter at bourrelet, inches.....4.985
Filling.....Expelling charge is black powder; flare, magnesium.
Weight of filling....Expelling charge is 2.5 ounces.
Weight of loaded projectile, pounds.....54.5
Cartridge Case.....Mk 5
Primer.....Mk 13 and all Mods
Fuzes
Nose.....Mk 18 Mods 2, 3, and 4
Mk 50 Mods 0–4
Mk 63 Mod 0

This projectile is currently assembled with the Illuminating Contents Mk 4 Mod 5

5-inch Illuminating and 5-inch W.P. Mk 45 Mod 0

Guns used in.....5"/25
Over-all length, inches
With nose fuze.....19.97
Without nose fuze.....16.465
Diameter of base, inches.....4.968
Distance base to band, inches.....1.93
Width of band, inches.....2.0
Diameter at bourrelet, inches.....4.985
Filling.....Expelling charge is black powder; flare, magnesium.
Weight of filling....Expelling charge is 2.5 ounces.
Weight of loaded projectile, pounds.....54.5
Cartridge Case.....Mk 4, Mk 4 Mod 2
Primer.....Mk 13 and all Mods
Fuzes
Nose.....Mk 18 Mods 2, 3, and 4
Mk 50 and all Mods
Mk 63 Mod 0

This projectile is loaded with the Illuminating Contents Mk 4 Mod 5.

The W.P. projectile uses the body of the Mk 45 and the incendiary contents of the W.P. shell.

5-inch Illuminating Mk 48 Mod 0

Guns used in.....5"/54
Over-all length, inches.....26.0
Without nose fuze.....22.28
Diameter of base, inches.....4.973
Diameter at bourrelet, inches.....4.985
Filling.....Expelling charge is black powder; flare, magnesium.
Weight of filling....Expelling charge is 2.5 ounces.

Figure 38. 5-inch Illuminating Mk 48 Mod 0

Weight of loaded projectile, pounds.....70
Cartridge Case.....Mk 6
Primer.....Mk 13 and all Mods
Fuzes.....Nose—Mk 25 Mod 1
The Illuminating Contents Mk 4 Mod 5 are used, modified for a lengthened spacer sleeve.

The projectile is identical in all respects to the Mk 43, except that it has a double rotating band.

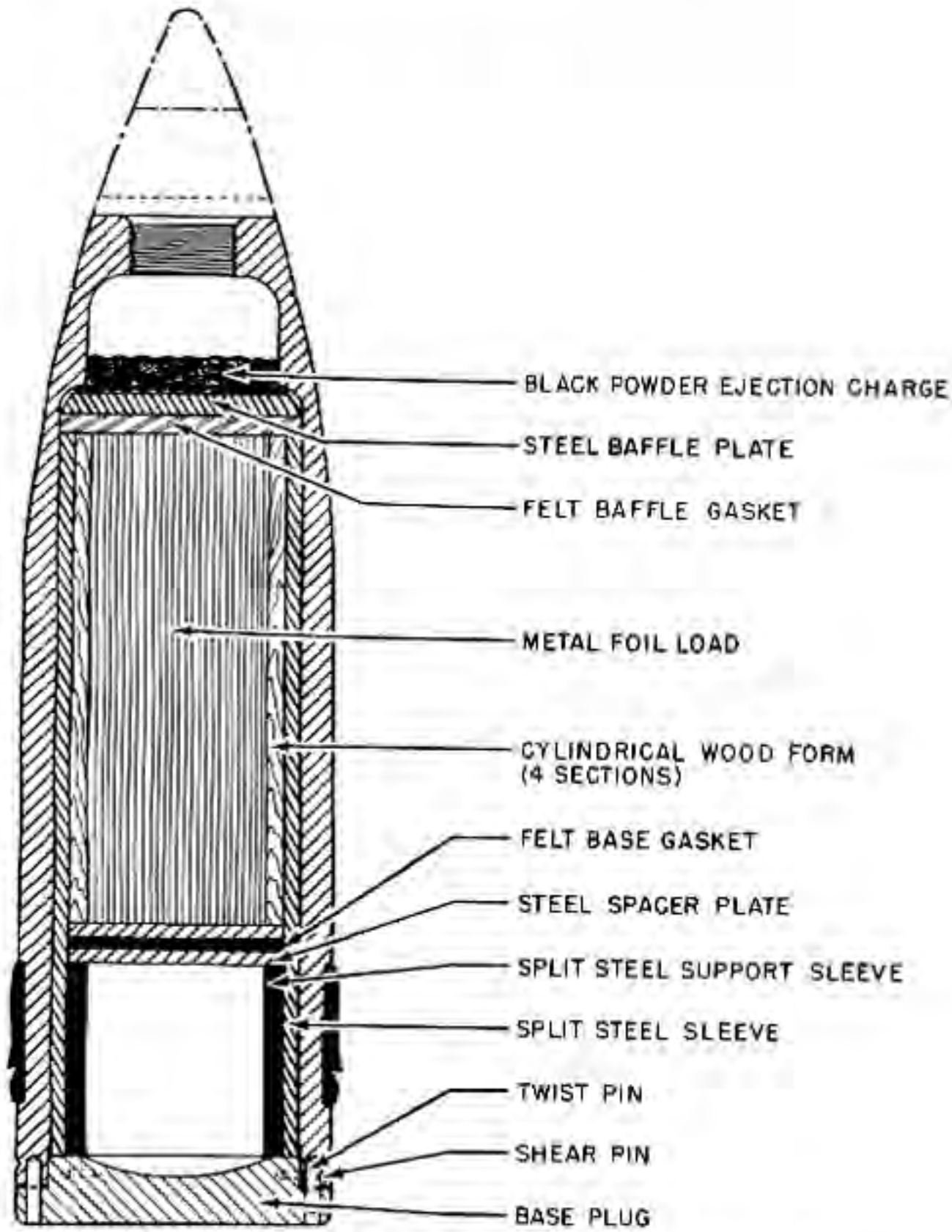
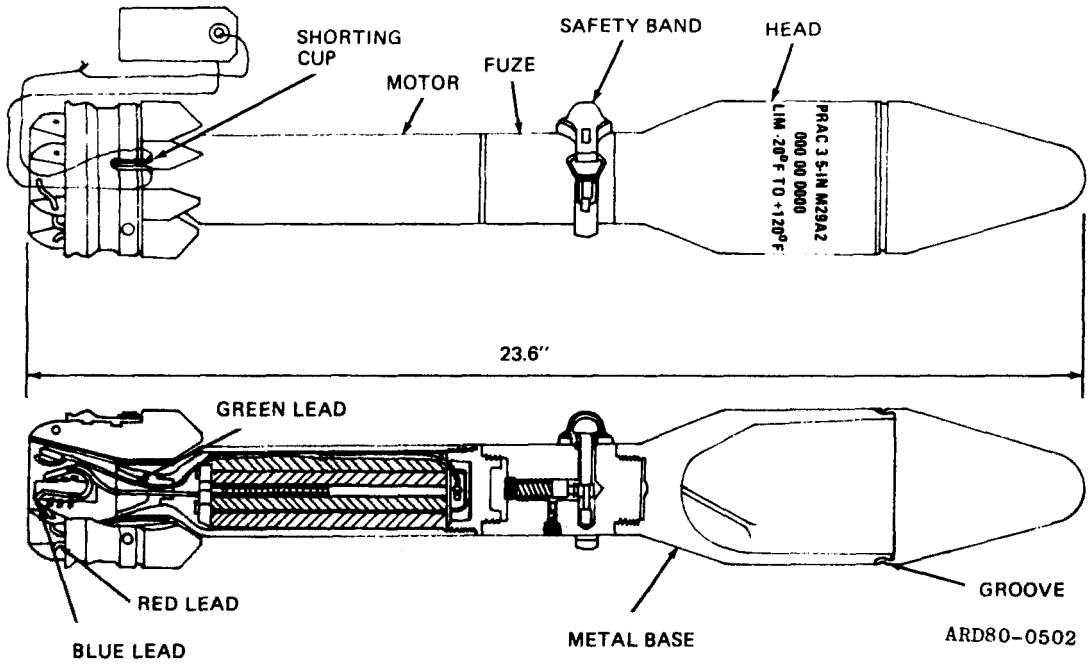


Figure 39. 5-inch Window Projectile—Window Load Mk 1 Mod 1

ROCKET, PRACTICE, 3. 5-INCH M29A2



Type Classification:

STD (LLC-B) AMCTCM 36841 (M29A2)

Use:

For training personnel in use, care and handling of service rockets.

Description:

a. The warhead is completely inert. The practice rockets can be fired at buttoned-up, modified target tanks without danger to tank crews. The practice rockets have the same flight characteristics as the HEAT rocket.

b. The dummy fuze rocket M405 which series as a coupling for the warhead and motor, is cylindrical. It is threaded externally at the forward end to fit into the warhead assembly, and internally at the rear end to receive the motor assembly. A safety band fits around the seals and fuze. This fuze incorporates a double-locking, bore-riding, round ejection pin assembly simulating that used in base detonating (BD) fuze M404A2. The body of the fuze and the safety band are painted blue.

c. The motor assembly consists of a tube which houses the propellant and igniter, The fin assembly is securely attached to this tube. The front end of the tube is assembled to the base of the fuze. The rear end forms a nozzle. The cylindrical motor cavity is divided into four sections by two spacer plates which support the grains of propellant powder.

d. Each grain of propellant is 5-in. long and approximately 3/8-in. in

diameter. Three grains are placed in each of the four sections formed by the spacer plates. Each lot of propellant is adjusted at the time of manufacture to give standard velocity. The igniter ignites the propellant.

e. The igniter consists of a short, cylindrical plastic case containing a small black powder charge and an electrical squib. It is assembled in the forward end of the motor on top of the propellant spacer plates. The leads of the electrical squib, running parallel to the grains of propellant, pass from the igniter through the nozzle into the expansion cone. A green lead (ground) wire is connected to the aluminum support ring of the contact ring assembly. A red lead (positive) wire is attached to a pin which is insulated from the support ring, but is in contact with the copper contact band. These connections are positioned 180° apart. Blue lead is used for test purpose only.

f. The fin assembly consists of six aluminum alloy fins and a contact ring assembly. The contact ring assembly, which encircles the fins, consists of three rings. An aluminum support ring, which is innermost, is separated from the copper contact ring by a plastic insulating ring. The fins are spot welded to the expansion cone; the expansion cone is press-fitted to the rear of the motor tube.

Differences between Models:

a. The M29A1 and M29A2 rockets are similar in appearance to the M28A2. The M29 series differ in that they have a crimping groove at the juncture of the warhead body and ogive. The rockets of an early manufacture are assembled with M28A2 rocket warhead metal parts inert loaded with plaster of paris.

b. The M29A1 warhead differs from the M29A2 warhead in the head and trap and spacer assembly. The ogive is attached to the head body of four screws staked to the ogive. Some rockets may have the cast trap and square spacer blades.

The warhead being inert, no functions occur when the rocket is fired. The rocket is strictly for training purpose.

Tabulated Data:

Rocket:	
Model -----	M29A2
Type -------	Practice
Diameter ----	3.5 in.
Length (max) --	23.6 in.
Weight (approx) -----	9.00 lb
Performance:	
Operating temperature limits- -----	-20° to +120°F (-28. 6 to +48.4°C)
Muzzle velocity (at 70°F, approx) -----	334 fps (101.9 reps)
Range (max, approx) -----	945 yd (863.7 m)
Warhead:	
Type -------	Inert
Body -------	Cast iron
Color -------	Blue w/white markings
Diameter ----	3.5 in.
Length ------	10.5 in.
Weight ------	4.47 lb
Fuze:	
Model -------	M405A2
Type -------	Dummy
Diameter ----	2.0 in.
Length:	
Overall -----	3.42 in.
TO shoulder (max)-------	2.94 in.
Weight --------	1.01 lb

Motor:
- Diameter (at fins) - - - - - - - 3.5 in.
- Length - - - - - - 10.41 in.
- Weight - - - - - - 3.30 1b
- Thrust - - - - - - 6,000 to 10,000 lbs

Propellant initiating train:
- Igniter:
  - Model - - - - - - M20A1
  - Charge (black powder) - - - - 0.125 ± 0.007 oz 3.54±2 g)
  - Electrical squib - - - - - - M2

Propelling charge:
- Propellant:
  - Model, - - - - - - M7
  - Type - - - - - - Solvent
  - Configuration- Monoperforated, cylindrical extruded grains (12)
  - Weight (new type) - - - - - - 0.44 lb (200 g)
  - Burning time:
    - At -20°F - - - 0.05 sec
    - At +120°F - - 0.02 sec

Launchers:
- M29A2 - - - - - - M20, M20A1, M20A1B1, M20B1
- M29A1 - - - - - - M20, M20B1

Packing - - - - - - - 1 per metal/fiber container; 3 containers per wooden box

Box:
- Weight (with contents) - - - - 53.0 lb
- Dimensions:
  - W/metal container - - - 29-9/16 in. x 14-1/16 in. x 6-19/32 in.
  - W/fiber container - - - 29-3/16 in. x 13-7/8 in. x 6-19/32 in.

Cube:
- W/metal container - - - - 1.6 ft^3
- W/fiber container - - - - 1.5 ft^3

Shipping and storage data:
- Storage class/ SCG - - - - - - - 1.2C (12)
- DOT shipping class - - - - - - - B
- DOT designation - - - ROCKET AMMUNITION WITH EMPTY PROJECTILES
- Field storage- - Group C

DODAC - - - - - - - 1340-H601

Drawings:
- Complete assy - 82-6-23
- Loading assy -- 82-6-23
- Fuze - - - - - - - Dummy 72-5-16
- Packing (inner)- 7549038
- Packing (outer)- 7549040

References:
- TM 9-1340-222-20
- TM 9-1340-222-34

APPENDIX G. MRSPP TABLES

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SITE ID: AL120 Proximity Fuze Range (H-22) **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10 ✓
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0 ✓

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91 Total = 86	EHE Rating B ✓
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70	EHE Rating D
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38	EHE Rating G

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12 **Classifications Within the CHE Module *Sources of CWM* Data Element**		
Classification	**Description**	**Score**
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0 ✓

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5 ✓
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 26	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B ✓	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest)	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: AL769 Ordnance Drop Zone (H-19) **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10 ✓
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5 ✓
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0 ✓

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91	EHE Rating B
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70	EHE Rating D
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47 Total = 46	EHE Rating F ✓
The MRS has an overall EHE module score less than 38	EHE Rating G

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12
Classifications Within the CHE Module *Sources of CWM* Data Element

Classification	Description	Score
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 26	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F ✓	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest)	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: AL771 Old Cable Site (H-24) **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10 ✓
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3 Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0 ✓

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2 ✓
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91 Total = 87	EHE Rating B ✓
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70	EHE Rating D
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38	EHE Rating G

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12 Classifications Within the CHE Module *Sources of CWM* Data Element		
Classification	**Description**	**Score**
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 Classifications Within the CHE Module *Information on the Location of CWM* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13 Classifications Within the CHE Module *Information on the Location of CWM* Data Element		
Classification	**Description**	**Score**

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4 ✓
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2 ✓
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 22	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B ✓	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest)	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: DA130 Arroyo del Coyote Demolition Area (H-13) **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8 ✓
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3 Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 **Classifications Within the EHE Module *Types of Activities/Structures* Data Element**		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4 ✓
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 **Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element**		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91 Total = 85	EHE Rating B ✓
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70	EHE Rating D
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38	EHE Rating G

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12
Classifications Within the CHE Module *Sources of CWM* Data Element

Classification	Description	Score
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13
Classifications Within the CHE Module *Information on the Location of CWM* Data Element

Classification	Description	Score

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5 ✓
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4 ✓
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 27	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B ✓	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest)	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: DA782 Explosive Disposal Area (H-7) **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2 Classifications Within the EHE Module *Source of Hazard* Data Element		
Classification	**Description**	**Score**
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5 ✓
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0 ✓

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91	EHE Rating B
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70 Total = 64	EHE Rating D ✓
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38	EHE Rating G

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12
Classifications Within the CHE Module *Sources of CWM* Data Element

Classification	Description	Score
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5 ✓
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 26	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D ✓	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest)	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: ED770 Experimental Range (H-28) **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3 Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0 ✓

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2 ✓
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91 Total = 83	EHE Rating B ✓
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70	EHE Rating D
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38	EHE Rating G

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12
Classifications Within the CHE Module *Sources of CWM* Data Element

Classification	Description	Score
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 Classifications Within the CHE Module *Information on the Location of CWM* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0 ✓

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5 ✓
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2 ✓
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 23	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B ✓	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest)	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: ML125 Field Firing Range (H-30) **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10 ✓
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3 Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0 ✓

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2 ✓
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91 Total = 82	EHE Rating B ✓
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70	EHE Rating D
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38	EHE Rating G

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12
Classifications Within the CHE Module *Sources of CWM* Data Element

Classification	Description	Score
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0 ✓

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4 ✓
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2 ✓
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 22	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B ✓	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest)	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: ML774 Gun Fan Site (H-12) **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3 Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5 ✓
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0 ✓

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91	EHE Rating B
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70 Total = 66	EHE Rating D ✓
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38	EHE Rating G

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12
Classifications Within the CHE Module *Sources of CWM* Data Element

Classification	Description	Score
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0 ✓

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5 ✓
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 26	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D ✓	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest)	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: ML781 Firing In-Abutment (H-3) **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2 Classifications Within the EHE Module *Source of Hazard* Data Element		
Classification	**Description**	**Score**
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3 Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0 ✓

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91 Total = 83	EHE Rating B ✓
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70	EHE Rating D
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38	EHE Rating G

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12
Classifications Within the CHE Module *Sources of CWM* Data Element

Classification	Description	Score
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 Classifications Within the CHE Module *Information on the Location of CWM* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5 ✓
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0 ✓

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 23	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B ✓	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest)	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: ML784 40mm Test and Training Range **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6 ✓
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0 ✓

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2 ✓
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91	EHE Rating B
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70	EHE Rating D
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38 Total = 35	EHE Rating G ✓

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12
Classifications Within the CHE Module *Sources of CWM* Data Element

Classification	Description	Score
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13
Classifications Within the CHE Module *Information on the Location of CWM* Data Element

Classification	Description	Score

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 **Classifications Within the CHE Module *Population Near Hazard* Data Element**		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1 ✓
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 18 **Classifications Within the CHE Module *Types of Activities/Structures* Data Element**		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2 ✓
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total =19	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest) ✓	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

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Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10 ✓
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3 Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10 ✓
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5 ✓
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2 ✓
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91	EHE Rating B
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70 Total = 66	EHE Rating D ✓
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38	EHE Rating G

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12 Classifications Within the CHE Module *Sources of CWM* Data Element		
Classification	**Description**	**Score**
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 Classifications Within the CHE Module *Information on the Location of CWM* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13
Classifications Within the CHE Module *Information on the Location of CWM* Data Element

Classification	Description	Score

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0 ✓

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3 ✓
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2 ✓
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total =21	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D ✓	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest)	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: PT123 Tijeras Small Arms Range (H-20) **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10 ✓
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10 ✓
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0 ✓

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91	EHE Rating B
The MRS has an overall EHE module score from 71 to 81 Total = 71	EHE Rating C ✓
The MRS has an overall EHE module score from 60 to 70	EHE Rating D
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38	EHE Rating G

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12
Classifications Within the CHE Module *Sources of CWM* Data Element

Classification	Description	Score
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0 ✓

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5 ✓
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 26	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C ✓	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest)	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: PT761 Tijeras Small Arms and Training Range (OB-6) **DATE:** 8/25/2006

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

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Table 2 Classifications Within the EHE Module *Source of Hazard* Data Element		
Classification	**Description**	**Score**
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3
Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element

Classification	Description	Score
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10 ✓
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0 ✓

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91	EHE Rating B
The MRS has an overall EHE module score from 71 to 81 Total = 75	EHE Rating C ✓
The MRS has an overall EHE module score from 60 to 70	EHE Rating D
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38	EHE Rating G

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12
Classifications Within the CHE Module *Sources of CWM* Data Element

Classification	Description	Score
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5 ✓
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0 ✓

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 30	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C ✓	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest)	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: PT773 Coyote Canyon Tech Site (H-28) **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2 Classifications Within the EHE Module *Source of Hazard* Data Element		
Classification	**Description**	**Score**
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3
Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element

Classification	Description	Score
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91 Total = 91	EHE Rating B ✓
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70	EHE Rating D
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38	EHE Rating G

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12
Classifications Within the CHE Module *Sources of CWM* Data Element

Classification	Description	Score
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 Classifications Within the CHE Module *Information on the Location of CWM* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13
Classifications Within the CHE Module *Information on the Location of CWM* Data Element

Classification	Description	Score

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3 ✓
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 26	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B ✓	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest)	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: PT783 Bazooka Training Range (H-23) **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3 Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 **Classifications Within the EHE Module *Types of Activities/Structures* Data Element**		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2 ✓
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 **Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element**		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5 ✓
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91 Total = 89	EHE Rating B ✓
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70	EHE Rating D
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38	EHE Rating G

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12
Classifications Within the CHE Module *Sources of CWM* Data Element

Classification	Description	Score
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2 ✓
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2 ✓
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5 ✓
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 24	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B ✓	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest)	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: SR763 Rifle Range (H-17) **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1 ✓
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0 ✓

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91	EHE Rating B
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70	EHE Rating D
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38 Total = 29	EHE Rating G ✓

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12
Classifications Within the CHE Module *Sources of CWM* Data Element

Classification	Description	Score
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 Classifications Within the CHE Module *Information on the Location of CWM* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13
Classifications Within the CHE Module *Information on the Location of CWM* Data Element

Classification	Description	Score

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5 ✓
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 26	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest) ✓	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: SR764 Rifle Range (H-8) **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1 ✓
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0 ✓

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91	EHE Rating B
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70	EHE Rating D
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38 Total = 30	EHE Rating G ✓

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12
Classifications Within the CHE Module *Sources of CWM* Data Element

Classification	Description	Score
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 Classifications Within the CHE Module *Information on the Location of CWM* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13
Classifications Within the CHE Module *Information on the Location of CWM* Data Element

Classification	Description	Score

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5 ✓
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 26	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest) ✓	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: SR765 WWII Pistol Range (H-14) **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1 ✓
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3 Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0 ✓

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91	EHE Rating B
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70	EHE Rating D
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38 Total = 30	EHE Rating G ✓

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12 Classifications Within the CHE Module *Sources of CWM* Data Element		
Classification	**Description**	**Score**
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5 ✓
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 26	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest) ✓	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: SR766 Sub-Machine Gun (H-10) **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1 ✓
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0 ✓

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91	EHE Rating B
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70	EHE Rating D
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38 Total = 30	EHE Rating G ✓

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12 Classifications Within the CHE Module *Sources of CWM* Data Element		
Classification	**Description**	**Score**
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13 Classifications Within the CHE Module *Information on the Location of CWM* Data Element		
Classification	**Description**	**Score**

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0 ✓

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5 ✓
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 26	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest) ✓	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: SR767 Rifle Range (H-11) **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1 ✓
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0 ✓

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0 ✓

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91	EHE Rating B
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70	EHE Rating D
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38 Total = 27	EHE Rating G ✓

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12
Classifications Within the CHE Module *Sources of CWM* Data Element

Classification	Description	Score
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 Classifications Within the CHE Module *Information on the Location of CWM* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13
Classifications Within the CHE Module *Information on the Location of CWM* Data Element

Classification	Description	Score

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0 ✓

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5 ✓
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0 ✓

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 23	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest) ✓	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

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Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10 ✓
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5 ✓
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 **Classifications Within the EHE Module *Types of Activities/Structures* Data Element**		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2 ✓
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 **Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element**		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91	EHE Rating B
The MRS has an overall EHE module score from 71 to 81 Total = 72	EHE Rating C ✓
The MRS has an overall EHE module score from 60 to 70	EHE Rating D
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38	EHE Rating G

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12
Classifications Within the CHE Module *Sources of CWM* Data Element

Classification	Description	Score
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13
Classifications Within the CHE Module *Information on the Location of CWM* Data Element

Classification	Description	Score

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4 ✓
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2 ✓
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 22	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C ✓	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest)	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: SR777 Rifle Range (H-16) **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1 ✓
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3 Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5 ✓
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0 ✓

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91	EHE Rating B
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70	EHE Rating D
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38 Total = 33	EHE Rating G ✓

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12
Classifications Within the CHE Module *Sources of CWM* Data Element

Classification	Description	Score
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 Classifications Within the CHE Module *Information on the Location of CWM* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13 Classifications Within the CHE Module *Information on the Location of CWM* Data Element		
Classification	**Description**	**Score**

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10 ✓
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0 ✓

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5 ✓
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0 ✓

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 25	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest) ✓	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: SR778 Airfield Pistol Range (H-2) **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1 ✓
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3
Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element

Classification	Description	Score
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5 ✓
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91	EHE Rating B
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70	EHE Rating D
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38 Total = 36	EHE Rating G ✓

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12
Classifications Within the CHE Module *Sources of CWM* Data Element

Classification	Description	Score
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5 ✓
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 28	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest) ✓	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: SR780 Impact Area (H-29) **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3 Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5 ✓
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0 ✓

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 **Classifications Within the EHE Module *Types of Activities/Structures* Data Element**		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2 ✓
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 **Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element**		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91	EHE Rating B
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70 Total = 65	EHE Rating D ✓
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38	EHE Rating G

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12
Classifications Within the CHE Module *Sources of CWM* Data Element

Classification	Description	Score
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 Classifications Within the CHE Module *Information on the Location of CWM* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0 ✓

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2 ✓
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2 ✓
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3 ✓
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 20	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D ✓	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest)	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: TS775 Airfield Skeet Range (ST-351) (H-1) **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1 ✓
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 **Classifications Within the EHE Module *Ease of Access* Data Element**		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 **Classifications Within the EHE *Status of Property* Data Element**		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0 ✓

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0 ✓

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91	EHE Rating B
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70	EHE Rating D
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38 Total = 27	EHE Rating G ✓

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12
Classifications Within the CHE Module *Sources of CWM* Data Element

Classification	Description	Score
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5 ✓
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0 ✓

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 23	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest) ✓	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: TS776 Skeet Range (H-9) **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1 ✓
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 3 Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0

Notes:

- *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0 ✓

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91	EHE Rating B
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70	EHE Rating D
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38 Total = 29	EHE Rating G ✓

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12
Classifications Within the CHE Module *Sources of CWM* Data Element

Classification	Description	Score
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13 Classifications Within the CHE Module *Information on the Location of CWM* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13 **Classifications Within the CHE Module *Information on the Location of CWM* Data Element**		
Classification	**Description**	**Score**

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10 ✓
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0 ✓

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5 ✓
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0 ✓

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 25	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest) ✓	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

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Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

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Table 3 Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10 ✓
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0 ✓

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91	EHE Rating B
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70 Total = 68	EHE Rating D ✓
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38	EHE Rating G

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

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Table 12 Classifications Within the CHE Module *Sources of CWM* Data Element		
Classification	**Description**	**Score**
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

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Table 13 Classifications Within the CHE Module *Information on the Location of CWM* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13
Classifications Within the CHE Module *Information on the Location of CWM* Data Element

Classification	Description	Score

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0 ✓

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5 ✓
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0 ✓

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 23	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D ✓	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest)	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

SITE ID: Howitzer Range Buffer **DATE:** 8/25/2006

Table 1 Classifications Within the EHE Module *Munitions Type* Data Element		
Classification	**Description**	**Score**
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (i.e., submunitions, cluster munitions, 40mm high-explosive grenades, white phosphorus (WP) munitions (including practice munitions with sensitive fuzes, but excluding all other practice munitions), and high-explosive antitank (HEAT) munitions • All hand grenades containing an explosive filler • Bulk primary explosives, or mixtures of these with environmental medial such that the mixture is explosive.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B) that are not considered "sensitive" • All DMM containing a high-explosive filler that have been damaged by burning or detonation • All DMM containing a high-explosive filler that have deteriorated to the point of instability	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have been damaged by burning or detonation or that have deteriorated to the point of instability	20
High explosive (unused)	• All DMM containing a high explosive filler that have not been damaged by burning or detonation • All DMM containing a high explosive filler that are not deteriorated to the point of instability	15
Propellant	• All UXO containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are damaged by burning or detonation • All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to the point of instability.	15
Bulk secondary High Explosives, pyrotechnics, or propellant	• All DMM containing only a single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are deteriorated to Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture being explosive	10
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation • All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that are not deteriorated to the point of instability.	10
Practice	• All UXO that are a practice munition not associated with a sensitive fuze • All DMM that are a practice munition not associated with a sensitive fuze that have not been damaged by burning or detonation • All DMM that are a practice munition not associated with a sensitive fuze that have not deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing only a riot control agent (e.g., tear gas).	3

Table 1 **Classifications Within the EHE Module *Munitions Type* Data Element**		
Classification	**Description**	**Score**
Small arms	• All UXO or DMM that are classified as small arms ammunition. [physical evidence or historical evidence that no other munitions type (e.g., grenades, subcaliber training rockets, demolition charges) was used or is present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical or evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

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Table 2 Classifications Within the EHE Module *Source of Hazard* Data Element		
Classification	**Description**	**Score**
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, when the firing point is delineated as an MRS separate from the rest of a former range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms were used. There must be evidence that no other type of munitions (e.g., grenades) were used or are present at the location to place an MRS into this category.	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former range") means the MRS is a location that was (1) closed by a formal decision made by the Department Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

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Table 3 Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, are likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5 ✓
Subsurface, physical constraint	• There is physical or historical evidence indicating the UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunitions is confirmed or suspected, regardless of other factors such as geological stability. There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to include it in this category.	1

Table 3 **Classifications Within the EHE Module Inf*ormation on the Location of Munitions* Data Element**		
Classification	**Description**	**Score**
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence there are no UXO or DMM present or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below and shotgun shells.

Table 4 Classifications Within the EHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 5 Classifications Within the EHE *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24-hours per day, every day of the calendar year.	0 ✓

Table 6 Classifications Within the EHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 7 Classifications Within the EHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	✓ 5
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 8 Classifications Within the EHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9 Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0 ✓

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of religious significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10 Determining the EHE Rating from the EHE Module Score	
Overall EHE Module Score	**EHE Rating**
The MRS has an overall EHE module score from 92 to 100	EHE Rating A
The MRS has an overall EHE module score from 82 to 91	EHE Rating B
The MRS has an overall EHE module score from 71 to 81	EHE Rating C
The MRS has an overall EHE module score from 60 to 70 Total = 63	EHE Rating D ✓
The MRS has an overall EHE module score from 48 to 59	EHE Rating E
The MRS has an overall EHE module score from 38 to 47	EHE Rating F
The MRS has an overall EHE module score less than 38	EHE Rating G

Table 11 Classifications Within the CHE Module *CWM Configuration* Data Element		
Classification	**Description**	**Score**
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is • Explosively configured CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM that have been damaged (CWM/DMM).	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are CWM/DMM that are comingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is • Nonexplosively configured CWM/DMM • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• The CWM known or suspected of being present at the MRS are only CAIS/DMM. The CAIS present cannot include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11 for the MRS to be assigned this rating.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.

Table 12 Classifications Within the CHE Module *Sources of CWM* Data Element		
Classification	**Description**	**Score**
Live-fire involving CWM	• The MRS is a former range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface comingled with conventional munitions that are UXO.	10
Damaged CWM/DMM or CAIS/DMM, surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM or CAIS/DMM, surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
Undamaged CWM/DMM, or CAIS/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
Former Production Facilities of CWM or CAIS	• The MRS is a facility that formerly engaged in production of CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM or CAIS	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0 ✓

Notes:

- The notation *CWM/DMM* means CWM that are DMM.
- The term *CWM /UXO* means CWM that are UXO.
- *Historical evidence* means that the investigation: (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

SITE ID: Howitzer Range Buffer **DATE:** 8/25/2006

Table 13 Classifications Within the CHE Module *Information on the Location of CWM* Data Element		
Classification	**Description**	**Score**
Confirmed surface	• Physical evidence indicates there are CWM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed in the future by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or there are ongoing intrusive activities (e.g., plowing, construction, dredging) at the MRS that are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed in the future by naturally occurring phenomena, or there are no intrusive activities occurring at the MRS that are likely to either occur, or if the activities do occur, they are unlikely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating the CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence there is no CWM present or there is historical evidence indicating that no CWM are present	0 ✓

Table 13 Classifications Within the CHE Module *Information on the Location of CWM* Data Element		
Classification	**Description**	**Score**

Notes:

- *Historical evidence* means that the investigation (1) found written documents or records, or (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or components, fragments, or other pieces of military munitions, or (2) the results of field or laboratory sampling and analysis procedures, or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition that is .50 caliber or below, or for shotgun shells.

Table 14 Classifications Within the CHE Module *Ease of Access* Data Element		
Classification	**Description**	**Score**
No barrier	• There is no barrier preventing access to all parts of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS but not the entire MRS.	8 ✓
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
Notes: • *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.		

Table 15 Classifications Within the CHE Module *Status of Property* Data Element		
Classification	**Description**	**Score**
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by American Indian or Alaskan Native Tribes, or State or local governments; and lands or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a State, American Indian, Alaskan Native, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0 ✓

Table 16 Classifications Within the CHE Module *Population Density* Data Element		
Classification	**Definition**	**Score**
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5 ✓
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1
Notes: • If an MRS is in more that one county, the Department Component will use the largest population value among the counties. If the MRS is within or borders a city or town, the population density for the city or town instead of the county population density is used.		

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	**Description**	**Score**
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5 ✓
16 to 25	• There are 16–25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11–15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6–10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1–5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 18 Classifications Within the CHE Module *Types of Activities/Structures* Data Element		
Classification	**Description**	**Score**
Residential, educational, commercial, or subsistence	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5 ✓
Parks and recreational areas	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary or within the MRS's boundary that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted or inhabited structures are located up to 2 miles from the MRS's boundary, within the MRS's boundary that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known of recurring activities occurring up to 2 miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 19 Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element		
Classification	**Description**	**Score**
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0 ✓

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act (ESA)) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. For example, American Indians or Alaska Natives deem the MRS to be of spiritual significance or there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20 Determining the CHE Rating from the CHE Module Score	
Overall CHE Module Score	**CHE Rating**
The MRS has an overall CHE module score from 92 to 100	CHE Rating A
The MRS has an overall CHE module score from 82 to 91	CHE Rating B
The MRS has an overall CHE module score from 71 to 81	CHE Rating C
The MRS has an overall CHE module score from 60 to 70	CHE Rating D
The MRS has an overall CHE module score from 48 to 59	CHE Rating E
The MRS has an overall CHE module score from 38 to 47	CHE Rating F
The MRS has an overall CHE module score less than 38 Total = 23	CHE Rating G ✓

Table 21 Health Hazard Evaluation Factor Levels					
Contaminant Hazard Factor		**Receptor Factor**		**Migration Pathway Factor**	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22 HHE Three-letter Combination Levels				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**HHH**	**HHM**	**HHL**
	Potential	**HHM**	**HMM**	**HML**
	Limited	**HHL**	**HML**	**HLL**
Moderate	**Identified**	**HHM**	**HMM**	**HML**
	Potential	**HMM**	**MMM**	**MML**
	Limited	**HML**	**MML**	**MLL**
Minimal	**Identified**	**HHL**	**HML**	**HLL**
	Potential	**HML**	**MML**	**MLL**
	Limited	**HLL**	**MLL**	**LLL**

Table 23 HHE Module Ratings		
Combination	**Frequency**	**Rating**
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

Table 24 Health Hazard Evaluation Module Rating				
Contaminant Hazard Factor	**Receptor Factor**	**Migration Pathway**		
		Evident	**Potential**	**Confined**
Significant	**Identified**	**A**	**B**	**C**
	Potential	**B**	**C**	**D**
	Limited	**C**	**D**	**E**
Moderate	**Identified**	**B**	**C**	**D**
	Potential	**C**	**D**	**E**
	Limited	**D**	**E**	**F**
Minimal	**Identified**	**C**	**D**	**E**
	Potential	**D**	**E**	**F**
	Limited	**E**	**F**	**G**

Table 25 MRS Priority Based on Highest Hazard Evaluation Module Rating					
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
Hazard Evaluation A (Highest)	**2**	**Hazard Evaluation A (Highest)**	**1**	**Hazard Evaluation A (Highest)**	**2**
Hazard Evaluation B	**3**	**Hazard Evaluation B**	**2**	**Hazard Evaluation B**	**3**
Hazard Evaluation C	**4**	**Hazard Evaluation C**	**3**	**Hazard Evaluation C**	**4**
Hazard Evaluation D ✓	**5**	**Hazard Evaluation D**	**4**	**Hazard Evaluation D**	**5**
Hazard Evaluation E	**6**	**Hazard Evaluation E**	**5**	**Hazard Evaluation E**	**6**
Hazard Evaluation F	**7**	**Hazard Evaluation F**	**6**	**Hazard Evaluation F**	**7**
Hazard Evaluation G (Lowest)	**8**	**Hazard Evaluation G (Lowest)** ✓	**7**	**Hazard Evaluation G (Lowest)Low**	**8**
No Longer Required		**No Longer Required**		**No Longer Required**	
Evaluation Pending		**Evaluation Pending**		**Evaluation Pending** ✓	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected HHE Hazard**	

APPENDIX H. RACER DATA INPUT WORKSHEETS

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AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID AL120

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Proximity Fuze Range (H-22)

Site Dimensions:

Acerage 6058 Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☑	☐	Other*
Artillery	☐	☐	Motar
Bombing	☐	☐	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☐	Small Arms
Han grenade	☐		

*Please specify

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☐	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☑	☐	Land Mines
Large Caliber (37mm and larger)	☑	☐	Demolition Materials

*Please specify

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID AL120

Anomaly Density (check one):

Low (<= 10 anomalies per acre)	☐	☐	High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre)	☑		

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 90-100 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined	☑	☐	Unconfined

Impacted Media (check all that apply):

Surface Soil	☑	☐	Surface water
Subsurface Soil	☑	☐	Sediment
Groundwater	☐		

Soil Type(Check one):

Gravel/Gravel-Sand Mixture	☑	☐	Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture	☐	☐	Silt/Silty Clay Mixture

Topography (check one):

Flat	☐	☐	Flat with gorges or gullies
Gently Rolling	☐	☐	Rolling with gorges or gullies
Heavy Rolling	☐	☑	Mountainous

Vegetation Type (check one):

Barren or Low grass	☐	☐	Shrubs with some trees
Low grass or few shrubs	☐	☑	Heavy shrubs with trees
Heavy grass with numerous shrubs	☐		

Typical safety level used at the site (check one):

A	☐	☐	C
B	☐	☑	D

Additional information that may influence cost:

_____

_____

_____

_____

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID AL758

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Proximity Fuze Range North (OB-10) *not AF MMRP eligible - transferred to FUDS MMRP*

Site Dimensions:

Acerage 251 Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☑	☐	Mortar
Bombing	☐	☑	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☐	Small Arms
Hand grenade	☐		

*Please specify

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☐	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☑	☐	Demolition Materials

*Please specify

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID AL758

Anomaly Density (check one):

Low (<= 10 anomalies per acre)	☐	☐	High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre)	☑		

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 90-100 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined	☑	☐	Unconfined

Impacted Media (check all that apply):

Surface Soil	☑	☐	Surface water
Subsurface Soil	☑	☐	Sediment
Groundwater	☐		

Soil Type(Check one):

Gravel/Gravel-Sand Mixture	☑	☐	Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture	☐	☐	Silt/Silty Clay Mixture

Topography (check one):

Flat	☐	☐	Flat with gorges or gullies
Gently Rolling	☐	☐	Rolling with gorges or gullies
Heavy Rolling	☐	☑	Mountainous

Vegetation Type (check one):

Barren or Low grass	☐	☐	Shrubs with some trees
Low grass or few shrubs	☐	☑	Heavy shrubs with trees
Heavy grass with numerous shrubs	☐		

Typical safety level used at the site (check one):

A	☐	☐	C
B	☐	☑	D

Additional information that may influence cost:

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AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID AL758

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Proximity Fuze Range East (OB-9) *not AF MMRP eligible - transferred to FUDS MMRP*

Site Dimensions:

Acerage 941 Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☑	☐	Mortar
Bombing	☐	☑	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☐	Small Arms
Hand grenade	☐		

*Please specify

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☐	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☑	☐	Demolition Materials

*Please specify

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID AL758

Anomaly Density (check one):

Low (<= 10 anomalies per acre)	☐	☐	High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre)	☑		

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 90-100 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined	☑	☐	Unconfined

Impacted Media (check all that apply):

Surface Soil	☑	☐	Surface water
Subsurface Soil	☑	☐	Sediment
Groundwater	☐		

Soil Type(Check one):

Gravel/Gravel-Sand Mixture	☑	☐	Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture	☐	☐	Silt/Silty Clay Mixture

Topography (check one):

Flat	☐	☐	Flat with gorges or gullies
Gently Rolling	☐	☐	Rolling with gorges or gullies
Heavy Rolling	☐	☑	Mountainous

Vegetation Type (check one):

Barren or Low grass	☐	☐	Shrubs with some trees
Low grass or few shrubs	☐	☑	Heavy shrubs with trees
Heavy grass with numerous shrubs	☐		

Typical safety level used at the site (check one):

A	☐	☐	C
B	☐	☑	D

Additional information that may influence cost:

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AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID AL769

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Ordnance Drop Zone (H-19)

Site Dimensions:

Acerage 524 Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☑	☐	Other*
Artillery	☐	☐	Motar
Bombing	☐	☐	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☐	Small Arms
Han grenade	☐		

*Please specify

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☐	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☐	☐	Demolition Materials

*Please specify No MEC found.

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID AL769

Anomaly Density (check one):

Low (<= 10 anomalies per acre) ☑ ☐ High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre) ☐

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 350-490 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined ☐ ☑ Unconfined

Impacted Media (check all that apply):

Surface Soil ☑ ☐ Surface water
Subsurface Soil ☑ ☐ Sediment
Groundwater ☐

Soil Type(Check one):

Gravel/Gravel-Sand Mixture ☐ ☑ Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture ☐ ☐ Silt/Silty Clay Mixture

Topography (check one):

Flat ☐ ☑ Flat with gorges or gullies
Gently Rolling ☐ ☐ Rolling with gorges or gullies
Heavy Rolling ☐ ☐ Mountainous

Vegetation Type (check one):

Barren or Low grass ☐ ☐ Shrubs with some trees
Low grass or few shrubs ☑ ☐ Heavy shrubs with trees
Heavy grass with numerous shrubs ☐

Typical safety level used at the site (check one):

A ☐ ☐ C
B ☐ ☑ D

Additional information that may influence cost:

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AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID AL771

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Old Cable Site (H-24)

Site Dimensions:

Acerage 863 Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☑	☐	Other*
Artillery	☐	☐	Motar
Bombing	☐	☐	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☐	Small Arms
Han grenade	☐		

*Please specify

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☑	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☑	☐	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☑	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☑	☐	Demolition Materials

*Please specify 5 inch rocket motor raw ballistite and expended rocket motors

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID AL771

Anomaly Density (check one):

Low (<= 10 anomalies per acre)	☐	☐	High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre)	☑		

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 90-100 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined	☑	☐	Unconfined

Impacted Media (check all that apply):

Surface Soil	☑	☐	Surface water
Subsurface Soil	☑	☐	Sediment
Groundwater	☐		

Soil Type(Check one):

Gravel/Gravel-Sand Mixture	☑	☐	Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture	☐	☐	Silt/Silty Clay Mixture

Topography (check one):

Flat	☐	☐	Flat with gorges or gullies
Gently Rolling	☐	☐	Rolling with gorges or gullies
Heavy Rolling	☐	☑	Mountainous

Vegetation Type (check one):

Barren or Low grass	☐	☑	Shrubs with some trees
Low grass or few shrubs	☐	☐	Heavy shrubs with trees
Heavy grass with numerous shrubs	☐		

Typical safety level used at the site (check one):

A	☐	☐	C
B	☐	☑	D

Additional information that may influence cost:

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AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID DA130

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Arroyo del Coyote Demolition Area (H-13)

Site Dimensions:

Acerage 386 Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify Light case fragment. OT-10 soil remediation performed here by MWH.

Range Types (check all that apply):

Air to air	☐	☑	OB/OD
Air to ground	☐	☐	Other*
Artillery	☐	☐	Motar
Bombing	☐	☐	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☐	Small Arms
Han grenade	☐		

*Please specify

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☐	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☐	☐	Demolition Materials

*Please specify Small light case metal fragment found.

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID DA130

Anomaly Density (check one):

Low (<= 10 anomalies per acre)	☐	☐	High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre)	☑		

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 350-485 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined	☐	☑	Unconfined

Impacted Media (check all that apply):

Surface Soil	☑	☐	Surface water
Subsurface Soil	☑	☐	Sediment
Groundwater	☐		

Soil Type(Check one):

Gravel/Gravel-Sand Mixture	☐	☑	Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture	☐	☐	Silt/Silty Clay Mixture

Topography (check one):

Flat	☑	☐	Flat with gorges or gullies
Gently Rolling	☐	☐	Rolling with gorges or gullies
Heavy Rolling	☐	☐	Mountainous

Vegetation Type (check one):

Barren or Low grass	☐	☐	Shrubs with some trees
Low grass or few shrubs	☑	☐	Heavy shrubs with trees
Heavy grass with numerous shrubs	☐		

Typical safety level used at the site (check one):

A	☐	☐	C
B	☐	☑	D

Additional information that may influence cost:

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AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID DA782

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Explosive Disposal Area (H-7)

Site Dimensions:

Acerage 6 (* 26) Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☑	OB/OD
Air to ground	☐	☐	Other*
Artillery	☐	☐	Motar
Bombing	☐	☐	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☐	Small Arms
Han grenade	☐		

*Please specify

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☐	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☐	☐	Demolition Materials

*Please specify Nothing found

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID DA782

Anomaly Density (check one):

Low (<= 10 anomalies per acre) ☑ ☐ High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre) ☐

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 350-490 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined ☐ ☑ Unconfined

Impacted Media (check all that apply):

Surface Soil ☑ ☐ Surface water
Subsurface Soil ☑ ☐ Sediment
Groundwater ☐

Soil Type(Check one):

Gravel/Gravel-Sand Mixture ☐ ☐ Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture ☑ ☐ Silt/Silty Clay Mixture

Topography (check one):

Flat ☑ ☐ Flat with gorges or gullies
Gently Rolling ☐ ☐ Rolling with gorges or gullies
Heavy Rolling ☐ ☐ Mountainous

Vegetation Type (check one):

Barren or Low grass ☐ ☐ Shrubs with some trees
Low grass or few shrubs ☑ ☐ Heavy shrubs with trees
Heavy grass with numerous shrubs ☐

Typical safety level used at the site (check one):

A ☐ ☐ C
B ☐ ☑ D

Additional information that may influence cost:

*MRA acreage has been reduced from 26 acres due to corrections to the MRA boundary and encroachment of current operational range areas (explosive safety limits).

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID ED770

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Experimental Range (H-28)

Site Dimensions:

Acerage 1480 (* 1848) Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☑	OB/OD
Air to ground	☐	☐	Other*
Artillery	☐	☐	Motar
Bombing	☐	☐	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☐	Small Arms
Han grenade	☐		

*Please specify

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☑	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☑	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☑	☐	Demolition Materials

*Please specify

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID ED770

Anomaly Density (check one):

Low (<= 10 anomalies per acre)	☐	☐	High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre)	☑		

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 100-485 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined	☐	☑	Unconfined

Impacted Media (check all that apply):

Surface Soil	☑	☐	Surface water
Subsurface Soil	☑	☐	Sediment
Groundwater	☐		

Soil Type(Check one):

Gravel/Gravel-Sand Mixture	☐	☑	Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture	☐	☐	Silt/Silty Clay Mixture

Topography (check one):

Flat	☑	☐	Flat with gorges or gullies
Gently Rolling	☐	☐	Rolling with gorges or gullies
Heavy Rolling	☐	☐	Mountainous

Vegetation Type (check one):

Barren or Low grass	☐	☐	Shrubs with some trees
Low grass or few shrubs	☑	☐	Heavy shrubs with trees
Heavy grass with numerous shrubs	☐		

Typical safety level used at the site (check one):

A	☐	☐	C
B	☐	☑	D

Additional information that may influence cost:

*MRA acreage has been reduced from 1848 acres due to encroachment of current operational range areas and explosive safety limits.

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID ML125

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Field Firing Range (H-30)

Site Dimensions:

Acerage 1993 Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☐	☐	Motar
Bombing	☐	☑	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☐	Small Arms
Han grenade	☐		

*Please specify

Ordnance Types (check all that apply):

Bombs high explosive	☐	☑	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☑	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☑	☑	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☑	☐	Demolition Materials

*Please specify 5" rocket motor venturi section debris, 3.5" HEAT rocket warhead, no fuzing

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID ML125

Anomaly Density (check one):

- ☐ Low (<= 10 anomalies per acre)
- ☐ Medium (10 to 50 anomalies per acre)
- ☑ High (>50 anomalies per acre)

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 90-100 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

- ☑ Confined
- ☐ Unconfined

Impacted Media (check all that apply):

- ☑ Surface Soil
- ☑ Subsurface Soil
- ☐ Groundwater
- ☐ Surface water
- ☐ Sediment

Soil Type(Check one):

- ☐ Gravel/Gravel-Sand Mixture
- ☑ Sand/Gravelly-Sand Mixture
- ☐ Sand-Silt Mixture/Sand-Clay Mixture
- ☐ Silt/Silty Clay Mixture

Topography (check one):

- ☐ Flat
- ☐ Gently Rolling
- ☐ Heavy Rolling
- ☐ Flat with gorges or gullies
- ☐ Rolling with gorges or gullies
- ☑ Mountainous

Vegetation Type (check one):

- ☐ Barren or Low grass
- ☐ Low grass or few shrubs
- ☐ Heavy grass with numerous shrubs
- ☐ Shrubs with some trees
- ☑ Heavy shrubs with trees

Typical safety level used at the site (check one):

- ☐ A
- ☐ B
- ☐ C
- ☑ D

Additional information that may influence cost:

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AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID ML760

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Gun Fan Site (OB-7) *Off-base MRA not investigated under CSE Phase I*

Site Dimensions:

Acerage 8486 Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify_____

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☑	☐	Motar
Bombing	☐	☐	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☐	Small Arms
Han grenade	☐		

*Please specify_____

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☐	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☑	☐	Demolition Materials

*Please specify_____

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID ML760

Anomaly Density (check one):

Low (<= 10 anomalies per acre) ☑ ☐ High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre) ☐

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 350-450 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined ☐ ☑ Unconfined

Impacted Media (check all that apply):

Surface Soil ☑ ☐ Surface water
Subsurface Soil ☑ ☐ Sediment
Groundwater ☐

Soil Type(Check one):

Gravel/Gravel-Sand Mixture ☐ ☑ Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture ☐ ☐ Silt/Silty Clay Mixture

Topography (check one):

Flat ☑ ☐ Flat with gorges or gullies
Gently Rolling ☐ ☐ Rolling with gorges or gullies
Heavy Rolling ☐ ☐ Mountainous

Vegetation Type (check one):

Barren or Low grass ☐ ☐ Shrubs with some trees
Low grass or few shrubs ☑ ☐ Heavy shrubs with trees
Heavy grass with numerous shrubs ☐

Typical safety level used at the site (check one):

A ☐ ☐ C
B ☐ ☑ D

Additional information that may influence cost:

_____

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_____

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID ML762

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: McCormick Ranch Buffer (OB-1) *Off-base MRA not investigated under CSE Phase I*

Site Dimensions:

Acerage 14 Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify_____

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☑	☐	Motar
Bombing	☐	☐	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☐	Small Arms
Han grenade	☐		

*Please specify_____

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☐	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☑	☐	Demolition Materials

*Please specify_____

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID ML762

Anomaly Density (check one):

Low (<= 10 anomalies per acre) ☑ ☐ High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre) ☐

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 350-450 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined ☐ ☑ Unconfined

Impacted Media (check all that apply):

Surface Soil ☑ ☐ Surface water
Subsurface Soil ☑ ☐ Sediment
Groundwater ☐

Soil Type(Check one):

Gravel/Gravel-Sand Mixture ☐ ☑ Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture ☐ ☐ Silt/Silty Clay Mixture

Topography (check one):

Flat ☑ ☐ Flat with gorges or gullies
Gently Rolling ☐ ☐ Rolling with gorges or gullies
Heavy Rolling ☐ ☐ Mountainous

Vegetation Type (check one):

Barren or Low grass ☐ ☐ Shrubs with some trees
Low grass or few shrubs ☑ ☐ Heavy shrubs with trees
Heavy grass with numerous shrubs ☐

Typical safety level used at the site (check one):

A ☐ ☐ C
B ☐ ☑ D

Additional information that may influence cost:

_____

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AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID ML774

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Gun Fan Site (H-12)

Site Dimensions:

Acerage 634 (* 643) Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☑	☐	Motar
Bombing	☐	☐	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☐	Small Arms
Han grenade	☐		

*Please specify Medium/Large Caliber Range

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☐	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☑	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☐	☐	Demolition Materials

*Please specify 4 inch by 15 inch piece of heavy case steel fragment, possibly from large munition item; 4 inch by 6 inch piece of heavy case aluminum fragment; unknown thick piece/chunk of heavy case fragment

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID ML774

Anomaly Density (check one):

Low (<= 10 anomalies per acre) ☑ ☐ High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre) ☐

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 350-450 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined ☐ ☑ Unconfined

Impacted Media (check all that apply):

Surface Soil ☑ ☐ Surface water
Subsurface Soil ☑ ☐ Sediment
Groundwater ☐

Soil Type(Check one):

Gravel/Gravel-Sand Mixture ☐ ☑ Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture ☐ ☐ Silt/Silty Clay Mixture

Topography (check one):

Flat ☑ ☐ Flat with gorges or gullies
Gently Rolling ☐ ☐ Rolling with gorges or gullies
Heavy Rolling ☐ ☐ Mountainous

Vegetation Type (check one):

Barren or Low grass ☐ ☐ Shrubs with some trees
Low grass or few shrubs ☑ ☐ Heavy shrubs with trees
Heavy grass with numerous shrubs ☐

Typical safety level used at the site (check one):

A ☐ ☐ C
B ☐ ☑ D

Additional information that may influence cost:

*MRA acreage has been reduced from 643 acres due to encroachment of current operational range areas and explosive safety limits.

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID ML781

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Firing In-Abutment (H-3)

Site Dimensions:

Acerage 1 (* 6) Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☐	☐	Motar
Bombing	☐	☑	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☐	Small Arms
Han grenade	☐		

*Please specify

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☐	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☑	☐	Land Mines
Large Caliber (37mm and larger)	☐	☐	Demolition Materials

*Please specify

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID ML781

Anomaly Density (check one):

Low (<= 10 anomalies per acre) ☑ ☐ High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre) ☐

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 400-550 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined ☐ ☑ Unconfined

Impacted Media (check all that apply):

Surface Soil ☑ ☐ Surface water
Subsurface Soil ☑ ☐ Sediment
Groundwater ☐

Soil Type(Check one):

Gravel/Gravel-Sand Mixture ☐ ☑ Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture ☐ ☐ Silt/Silty Clay Mixture

Topography (check one):

Flat ☑ ☐ Flat with gorges or gullies
Gently Rolling ☐ ☐ Rolling with gorges or gullies
Heavy Rolling ☐ ☐ Mountainous

Vegetation Type (check one):

Barren or Low grass ☐ ☐ Shrubs with some trees
Low grass or few shrubs ☑ ☐ Heavy shrubs with trees
Heavy grass with numerous shrubs ☐

Typical safety level used at the site (check one):

A ☐ ☐ C
B ☐ ☑ D

Additional information that may influence cost:

*MRA acreage has been reduced from 6 acres due to corrections to MRA boundary.

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID ML784

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: 40mm Test and Training Range *not MMRP eligible - within operational range area*

Site Dimensions:

Acerage 150 Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☐	☐	Motar
Bombing	☐	☐	Multiple / combined use
Burial pits	☐	☑	Rifle grenade, anti-tank rocket
Guided missiles	☐	☐	Small Arms
Han grenade	☐		

*Please specify

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☐	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☐	☐	Demolition Materials

*Please specify Nothing found.

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID ML784

Anomaly Density (check one):

Low (<= 10 anomalies per acre) ☑ ☐ High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre) ☐

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 90-100 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined ☑ ☐ Unconfined

Impacted Media (check all that apply):

Surface Soil ☑ ☐ Surface water
Subsurface Soil ☑ ☐ Sediment
Groundwater ☐

Soil Type(Check one):

Gravel/Gravel-Sand Mixture ☑ ☐ Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture ☐ ☐ Silt/Silty Clay Mixture

Topography (check one):

Flat ☐ ☐ Flat with gorges or gullies
Gently Rolling ☐ ☐ Rolling with gorges or gullies
Heavy Rolling ☐ ☑ Mountainous

Vegetation Type (check one):

Barren or Low grass ☐ ☐ Shrubs with some trees
Low grass or few shrubs ☐ ☑ Heavy shrubs with trees
Heavy grass with numerous shrubs ☐

Typical safety level used at the site (check one):

A ☐ ☐ C
B ☐ ☑ D

Additional information that may influence cost:

_____

_____

_____

_____

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID MU772

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: H-25 Site

Site Dimensions:

Acerage 133 Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☐	☐	Motar
Bombing	☐	☑	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☐	Small Arms
Hand grenade	☐		

*Please specify

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☐	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☐	☐	Demolition Materials

*Please specify Nothing found.

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID MU772

Anomaly Density (check one):

Low (<= 10 anomalies per acre)	☑	☐	High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre)	☐		

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 90-100 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined	☑	☐	Unconfined

Impacted Media (check all that apply):

Surface Soil	☑	☐	Surface water
Subsurface Soil	☑	☐	Sediment
Groundwater	☐		

Soil Type(Check one):

Gravel/Gravel-Sand Mixture	☑	☐	Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture	☐	☐	Silt/Silty Clay Mixture

Topography (check one):

Flat	☐	☐	Flat with gorges or gullies
Gently Rolling	☐	☑	Rolling with gorges or gullies
Heavy Rolling	☐	☐	Mountainous

Vegetation Type (check one):

Barren or Low grass	☐	☐	Shrubs with some trees
Low grass or few shrubs	☐	☑	Heavy shrubs with trees
Heavy grass with numerous shrubs	☐		

Typical safety level used at the site (check one):

A	☐	☐	C
B	☐	☑	D

Additional information that may influence cost:

_____

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AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID PT123

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Tijeras Small Arms Range (H-20)

Site Dimensions:

Acerage 434 (* 812) Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☐	☐	Mortar
Bombing	☐	☑	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☑	Small Arms
Hand grenade	☐		

*Please specify

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☑	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☐	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☐	☐	Demolition Materials

*Please specify 1 Smoke Grenade spoon.

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID PT123

Anomaly Density (check one):

Low (<= 10 anomalies per acre) ☑ ☐ High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre) ☐

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 100-485 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined ☐ ☑ Unconfined

Impacted Media (check all that apply):

Surface Soil ☑ ☐ Surface water
Subsurface Soil ☑ ☐ Sediment
Groundwater ☐

Soil Type(Check one):

Gravel/Gravel-Sand Mixture ☑ ☐ Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture ☐ ☐ Silt/Silty Clay Mixture

Topography (check one):

Flat ☐ ☐ Flat with gorges or gullies
Gently Rolling ☐ ☐ Rolling with gorges or gullies
Heavy Rolling ☐ ☑ Mountainous

Vegetation Type (check one):

Barren or Low grass ☐ ☐ Shrubs with some trees
Low grass or few shrubs ☐ ☑ Heavy shrubs with trees
Heavy grass with numerous shrubs ☐

Typical safety level used at the site (check one):

A ☐ ☐ C
B ☐ ☑ D

Additional information that may influence cost:

Surface area of MRA was reduced from 812 acres due to encroachment of current operation range areas (Manzano Area explosive safety limit).

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID PT761

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Tijeras Small Arms and Training Range (OB-6)

Site Dimensions:

Acerage 575 Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☐	☐	Mortar
Bombing	☐	☑	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☑	Small Arms
Hand grenade	☐		

*Please specify

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☑	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☐	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☐	☐	Demolition Materials

*Please specify Base of Slap Flare container/launcher, expended/empty

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID PT761

Anomaly Density (check one):

Low (<= 10 anomalies per acre) ☑ ☐ High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre) ☐

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 100-485 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined ☐ ☑ Unconfined

Impacted Media (check all that apply):

Surface Soil ☑ ☐ Surface water
Subsurface Soil ☑ ☐ Sediment
Groundwater ☐

Soil Type(Check one):

Gravel/Gravel-Sand Mixture ☑ ☐ Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture ☐ ☐ Silt/Silty Clay Mixture

Topography (check one):

Flat ☐ ☐ Flat with gorges or gullies
Gently Rolling ☐ ☐ Rolling with gorges or gullies
Heavy Rolling ☐ ☑ Mountainous

Vegetation Type (check one):

Barren or Low grass ☐ ☐ Shrubs with some trees
Low grass or few shrubs ☐ ☑ Heavy shrubs with trees
Heavy grass with numerous shrubs ☐

Typical safety level used at the site (check one):

A ☐ ☐ C
B ☐ ☑ D

Additional information that may influence cost:

The land of PT761 lies outside the KAFB boundary. There are no controls on the property that is now populated with several, large, private residences. There are signs in the area indicating portions of the MRA are owned by the city of Albuquerque.

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID PT773

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Coyote Canyon Tech Site (H-18)

Site Dimensions:

Acerage 77 (* 131) Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☑	OB/OD
Air to ground	☐	☑	Other*
Artillery	☐	☐	Mortar
Bombing	☐	☐	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☐	Small Arms
Hand grenade	☐		

*Please specify Pyrotechnics Range

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☑	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☑	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☐	☑	Demolition Materials

*Please specify

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID PT773

Anomaly Density (check one):

Low (<= 10 anomalies per acre)	☐	☐	High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre)	☑		

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 90-100 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined	☑	☐	Unconfined

Impacted Media (check all that apply):

Surface Soil	☑	☐	Surface water
Subsurface Soil	☑	☐	Sediment
Groundwater	☐		

Soil Type(Check one):

Gravel/Gravel-Sand Mixture	☐	☑	Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture	☐	☐	Silt/Silty Clay Mixture

Topography (check one):

Flat	☑	☐	Flat with gorges or gullies
Gently Rolling	☐	☐	Rolling with gorges or gullies
Heavy Rolling	☐	☐	Mountainous

Vegetation Type (check one):

Barren or Low grass	☐	☐	Shrubs with some trees
Low grass or few shrubs	☐	☐	Heavy shrubs with trees
Heavy grass with numerous shrubs	☑		

Typical safety level used at the site (check one):

A	☐	☐	C
B	☐	☑	D

Additional information that may influence cost:

MRA acreage was erroneously reported as 131 acres in previous inventory.

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID PT783

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Bazooka Training Range (H-23)

Site Dimensions:

Acerage 354 Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☐	☐	Mortar
Bombing	☐	☑	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☑	Small Arms
Hand grenade	☐		

*Please specify

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☑	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☑	☑	Small Arms
Ground Rockets, Rifle Grenades, Practice	☑	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☐	☐	Demolition Materials

*Please specify Expended slap flare found during CSE Phase I survey.

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID PT783

Anomaly Density (check one):

Low (<= 10 anomalies per acre)	☐	☐	High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre)	☑		

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 90-100 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined	☑	☐	Unconfined

Impacted Media (check all that apply):

Surface Soil	☑	☐	Surface water
Subsurface Soil	☑	☐	Sediment
Groundwater	☐		

Soil Type(Check one):

Gravel/Gravel-Sand Mixture	☑	☐	Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture	☐	☐	Silt/Silty Clay Mixture

Topography (check one):

Flat	☐	☐	Flat with gorges or gullies
Gently Rolling	☐	☐	Rolling with gorges or gullies
Heavy Rolling	☐	☑	Mountainous

Vegetation Type (check one):

Barren or Low grass	☐	☑	Shrubs with some trees
Low grass or few shrubs	☐	☐	Heavy shrubs with trees
Heavy grass with numerous shrubs	☐		

Typical safety level used at the site (check one):

A	☐	☐	C
B	☐	☑	D

Additional information that may influence cost:

_____

_____

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AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID SR763

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Rifle Range (H-17)

Site Dimensions:

Acerage 232 (* 500) Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☐	☐	Mortar
Bombing	☐	☐	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☑	Small Arms
Hand grenade	☐		

*Please specify

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☑	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☐	☐	Demolition Materials

*Please specify 76mm Projectile, fired

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID SR763

Anomaly Density (check one):

Low (<= 10 anomalies per acre) ☑ ☐ High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre) ☐

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 350-490 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined ☐ ☑ Unconfined

Impacted Media (check all that apply):

Surface Soil ☑ ☐ Surface water
Subsurface Soil ☑ ☐ Sediment
Groundwater ☐

Soil Type(Check one):

Gravel/Gravel-Sand Mixture ☐ ☑ Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture ☐ ☐ Silt/Silty Clay Mixture

Topography (check one):

Flat ☐ ☐ Flat with gorges or gullies
Gently Rolling ☐ ☑ Rolling with gorges or gullies
Heavy Rolling ☐ ☐ Mountainous

Vegetation Type (check one):

Barren or Low grass ☐ ☐ Shrubs with some trees
Low grass or few shrubs ☐ ☐ Heavy shrubs with trees
Heavy grass with numerous shrubs ☑

Typical safety level used at the site (check one):

A ☐ ☐ C
B ☐ ☑ D

Additional information that may influence cost:

MRA acreage has decreased from 500 acres due to corrections to range location and boundary and elimination of overlap with other Sandia Base small arms ranges.

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID SR764

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Rifle Range (H-17)

Site Dimensions:

Acerage 116 Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify_____

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☐	☐	Mortar
Bombing	☐	☐	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☑	Small Arms
Hand grenade	☐		

*Please specify_____

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☑	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☐	☐	Demolition Materials

*Please specify_____

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID SR764

Anomaly Density (check one):

Low (<= 10 anomalies per acre) ☑ ☐ High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre) ☐

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 350-490 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined ☐ ☑ Unconfined

Impacted Media (check all that apply):

Surface Soil ☑ ☐ Surface water
Subsurface Soil ☑ ☐ Sediment
Groundwater ☐

Soil Type(Check one):

Gravel/Gravel-Sand Mixture ☐ ☑ Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture ☐ ☐ Silt/Silty Clay Mixture

Topography (check one):

Flat ☐ ☐ Flat with gorges or gullies
Gently Rolling ☐ ☑ Rolling with gorges or gullies
Heavy Rolling ☐ ☐ Mountainous

Vegetation Type (check one):

Barren or Low grass ☐ ☐ Shrubs with some trees
Low grass or few shrubs ☐ ☐ Heavy shrubs with trees
Heavy grass with numerous shrubs ☑

Typical safety level used at the site (check one):

A ☐ ☐ C
B ☐ ☑ D

Additional information that may influence cost:

_____

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AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID SR765

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: WWII Pistol Range (H-14)

Site Dimensions:

Acerage 3 (* 242) Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☐	☐	Mortar
Bombing	☐	☐	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☑	Small Arms
Hand grenade	☐		

*Please specify

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☑	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☐	☐	Demolition Materials

*Please specify

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID SR765

Anomaly Density (check one):

Low (<= 10 anomalies per acre) ☑ ☐ High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre) ☐

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 350-490 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined ☐ ☑ Unconfined

Impacted Media (check all that apply):

Surface Soil ☑ ☐ Surface water
Subsurface Soil ☑ ☐ Sediment
Groundwater ☐

Soil Type(Check one):

Gravel/Gravel-Sand Mixture ☐ ☑ Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture ☐ ☐ Silt/Silty Clay Mixture

Topography (check one):

Flat ☐ ☐ Flat with gorges or gullies
Gently Rolling ☐ ☑ Rolling with gorges or gullies
Heavy Rolling ☐ ☐ Mountainous

Vegetation Type (check one):

Barren or Low grass ☐ ☐ Shrubs with some trees
Low grass or few shrubs ☐ ☐ Heavy shrubs with trees
Heavy grass with numerous shrubs ☑

Typical safety level used at the site (check one):

A ☐ ☐ C
B ☐ ☑ D

Additional information that may influence cost:

MRA acreage has decreased from 242 acres due to corrections to range location/boundary and elimination of overlap with other Sandia Base small arms ranges.

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID SR766

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Sub-Machine Gun (H-10)

Site Dimensions:

Acerage 59 (*149) Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☐	☐	Mortar
Bombing	☐	☐	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☑	Small Arms
Hand grenade	☐		

*Please specify

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☑	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☐	☐	Demolition Materials

*Please specify

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID SR766

Anomaly Density (check one):

Low (<= 10 anomalies per acre) ☑ ☐ High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre) ☐

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 350-490 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined ☐ ☑ Unconfined

Impacted Media (check all that apply):

Surface Soil ☑ ☐ Surface water
Subsurface Soil ☑ ☐ Sediment
Groundwater ☐

Soil Type(Check one):

Gravel/Gravel-Sand Mixture ☐ ☑ Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture ☐ ☐ Silt/Silty Clay Mixture

Topography (check one):

Flat ☐ ☐ Flat with gorges or gullies
Gently Rolling ☐ ☑ Rolling with gorges or gullies
Heavy Rolling ☐ ☐ Mountainous

Vegetation Type (check one):

Barren or Low grass ☐ ☐ Shrubs with some trees
Low grass or few shrubs ☐ ☐ Heavy shrubs with trees
Heavy grass with numerous shrubs ☑

Typical safety level used at the site (check one):

A ☐ ☐ C
B ☐ ☑ D

Additional information that may influence cost:

MRA acreage has decreased from 149 acres due to corrections to range location/boundary and elimination of overlap with other Sandia Base small arms ranges.

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID SR767

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Rifle Range (H-11)

Site Dimensions:

Acerage 4 (* 189) Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☐	☐	Mortar
Bombing	☐	☐	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☑	Small Arms
Hand grenade	☐		

*Please specify

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☑	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☐	☐	Demolition Materials

*Please specify

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID SR767

Anomaly Density (check one):

Low (<= 10 anomalies per acre) ☑ ☐ High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre) ☐

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 350-490 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined ☐ ☑ Unconfined

Impacted Media (check all that apply):

Surface Soil ☑ ☐ Surface water
Subsurface Soil ☑ ☐ Sediment
Groundwater ☐

Soil Type(Check one):

Gravel/Gravel-Sand Mixture ☐ ☑ Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture ☐ ☐ Silt/Silty Clay Mixture

Topography (check one):

Flat ☐ ☐ Flat with gorges or gullies
Gently Rolling ☐ ☑ Rolling with gorges or gullies
Heavy Rolling ☐ ☐ Mountainous

Vegetation Type (check one):

Barren or Low grass ☐ ☐ Shrubs with some trees
Low grass or few shrubs ☐ ☐ Heavy shrubs with trees
Heavy grass with numerous shrubs ☑

Typical safety level used at the site (check one):

A ☐ ☐ C
B ☐ ☑ D

Additional information that may influence cost:

MRA acreage has decreased from 189 acres due to corrections to range location/boundary and elimination of overlap with other Sandia Base small arms ranges.

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID SR768

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Close Combat Infiltration Course (H-26)

Site Dimensions:

Acerage 536 Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☐	☐	Mortar
Bombing	☐	☑	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☑	Small Arms
Hand grenade	☐		

*Please specify

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☑	☐	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☑	☐	Demolition Materials

*Please specify

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID SR768

Anomaly Density (check one):

Low (<= 10 anomalies per acre) ☑ ☐ High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre) ☐

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 90-100 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined ☑ ☐ Unconfined

Impacted Media (check all that apply):

Surface Soil ☑ ☐ Surface water
Subsurface Soil ☑ ☐ Sediment
Groundwater ☐

Soil Type(Check one):

Gravel/Gravel-Sand Mixture ☑ ☐ Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture ☐ ☐ Silt/Silty Clay Mixture

Topography (check one):

Flat ☐ ☐ Flat with gorges or gullies
Gently Rolling ☐ ☐ Rolling with gorges or gullies
Heavy Rolling ☐ ☑ Mountainous

Vegetation Type (check one):

Barren or Low grass ☐ ☐ Shrubs with some trees
Low grass or few shrubs ☐ ☑ Heavy shrubs with trees
Heavy grass with numerous shrubs ☐

Typical safety level used at the site (check one):

A ☐ ☐ C
B ☐ ☑ D

Additional information that may influence cost:

_____

_____

_____

_____

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID SR777

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Rifle Range (H-17)

Site Dimensions:

Acerage 57 Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☐	☐	Mortar
Bombing	☐	☐	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☑	Small Arms
Hand grenade	☐		

*Please specify

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☐	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☐	☐	Demolition Materials

*Please specify Nothing found.

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID SR777

Anomaly Density (check one):

Low (<= 10 anomalies per acre) ☑ ☐ High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre) ☐

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 500-550 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined ☐ ☑ Unconfined

Impacted Media (check all that apply):

Surface Soil ☑ ☐ Surface water
Subsurface Soil ☑ ☐ Sediment
Groundwater ☐

Soil Type(Check one):

Gravel/Gravel-Sand Mixture ☐ ☑ Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture ☐ ☐ Silt/Silty Clay Mixture

Topography (check one):

Flat ☑ ☐ Flat with gorges or gullies
Gently Rolling ☐ ☐ Rolling with gorges or gullies
Heavy Rolling ☐ ☐ Mountainous

Vegetation Type (check one):

Barren or Low grass ☐ ☐ Shrubs with some trees
Low grass or few shrubs ☐ ☐ Heavy shrubs with trees
Heavy grass with numerous shrubs ☑

Typical safety level used at the site (check one):

A ☐ ☐ C
B ☐ ☑ D

Additional information that may influence cost:

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AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID SR778

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Airfield Pistol Range (H-2)

Site Dimensions:

Acerage 86 Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☐	☐	Mortar
Bombing	☐	☐	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☑	Small Arms
Hand grenade	☐		

*Please specify

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☐	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☐	☐	Demolition Materials

*Please specify Nothing found.

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID SR778

Anomaly Density (check one):

Low (<= 10 anomalies per acre) ☑ ☐ High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre) ☐

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 350-490 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined ☐ ☑ Unconfined

Impacted Media (check all that apply):

Surface Soil ☑ ☐ Surface water
Subsurface Soil ☑ ☐ Sediment
Groundwater ☐

Soil Type(Check one):

Gravel/Gravel-Sand Mixture ☐ ☑ Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture ☐ ☐ Silt/Silty Clay Mixture

Topography (check one):

Flat ☑ ☐ Flat with gorges or gullies
Gently Rolling ☐ ☐ Rolling with gorges or gullies
Heavy Rolling ☐ ☐ Mountainous

Vegetation Type (check one):

Barren or Low grass ☐ ☐ Shrubs with some trees
Low grass or few shrubs ☑ ☐ Heavy shrubs with trees
Heavy grass with numerous shrubs ☐

Typical safety level used at the site (check one):

A ☐ ☐ C
B ☐ ☑ D

Additional information that may influence cost:

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AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID SR780

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Impact Area (H-29) *not MMRP eligible - within operational range area*

Site Dimensions:

Acerage 88 Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify_____

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☐	☐	Mortar
Bombing	☐	☑	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☐	Small Arms
Hand grenade	☐		

*Please specify_____

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☑	☐	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☑	☐	Demolition Materials

*Please specify_____

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID SR780

Anomaly Density (check one):

Low (<= 10 anomalies per acre) ☑ ☐ High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre) ☐

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 90-100 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined ☑ ☐ Unconfined

Impacted Media (check all that apply):

Surface Soil ☑ ☐ Surface water
Subsurface Soil ☑ ☐ Sediment
Groundwater ☐

Soil Type(Check one):

Gravel/Gravel-Sand Mixture ☐ ☐ Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture ☑ ☐ Silt/Silty Clay Mixture

Topography (check one):

Flat ☐ ☐ Flat with gorges or gullies
Gently Rolling ☐ ☐ Rolling with gorges or gullies
Heavy Rolling ☐ ☑ Mountainous

Vegetation Type (check one):

Barren or Low grass ☐ ☑ Shrubs with some trees
Low grass or few shrubs ☐ ☐ Heavy shrubs with trees
Heavy grass with numerous shrubs ☐

Typical safety level used at the site (check one):

A ☐ ☐ C
B ☐ ☑ D

Additional information that may influence cost:

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AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID TS756

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Skeet Range (OB-12) *not AF MMRP eligible - transferred to FUDS MMRP*

Site Dimensions:

Acerage 9 Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify_____

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☐	☐	Mortar
Bombing	☐	☐	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☑	Small Arms
Hand grenade	☐		

*Please specify_____

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☑	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☐	☐	Demolition Materials

*Please specify_____

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID TS756

Anomaly Density (check one):

Low (<= 10 anomalies per acre) ☑ ☐ High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre) ☐

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 350-490 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined ☐ ☑ Unconfined

Impacted Media (check all that apply):

Surface Soil ☑ ☐ Surface water
Subsurface Soil ☑ ☐ Sediment
Groundwater ☐

Soil Type(Check one):

Gravel/Gravel-Sand Mixture ☐ ☑ Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture ☐ ☐ Silt/Silty Clay Mixture

Topography (check one):

Flat ☑ ☐ Flat with gorges or gullies
Gently Rolling ☐ ☐ Rolling with gorges or gullies
Heavy Rolling ☐ ☐ Mountainous

Vegetation Type (check one):

Barren or Low grass ☐ ☐ Shrubs with some trees
Low grass or few shrubs ☑ ☐ Heavy shrubs with trees
Heavy grass with numerous shrubs ☐

Typical safety level used at the site (check one):

A ☐ ☐ C
B ☐ ☑ D

Additional information that may influence cost:

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AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID TS775

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Airfield Skeet Range (ST-351) (H-1) *Not surveyed during CSE Phase I*

Site Dimensions:

Acerage 25 Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify_____

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☐	☐	Mortar
Bombing	☐	☐	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☑	Small Arms
Hand grenade	☐		

*Please specify_____

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☑	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☐	☐	Demolition Materials

*Please specify_____

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID TS775

Anomaly Density (check one):

Low (<= 10 anomalies per acre) ☑ ☐ High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre) ☐

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 350-490 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined ☐ ☑ Unconfined

Impacted Media (check all that apply):

Surface Soil ☑ ☐ Surface water
Subsurface Soil ☑ ☐ Sediment
Groundwater ☐

Soil Type(Check one):

Gravel/Gravel-Sand Mixture ☐ ☑ Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture ☐ ☐ Silt/Silty Clay Mixture

Topography (check one):

Flat ☑ ☐ Flat with gorges or gullies
Gently Rolling ☐ ☐ Rolling with gorges or gullies
Heavy Rolling ☐ ☐ Mountainous

Vegetation Type (check one):

Barren or Low grass ☐ ☐ Shrubs with some trees
Low grass or few shrubs ☑ ☐ Heavy shrubs with trees
Heavy grass with numerous shrubs ☐

Typical safety level used at the site (check one):

A ☐ ☐ C
B ☐ ☑ D

Additional information that may influence cost:

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AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID TS776

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Skeet Range (H-9)

Site Dimensions:

Acerage 29 Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☐	☐	Mortar
Bombing	☐	☐	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☑	Small Arms
Hand grenade	☐		

*Please specify

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☐	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☐	☐	Demolition Materials

*Please specify Nothing found.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID TS776

Anomaly Density (check one):

Low (<= 10 anomalies per acre) ☑ ☐ High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre) ☐

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 350-490 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined ☐ ☑ Unconfined

Impacted Media (check all that apply):

Surface Soil ☑ ☐ Surface water
Subsurface Soil ☑ ☐ Sediment
Groundwater ☐

Soil Type(Check one):

Gravel/Gravel-Sand Mixture ☐ ☑ Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture ☐ ☐ Silt/Silty Clay Mixture

Topography (check one):

Flat ☑ ☐ Flat with gorges or gullies
Gently Rolling ☐ ☐ Rolling with gorges or gullies
Heavy Rolling ☐ ☐ Mountainous

Vegetation Type (check one):

Barren or Low grass ☐ ☐ Shrubs with some trees
Low grass or few shrubs ☑ ☐ Heavy shrubs with trees
Heavy grass with numerous shrubs ☐

Typical safety level used at the site (check one):

A ☐ ☐ C
B ☐ ☑ D

Additional information that may influence cost:

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AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID Not Assigned

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Sandia Base Howitzer Range

Site Dimensions:

Acerage 743 Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☑	Other*
Artillery	☑	☐	Mortar
Bombing	☐	☐	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☑	Small Arms
Hand grenade	☐		

*Please specify Practice artillery range

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☐	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☑	☐	Demolition Materials

*Please specify 76mm projectile, fired, practice, found during CSE Phase I survey.

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID Not Assigned

Anomaly Density (check one):

Low (<= 10 anomalies per acre) ☑ ☐ High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre) ☐

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 350-490 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined ☐ ☑ Unconfined

Impacted Media (check all that apply):

Surface Soil ☑ ☐ Surface water
Subsurface Soil ☑ ☐ Sediment
Groundwater ☐

Soil Type(Check one):

Gravel/Gravel-Sand Mixture ☐ ☑ Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture ☐ ☐ Silt/Silty Clay Mixture

Topography (check one):

Flat ☐ ☐ Flat with gorges or gullies
Gently Rolling ☐ ☑ Rolling with gorges or gullies
Heavy Rolling ☐ ☐ Mountainous

Vegetation Type (check one):

Barren or Low grass ☐ ☐ Shrubs with some trees
Low grass or few shrubs ☐ ☐ Heavy shrubs with trees
Heavy grass with numerous shrubs ☑

Typical safety level used at the site (check one):

A ☐ ☐ C
B ☐ ☑ D

Additional information that may influence cost:

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AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID Not Assigned

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Sandia Base Howitzer Range Buffer

Site Dimensions:

Acerage 710 Acres
Length *Insufficient Data Feet
Width *Insufficient Data Feet
Perimeter *Insufficient Data Feet

Contaminants of Concern (check all that apply):

Acids/Caustics	☐	☑	Ordnance (not residual)
Asbestos	☐	☑	Ordnance (residual)
Fuels	☐	☐	PCBs
S V O C s	☐	☐	Pesticides
V O C s	☐	☐	Metals
Other*	☐	☐	Low Level Radioactive

*Please specify

Range Types (check all that apply):

Air to air	☐	☐	OB/OD
Air to ground	☐	☐	Other*
Artillery	☑	☐	Mortar
Bombing	☐	☐	Multiple / combined use
Burial pits	☐	☐	Rifle grenade, anti-tank rocket
Guided missiles	☐	☐	Small Arms
Hand grenade	☐		

*Please specify Practice artillery range buffer zone

Ordnance Types (check all that apply):

Bombs high explosive	☐	☐	Mortars
Bombs (WP, Incendiary, Photoflash)	☐	☐	Aerial Rockets, Live
Bombs, Practice	☐	☐	Aerial Rockets, Practice
Hand Grenades, Live	☐	☐	Guided Missiles
Hand Grenades, Practice	☐	☐	Pyrotechnics
Ground Rockets, Rifle Grenades, Live	☐	☐	Small Arms
Ground Rockets, Rifle Grenades, Practice	☐	☐	Other*
Medium Calbier (20mm, 25mm, 30mm)	☐	☐	Land Mines
Large Caliber (37mm and larger)	☑	☐	Demolition Materials

*Please specify

AF MMRP CSE PHASE 1

RACER DATA INPUT WORKSHEET

Site ID Not Assigned

Anomaly Density (check one):

Low (<= 10 anomalies per acre)	☐	☐	High (>50 anomalies per acre)
Medium (10 to 50 anomalies per acre)	☑		

*Please specify_____

Area of Contamination:

Depth to base of contamination: n/a Feet
Depth to water table: 350-485 Feet
Depth to groundwater contamination: n/a Feet

Type of Auqifer (check one):

Confined	☐	☑	Unconfined

Impacted Media (check all that apply):

Surface Soil	☑	☐	Surface water
Subsurface Soil	☑	☐	Sediment
Groundwater	☐		

Soil Type(Check one):

Gravel/Gravel-Sand Mixture	☐	☑	Sand-Silt Mixture/Sand-Clay Mixture
Sand/Gravelly-Sand Mixture	☐	☐	Silt/Silty Clay Mixture

Topography (check one):

Flat	☑	☐	Flat with gorges or gullies
Gently Rolling	☐	☐	Rolling with gorges or gullies
Heavy Rolling	☐	☐	Mountainous

Vegetation Type (check one):

Barren or Low grass	☐	☐	Shrubs with some trees
Low grass or few shrubs	☑	☐	Heavy shrubs with trees
Heavy grass with numerous shrubs	☐		

Typical safety level used at the site (check one):

A	☐	☐	C
B	☐	☑	D

Additional information that may influence cost:

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APPENDIX I. AFRIMS DATA INPUT WORKSHEETS

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AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL120

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Proximity Fuze Range (H-22)

Point of Contact:

Name Carl J. Lanz, P.G.
Organization KAFB Restoration Section
Phone (505) 853-6534
Email Carl.Lanz@kirtland.af.mil

2050 Wyoming Blvd. SE Address
Albuquerque City
NM State

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at various locations.
State
County

Latitude
Longitude

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply): ☐

Testing	☑	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☑	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☐	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☑	☐	Other*
Land-to-Air	☐		

*Please specify

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL120

Site Type (check all that apply):

- [x] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [ ] Buffer Zone
- [ ] Chemical Weapons
- [ ] Surface Disposal Area
- [ ] Depleted Uranium
- [ ] EOD Range
- [ ] Firing Line
- [x] Fire Range
- [ ] Grenade Range
- [ ] Heavy Explosive
- [ ] Munitions Burial
- [x] Medium/Large Caliber
- [ ] Multi-Use Range
- [ ] Open Burn
- [ ] Open Detonation
- [x] Propellant and Pyrotechnics
- [ ] Pistol Range
- [ ] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [ ] Range Residue Graveyard (targets and debris)
- [x] Safety Fan
- [ ] Strafing Run-in Line
- [ ] Small Arms Range
- [ ] Target Area
- [ ] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [ ] EOD Area
- [x] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	6058	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		6058
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [x] Medium/Large Caliber (20mm or larger)
- [x] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [x] Explosive rockets
- [ ] Guided Missiles
- [ ] Explosive detonators
- [ ] Blasting Caps
- [ ] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [x] Small arms expended
- [ ] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [ ] Incendiary material
- [ ] Primary or initiating explosives
- [ ] Demolition charges
- [ ] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [x] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [ ] Riot control agents (vomiting, tear)
- [ ] Bombs (explosive)
- [ ] Bombs (practice)
- [x] Fuses, Booster, Bursters
- [ ] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [ ] Mortars
- [ ] Torpedoes
- [ ] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL120

Anomaly Density (check one):

- ☐ Low (<= 10 anomalies per acre)
- ☐ Medium (10 to 50 anomalies peracre)
- ☑ High (> 50 anomalies per acre)

Predominant Soil Type (check one):

- ☐ Clay/Sand with Stone
- ☐ Sand/Gravel-Sand
- ☐ Sand-Silt/Sand-Clay
- ☐ Silt/Silty Clay
- ☐ Clay-Sand/Clay-Silt
- ☐ Gravel/Gravel-Sand
- ☐ Rock
- ☐ Water Range
- ☑ Other*

*Please specify Shallow to deep, loamy, stony, cobbly soils

Predominant Topography (check one):

- ☐ Flat
- ☐ Flat with gorges or gullies
- ☐ Gently rolling
- ☐ Heavily rolling
- ☑ Mountainous
- ☐ Rolling with gorges or gullies
- ☐ Water Range
- ☐ Other*

*Please specify_____

Predominant Vegetation (check one):

- ☐ Barren or low grass
- ☐ Heavy grass and many shrubs
- ☐ Heavy shrubs and trees
- ☐ Low grass and few shrubs
- ☐ Shrubs and some trees
- ☑ Heavily wooded
- ☐ Water Range
- ☐ Other*

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- ☐ Actual (Known)
- ☐ Potential
- ☑ No potential
- ☐ Unknown

Depth to Groundwater:

Groundwater Depth 200 Feet

MRS Located above drinking water aquifer?

- ☐ Yes
- ☑ No
- ☐ Not applicable (water range)

Sole source aquifer?

- ☑ Yes
- ☐ No

Threatened or endangered species present?

- ☑ Yes
- ☐ No

Archaeological or cultural sites present?

- ☐ Yes
- ☑ No

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- ☐ Yes
- ☑ No

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- ☐ Yes
- ☐ No

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL120

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☐ ☑ No

If yes, what is the scope of the response activities?

Past practices ☐ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☐ ☐ Operation and maintenance
Investigation ☐ ☐ Monitoring
Response/remedial action ☐ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☐

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☐

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☐ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☑ Unknown

Risk Assessment Code (RAC):

Hazard Severity I _____ 1 _____ RAC score
Hazard Probability A _____ ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC score based on previous AFRIMS input. FOR REFERENCE ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL120

Access Control:

No controls	☐	☐	Locked/secured gated
Signs	☑	☐	Log-in book
Fencing around entire range	☐	☑	Security patrol
Partial fencing	☑	☐	Other*

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

Federal Agency	☐	☐	Local agency
Tribal government	☐	☐	Private entity
State Agency	☐		

☐ Ownership transfer to:

Federal agency	☐	☐	Local agency
Tribal government	☐	☐	Private entity
State agency	☐		

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land
☐ Base realignment/closure action
Planned or mandated date for transfer?_____
☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

Yes	☐	☐	Unknown
No	☐		

If yes:

Point of contact:_____
Phone #:_____
Year of transfer:_____
Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

Federal agency	☑	☐	Local agency
Tribal government	☐	☐	Private entity
State agency	☐	☐	None

Please provide a brief description of the organization with ownership or control:

Part of the eastern area of AL120 is owned by the US Forestry Department.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL757

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Proximity Fuze Range North (OB-10) *not AF MMRP eligible - transferred to FUDS MMRP*

Point of Contact:

Name Carl J. Lanz, P.G.
Organization KAFB Restoration Section
Phone (505) 853-6534
Email Carl.Lanz@kirtland.af.mil

2050 Wyoming Blvd. SE Address
Albuquerque City
NM State

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at various locations.
State
County

Latitude
Longitude

MRS Status (check one):

Closed	☐	☐	Active
Transferring	☐	☐	Inactive
Transferred	☑	☐	Other*

*Please specify

Classification (check all that apply):

	☐		
Testing	☑	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☑	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☐	Other*
Land-to-Air	☐		

*Please specify

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL757

Site Type (check all that apply):

- [ ] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [x] Buffer Zone
- [ ] Chemical Weapons
- [ ] Surface Disposal Area
- [ ] Depleted Uranium
- [ ] EOD Range
- [ ] Firing Line
- [ ] Fire Range
- [ ] Grenade Range
- [ ] Heavy Explosive
- [ ] Munitions Burial
- [x] Medium/Large Caliber
- [ ] Multi-Use Range
- [ ] Open Burn
- [ ] Open Detonation
- [ ] Propellant and Pyrotechnics
- [ ] Pistol Range
- [ ] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [ ] Range Residue Graveyard (targets and debris)
- [x] Safety Fan
- [ ] Strafing Run-in Line
- [ ] Small Arms Range
- [ ] Target Area
- [ ] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [ ] EOD Area
- [ ] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	251	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		251
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [x] Medium/Large Caliber (20mm or larger)
- [ ] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [x] Explosive rockets
- [ ] Guided Missiles
- [ ] Explosive detonators
- [ ] Blasting Caps
- [ ] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [ ] Small arms expended
- [ ] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [ ] Incendiary material
- [ ] Primary or initiating explosives
- [ ] Demolition charges
- [ ] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [ ] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [ ] Riot control agents (vomiting, tear)
- [ ] Bombs (explosive)
- [ ] Bombs (practice)
- [x] Fuses, Booster, Bursters
- [ ] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [ ] Mortars
- [ ] Torpedoes
- [ ] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL757

Anomaly Density (check one):

- ☐ Low (<= 10 anomalies per acre)
- ☐ Medium (10 to 50 anomalies peracre)
- ☑ High (> 50 anomalies per acre)

Predominant Soil Type (check one):

- ☐ Clay/Sand with Stone
- ☐ Sand/Gravel-Sand
- ☐ Sand-Silt/Sand-Clay
- ☐ Silt/Silty Clay
- ☐ Clay-Sand/Clay-Silt
- ☐ Gravel/Gravel-Sand
- ☐ Rock
- ☐ Water Range
- ☑ Other*

*Please specify Shallow to deep, loamy, stony, cobbly soils

Predominant Topography (check one):

- ☐ Flat
- ☐ Flat with gorges or gullies
- ☐ Gently rolling
- ☐ Heavily rolling
- ☑ Mountainous
- ☐ Rolling with gorges or gullies
- ☐ Water Range
- ☐ Other*

*Please specify_____

Predominant Vegetation (check one):

- ☐ Barren or low grass
- ☐ Heavy grass and many shrubs
- ☐ Heavy shrubs and trees
- ☐ Low grass and few shrubs
- ☐ Shrubs and some trees
- ☑ Heavily wooded
- ☐ Water Range
- ☐ Other*

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- ☐ Actual (Known)
- ☐ Potential
- ☑ No potential
- ☐ Unknown

Depth to Groundwater:

Groundwater Depth 200 Feet

MRS Located above drinking water aquifer?

- ☐ Yes
- ☑ No
- ☐ Not applicable (water range)

Sole source aquifer?

- ☑ Yes
- ☐ No

Threatened or endangered species present?

- ☑ Yes
- ☐ No

Archaeological or cultural sites present?

- ☐ Yes
- ☑ No

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- ☐ Yes
- ☑ No

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- ☐ Yes
- ☐ No

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL757

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☐ ☑ No

If yes, what is the scope of the response activities?

Past practices ☐ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☐ ☐ Operation and maintenance
Investigation ☐ ☐ Monitoring
Response/remedial action ☐ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☐

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☐

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☐ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☑ Unknown

Risk Assessment Code (RAC):

Hazard Severity II 1 RAC score
Hazard Probability A ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☐ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☑ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC score based on previous AFRIMS input. FOR REFERENCE ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL757

Access Control:

- No controls ☑
- Signs ☐
- Fencing around entire range ☐
- Partial fencing ☐
- Locked/secured gated ☐
- Log-in book ☐
- Security patrol ☐
- Other* ☐

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- Federal Agency ☐
- Tribal government ☐
- State Agency ☐
- Local agency ☐
- Private entity ☐

☑ Ownership transfer to:

- Federal agency ☐
- Tribal government ☐
- State agency ☐
- Local agency ☑
- Private entity ☑

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- Yes ☐
- No ☐
- Unknown ☑

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- Federal agency ☑
- Tribal government ☐
- State agency ☐
- Local agency ☑
- Private entity ☑
- None ☐

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL758

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Proximity Fuze Range East (OB-9) *not AF MMRP eligible - transferred to FUDS MMRP*

Point of Contact:

Name Carl J. Lanz, P.G.
Organization KAFB Restoration Section
Phone (505) 853-6534
Email Carl.Lanz@kirtland.af.mil

2050 Wyoming Blvd. SE Address
Albuquerque City
NM State

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at various locations.
State
County

Latitude
Longitude

MRS Status (check one):

Closed	☐	☐	Active
Transferring	☐	☐	Inactive
Transferred	☑	☐	Other*

*Please specify

Classification (check all that apply):

	☐		
Testing	☑	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☑	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☐	Other*
Land-to-Air	☐		

*Please specify

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL758

Site Type (check all that apply):

- [ ] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [x] Buffer Zone
- [ ] Chemical Weapons
- [ ] Surface Disposal Area
- [ ] Depleted Uranium
- [ ] EOD Range
- [ ] Firing Line
- [ ] Fire Range
- [ ] Grenade Range
- [ ] Heavy Explosive
- [ ] Munitions Burial
- [x] Medium/Large Caliber
- [ ] Multi-Use Range
- [ ] Open Burn
- [ ] Open Detonation
- [ ] Propellant and Pyrotechnics
- [ ] Pistol Range
- [ ] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [ ] Range Residue Graveyard (targets and debris)
- [x] Safety Fan
- [ ] Strafing Run-in Line
- [ ] Small Arms Range
- [ ] Target Area
- [ ] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [ ] EOD Area
- [ ] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	941	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		941
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [x] Medium/Large Caliber (20mm or larger)
- [ ] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [x] Explosive rockets
- [ ] Guided Missiles
- [ ] Explosive detonators
- [ ] Blasting Caps
- [ ] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [ ] Small arms expended
- [ ] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [ ] Incendiary material
- [ ] Primary or initiating explosives
- [ ] Demolition charges
- [ ] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [ ] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [ ] Riot control agents (vomiting, tear)
- [ ] Bombs (explosive)
- [ ] Bombs (practice)
- [x] Fuses, Booster, Bursters
- [ ] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [ ] Mortars
- [ ] Torpedoes
- [ ] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL758

Anomaly Density (check one):

- ☐ Low (<= 10 anomalies per acre)
- ☐ Medium (10 to 50 anomalies peracre)
- ☑ High (> 50 anomalies per acre)

Predominant Soil Type (check one):

- ☐ Clay/Sand with Stone
- ☐ Sand/Gravel-Sand
- ☐ Sand-Silt/Sand-Clay
- ☐ Silt/Silty Clay
- ☐ Clay-Sand/Clay-Silt
- ☐ Gravel/Gravel-Sand
- ☐ Rock
- ☐ Water Range
- ☑ Other*

*Please specify Shallow to deep, loamy, stony, cobbly soils

Predominant Topography (check one):

- ☐ Flat
- ☐ Flat with gorges or gullies
- ☐ Gently rolling
- ☐ Heavily rolling
- ☑ Mountainous
- ☐ Rolling with gorges or gullies
- ☐ Water Range
- ☐ Other*

*Please specify_____

Predominant Vegetation (check one):

- ☐ Barren or low grass
- ☐ Heavy grass and many shrubs
- ☐ Heavy shrubs and trees
- ☐ Low grass and few shrubs
- ☐ Shrubs and some trees
- ☑ Heavily wooded
- ☐ Water Range
- ☐ Other*

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- ☐ Actual (Known)
- ☐ Potential
- ☑ No potential
- ☐ Unknown

Depth to Groundwater:

Groundwater Depth 200 Feet

MRS Located above drinking water aquifer?

- ☐ Yes
- ☑ No
- ☐ Not applicable (water range)

Sole source aquifer?

- ☑ Yes
- ☐ No

Threatened or endangered species present?

- ☑ Yes
- ☐ No

Archaeological or cultural sites present?

- ☐ Yes
- ☑ No

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- ☐ Yes
- ☑ No

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- ☐ Yes
- ☐ No

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL758

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☐ ☑ No

If yes, what is the scope of the response activities?

Past practices ☐ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☐ ☐ Operation and maintenance
Investigation ☐ ☐ Monitoring
Response/remedial action ☐ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☐

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☐

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☐ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☑ Unknown

Risk Assessment Code (RAC):

Hazard Severity II 1 RAC score
Hazard Probability A ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☐ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☑ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC score based on previous AFRIMS input. FOR REFERENCE ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL758

Access Control:

- No controls ☑
- Signs ☐
- Fencing around entire range ☐
- Partial fencing ☐
- Locked/secured gated ☐
- Log-in book ☐
- Security patrol ☐
- Other* ☐

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- Federal Agency ☐
- Tribal government ☐
- State Agency ☐
- Local agency ☐
- Private entity ☐

☑ Ownership transfer to:

- Federal agency ☐
- Tribal government ☐
- State agency ☐
- Local agency ☑
- Private entity ☑

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- Yes ☐
- No ☐
- Unknown ☑

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- Federal agency ☑
- Tribal government ☐
- State agency ☐
- Local agency ☑
- Private entity ☑
- None ☐

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL769

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Ordnance Drop Zone (H-19)

Point of Contact:

Name Carl J. Lanz, P.G.
Organization KAFB Restoration Section
Phone (505) 853-6534
Email Carl.Lanz@kirtland.af.mil

2050 Wyoming Blvd. SE Address
Albuquerque City
NM State

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at various locations.
State
County

Latitude
Longitude

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply): ☐

Testing	☑	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☐	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☑	☐	Other*
Land-to-Air	☐		

*Please specify

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL769

Site Type (check all that apply):

- [x] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [ ] Buffer Zone
- [ ] Chemical Weapons
- [ ] Surface Disposal Area
- [ ] Depleted Uranium
- [ ] EOD Range
- [ ] Firing Line
- [ ] Fire Range
- [ ] Grenade Range
- [ ] Heavy Explosive
- [ ] Munitions Burial
- [ ] Medium/Large Caliber
- [ ] Multi-Use Range
- [ ] Open Burn
- [ ] Open Detonation
- [ ] Propellant and Pyrotechnics
- [ ] Pistol Range
- [ ] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [ ] Range Residue Graveyard (targets and debris)
- [ ] Safety Fan
- [ ] Strafing Run-in Line
- [ ] Small Arms Range
- [x] Target Area
- [ ] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [ ] EOD Area
- [ ] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	524	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		524
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [ ] Medium/Large Caliber (20mm or larger)
- [ ] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [ ] Explosive rockets
- [ ] Guided Missiles
- [ ] Explosive detonators
- [ ] Blasting Caps
- [ ] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [ ] Small arms expended
- [ ] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [ ] Incendiary material
- [ ] Primary or initiating explosives
- [ ] Demolition charges
- [ ] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [ ] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [ ] Riot control agents (vomiting, tear)
- [ ] Bombs (explosive)
- [ ] Bombs (practice)
- [ ] Fuses, Booster, Bursters
- [ ] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [ ] Mortars
- [ ] Torpedoes
- [ ] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify No physical evidence of MEC located during reconnaissance.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL769

Anomaly Density (check one):

- Low (<= 10 anomalies per acre) ☑
- Medium (10 to 50 anomalies peracre) ☐
- High (> 50 anomalies per acre) ☐

Predominant Soil Type (check one):

- Clay/Sand with Stone ☐
- Sand/Gravel-Sand ☑
- Sand-Silt/Sand-Clay ☐
- Silt/Silty Clay ☐
- Clay-Sand/Clay-Silt ☐
- Gravel/Gravel-Sand ☐
- Rock ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Topography (check one):

- Flat ☐
- Flat with gorges or gullies ☑
- Gently rolling ☐
- Heavily rolling ☐
- Mountainous ☐
- Rolling with gorges or gullies ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Vegetation (check one):

- Barren or low grass ☐
- Heavy grass and many shrubs ☐
- Heavy shrubs and trees ☐
- Low grass and few shrubs ☑
- Shrubs and some trees ☐
- Heavily wooded ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- Actual (Known) ☐
- Potential ☐
- No potential ☐
- Unknown ☑

Depth to Groundwater:

Groundwater Depth 100 Feet

MRS Located above drinking water aquifer?

- Yes ☑
- No ☐
- Not applicable (water range) ☐

Sole source aquifer?

- Yes ☑
- No ☐

Threatened or endangered species present?

- Yes ☑
- No ☐

Archaeological or cultural sites present?

- Yes ☐
- No ☑

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- Yes ☐
- No ☑

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- Yes ☐
- No ☐

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL769

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☐ ☑ No

If yes, what is the scope of the response activities?

Past practices ☐ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☐ ☐ Operation and maintenance
Investigation ☐ ☐ Monitoring
Response/remedial action ☐ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☐

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☐

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☐ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☑ Unknown

Risk Assessment Code (RAC):

Hazard Severity IV 3 RAC score
Hazard Probability A ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC score based on previous AFRIMS input. FOR REFERENCE ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL769

Access Control:

- ☐ No controls
- ☐ Signs
- ☐ Fencing around entire range
- ☐ Partial fencing
- ☐ Locked/secured gated
- ☐ Log-in book
- ☑ Security patrol
- ☐ Other*

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- ☐ Federal Agency
- ☐ Tribal government
- ☐ State Agency
- ☐ Local agency
- ☐ Private entity

☐ Ownership transfer to:

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- ☐ Yes
- ☐ No
- ☐ Unknown

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity
- ☑ None

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL771

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Old Cable Site (H-24)

Point of Contact:

Name Carl J. Lanz, P.G.
Organization KAFB Restoration Section
Phone (505) 853-6534
Email Carl.Lanz@kirtland.af.mil

2050 Wyoming Blvd. SE Address
Albuquerque City
NM State

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at Latitude
State various locations. Longitude
County

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply): ☐

Testing	☑	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☐	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☑	☐	Other*
Land-to-Air	☐		

*Please specify

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL771

Site Type (check all that apply):

- [x] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [ ] Buffer Zone
- [ ] Chemical Weapons
- [ ] Surface Disposal Area
- [ ] Depleted Uranium
- [ ] EOD Range
- [ ] Firing Line
- [x] Fire Range
- [ ] Grenade Range
- [ ] Heavy Explosive
- [ ] Munitions Burial
- [x] Medium/Large Caliber
- [ ] Multi-Use Range
- [ ] Open Burn
- [ ] Open Detonation
- [x] Propellant and Pyrotechnics
- [ ] Pistol Range
- [ ] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [ ] Range Residue Graveyard (targets and debris)
- [ ] Safety Fan
- [ ] Strafing Run-in Line
- [ ] Small Arms Range
- [ ] Target Area
- [ ] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [ ] EOD Area
- [x] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	863	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		863
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [x] Medium/Large Caliber (20mm or larger)
- [x] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [x] Explosive rockets
- [ ] Guided Missiles
- [ ] Explosive detonators
- [ ] Blasting Caps
- [ ] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [ ] Small arms expended
- [ ] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [ ] Incendiary material
- [ ] Primary or initiating explosives
- [ ] Demolition charges
- [ ] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [x] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [x] Riot control agents (vomiting, tear)
- [ ] Bombs (explosive)
- [ ] Bombs (practice)
- [ ] Fuses, Booster, Bursters
- [ ] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [ ] Mortars
- [ ] Torpedoes
- [ ] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL771

Anomaly Density (check one):

- ☐ Low (<= 10 anomalies per acre)
- ☐ High (> 50 anomalies per acre)
- ☑ Medium (10 to 50 anomalies peracre)

Predominant Soil Type (check one):

- ☐ Clay/Sand with Stone
- ☐ Sand/Gravel-Sand
- ☐ Sand-Silt/Sand-Clay
- ☐ Silt/Silty Clay
- ☐ Clay-Sand/Clay-Silt
- ☐ Gravel/Gravel-Sand
- ☐ Rock
- ☐ Water Range
- ☑ Other*

*Please specify Shallow to deep, loamy, stony, cobbly soils

Predominant Topography (check one):

- ☐ Flat
- ☐ Flat with gorges or gullies
- ☐ Gently rolling
- ☐ Heavily rolling
- ☑ Mountainous
- ☐ Rolling with gorges or gullies
- ☐ Water Range
- ☐ Other*

*Please specify_____

Predominant Vegetation (check one):

- ☐ Barren or low grass
- ☐ Heavy grass and many shrubs
- ☐ Heavy shrubs and trees
- ☐ Low grass and few shrubs
- ☑ Shrubs and some trees
- ☐ Heavily wooded
- ☐ Water Range
- ☐ Other*

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- ☐ Actual (Known)
- ☐ Potential
- ☐ No potential
- ☑ Unknown

Depth to Groundwater:

Groundwater Depth 90-100 Feet

MRS Located above drinking water aquifer?

- ☐ Yes
- ☑ No
- ☐ Not applicable (water range)

Sole source aquifer?

- ☑ Yes
- ☐ No

Threatened or endangered species present?

- ☑ Yes
- ☐ No

Archaeological or cultural sites present?

- ☐ Yes
- ☑ No

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- ☐ Yes
- ☑ No

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- ☐ Yes
- ☐ No

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL771

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☑ ☐ No

If yes, what is the scope of the response activities?

Past practices ☑ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☑ ☐ Operation and maintenance
Investigation ☑ ☐ Monitoring
Response/remedial action ☑ ☑ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☑ No
Unknown ☐

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☑

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☐ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☑ Unknown

Risk Assessment Code (RAC):

Hazard Severity II 1 RAC score
Hazard Probability A ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC score based on previous AFRIMS input. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID AL771

Access Control:

- No controls ☐
- Signs ☑
- Fencing around entire range ☐
- Partial fencing ☑
- ☑ Locked/secured gated
- ☐ Log-in book
- ☑ Security patrol
- ☐ Other*

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- Federal Agency ☐
- Tribal government ☐
- State Agency ☐
- ☐ Local agency
- ☐ Private entity

☐ Ownership transfer to:

- Federal agency ☐
- Tribal government ☐
- State agency ☐
- ☐ Local agency
- ☐ Private entity

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- Yes ☐
- No ☐
- ☐ Unknown

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- Federal agency ☐
- Tribal government ☐
- State agency ☐
- ☐ Local agency
- ☐ Private entity
- ☑ None

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID DA130

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Arroyo del Coyote Demolition Area (H-13)

Point of Contact:

Name Carl J. Lanz, P.G.
Organization KAFB Restoration Section
Phone (505) 853-6534
Email Carl.Lanz@kirtland.af.mil

2050 Wyoming Blvd. SE Address
Albuquerque City
NM State

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archives Records Searches have been conducted on various dates.

Location:

City **Archives Records Searches have been conducted at various locations.
State
County

Latitude
Longitude

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply):

	☐		
Testing	☐	☐	Emergency Destruction
Training	☐	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☑	Other*
Disposal (Burial)	☐		

*Please specify Former Demolition Area

Range Type (check all that apply):

Air-to-Air	☐	☐	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☑	Other*
Land-to-Air	☐		

*Please specify Former Demolition Area

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID DA130

Site Type (check all that apply):

- ☐ Air-to Land
- ☐ Air-to-Water
- ☐ Burn Pit
- ☐ Biological Warfare
- ☐ Buffer Zone
- ☐ Chemical Weapons
- ☑ Surface Disposal Area
- ☐ Depleted Uranium
- ☐ EOD Range
- ☐ Firing Line
- ☐ Fire Range
- ☐ Grenade Range
- ☐ Heavy Explosive
- ☐ Munitions Burial
- ☐ Medium/Large Caliber
- ☐ Multi-Use Range
- ☐ Open Burn
- ☐ Open Detonation
- ☐ Propellant and Pyrotechnics
- ☐ Pistol Range
- ☐ Pyrotechnics
- ☐ Residue Holding Area (expended munitions, range clearance, etc.)
- ☐ Range Residue Graveyard (targets and debris)
- ☐ Safety Fan
- ☐ Strafing Run-in Line
- ☐ Small Arms Range
- ☐ Target Area
- ☐ Training and Maneuver Area
- ☐ Trap and Skeet Range
- ☐ EOD Area
- ☐ Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	☐	386	
Acreage confirmed as containing UXO	☐		0
Acreage suspected or potentially containing UXO	☐		386
Acreage confirmed as NOT containing UXO	☐		0

Ordnance Types (check all that apply):

- ☐ Medium/Large Caliber (20mm or larger)
- ☐ Explosive grenades (hand or rifle)
- ☐ Explosive landmine
- ☐ Explosive rockets
- ☐ Guided Missiles
- ☐ Explosive detonators
- ☐ Blasting Caps
- ☐ Practice Grenades (with spotting charges)
- ☐ Practice landmines (with spotting charges)
- ☐ Small Arms complete round (.22-.50 cal)
- ☐ Small arms expended
- ☐ Practice ordnance (without spotting charges)
- ☐ White phosphorous
- ☐ Incendiary material
- ☐ Primary or initiating explosives
- ☐ Demolition charges
- ☐ Other*
- ☐ Military dynamite
- ☐ Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- ☐ Solid or Liquid propellants
- ☐ Toxic chemical agents (choking, nerve, blood, blister)
- ☐ Water gas identification sets
- ☐ Radiological ordnance (e.g. depleted Uranium)
- ☐ Riot control agents (vomiting, tear)
- ☐ Bombs (explosive)
- ☐ Bombs (practice)
- ☐ Fuses, Booster, Bursters
- ☐ Flares, signals, and simulators (other than white phosphorous)
- ☐ Ballistics Missiles
- ☐ Skeet
- ☐ Mortars
- ☐ Torpedoes
- ☐ Warheads
- ☐ Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify No MEC found during investigation.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID DA130

Anomaly Density (check one):

- ☐ Low (<= 10 anomalies per acre)
- ☐ Medium (10 to 50 anomalies peracre)
- ☑ High (> 50 anomalies per acre)

Predominant Soil Type (check one):

- ☐ Clay/Sand with Stone
- ☑ Sand/Gravel-Sand
- ☐ Sand-Silt/Sand-Clay
- ☐ Silt/Silty Clay
- ☐ Clay-Sand/Clay-Silt
- ☐ Gravel/Gravel-Sand
- ☐ Rock
- ☐ Water Range
- ☐ Other*

*Please specify_____

Predominant Topography (check one):

- ☑ Flat
- ☐ Flat with gorges or gullies
- ☐ Gently rolling
- ☐ Heavily rolling
- ☐ Mountainous
- ☐ Rolling with gorges or gullies
- ☐ Water Range
- ☐ Other*

*Please specify_____

Predominant Vegetation (check one):

- ☐ Barren or low grass
- ☐ Heavy grass and many shrubs
- ☐ Heavy shrubs and trees
- ☑ Low grass and few shrubs
- ☐ Shrubs and some trees
- ☐ Heavily wooded
- ☐ Water Range
- ☐ Other*

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- ☐ Actual (Known)
- ☐ Potential
- ☐ No potential
- ☑ Unknown

Depth to Groundwater:

Groundwater Depth 350-485 Feet

MRS Located above drinking water aquifer?

- ☑ Yes
- ☐ No
- ☐ Not applicable (water range)

Sole source aquifer?

- ☑ Yes
- ☐ No

Threatened or endangered species present?

- ☑ Yes
- ☐ No

Archaeological or cultural sites present?

- ☐ Yes
- ☑ No

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- ☐ Yes
- ☑ No

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- ☐ Yes
- ☐ No

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID DA130

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☑ ☐ No

If yes, what is the scope of the response activities?

Past practices ☑ ☑ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☑ ☐ Operation and maintenance
Investigation ☑ ☑ Monitoring
Response/remedial action ☑ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☑

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☑

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☐ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☑ Unknown

Risk Assessment Code (RAC):

Hazard Severity II 2 RAC score
Hazard Probability B ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC score based on previous AFRIMS input. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID DA130

Access Control:

- ☐ No controls
- ☐ Signs
- ☐ Fencing around entire range
- ☐ Partial fencing
- ☐ Locked/secured gated
- ☐ Log-in book
- ☑ Security patrol
- ☐ Other*

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- ☐ Federal Agency
- ☐ Tribal government
- ☐ State Agency
- ☐ Local agency
- ☐ Private entity

☐ Ownership transfer to:

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- ☐ Yes
- ☐ No
- ☐ Unknown

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity
- ☑ None

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID DA782

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Explosive Disposal Area (H-7)

Point of Contact:

Name Carl J. Lanz, P.G. 2050 Wyoming Blvd. SE Address
Organization KAFB Restoration Section Albuquerque City
Phone (505) 853-6534 NM State
Email Carl.Lanz@kirtland.af.mil

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at Latitude
State various locations. Longitude
County

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply):

	☐		
Testing	☐	☐	Emergency Destruction
Training	☐	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☑	Other*
Disposal (Burial)	☐		

*Please specify Former Explosive Disposal Area

Range Type (check all that apply):

Air-to-Air	☐	☐	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☑	Other*
Land-to-Air	☐		

*Please specify Former Explosive Disposal Area

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID DA782

Site Type (check all that apply):

- ☐ Air-to Land
- ☐ Air-to-Water
- ☐ Burn Pit
- ☐ Biological Warfare
- ☐ Buffer Zone
- ☐ Chemical Weapons
- ☑ Surface Disposal Area
- ☐ Depleted Uranium
- ☐ EOD Range
- ☐ Firing Line
- ☐ Fire Range
- ☐ Grenade Range
- ☐ Heavy Explosive
- ☐ Munitions Burial
- ☐ Medium/Large Caliber
- ☐ Multi-Use Range
- ☐ Open Burn
- ☐ Open Detonation
- ☐ Propellant and Pyrotechnics
- ☐ Pistol Range
- ☐ Pyrotechnics
- ☐ Residue Holding Area (expended munitions, range clearance, etc.)
- ☐ Range Residue Graveyard (targets and debris)
- ☐ Safety Fan
- ☐ Strafing Run-in Line
- ☐ Small Arms Range
- ☐ Target Area
- ☐ Training and Maneuver Area
- ☐ Trap and Skeet Range
- ☐ EOD Area
- ☐ Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	☐	6 (* 26)	
Acreage confirmed as containing UXO	☐		0
Acreage suspected or potentially containing UXO	☐		6
Acreage confirmed as NOT containing UXO	☐		0

Ordnance Types (check all that apply):

- ☐ Medium/Large Caliber (20mm or larger)
- ☐ Explosive grenades (hand or rifle)
- ☐ Explosive landmine
- ☐ Explosive rockets
- ☐ Guided Missiles
- ☐ Explosive detonators
- ☐ Blasting Caps
- ☐ Practice Grenades (with spotting charges)
- ☐ Practice landmines (with spotting charges)
- ☐ Small Arms complete round (.22-.50 cal)
- ☐ Small arms expended
- ☐ Practice ordnance (without spotting charges)
- ☐ White phosphorous
- ☐ Incendiary material
- ☐ Primary or initiating explosives
- ☐ Demolition charges
- ☐ Other*
- ☐ Military dynamite
- ☐ Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- ☐ Solid or Liquid propellants
- ☐ Toxic chemical agents (choking, nerve, blood, blister)
- ☐ Water gas identification sets
- ☐ Radiological ordnance (e.g. depleted Uranium)
- ☐ Riot control agents (vomiting, tear)
- ☐ Bombs (explosive)
- ☐ Bombs (practice)
- ☐ Fuses, Booster, Bursters
- ☐ Flares, signals, and simulators (other than white phosphorous)
- ☐ Ballistics Missiles
- ☐ Skeet
- ☐ Mortars
- ☐ Torpedoes
- ☐ Warheads
- ☐ Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify No MEC found during investigation. MRA acreage has been reduced from 26 acres due to corrections to the MRA boundary and encroachment of current operational range areas (explosive safety limits).

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID DA782

Anomaly Density (check one):

- Low (<= 10 anomalies per acre) ☑
- Medium (10 to 50 anomalies peracre) ☐
- High (> 50 anomalies per acre) ☐

Predominant Soil Type (check one):

- Clay/Sand with Stone ☐
- Sand/Gravel-Sand ☑
- Sand-Silt/Sand-Clay ☐
- Silt/Silty Clay ☐
- Clay-Sand/Clay-Silt ☐
- Gravel/Gravel-Sand ☐
- Rock ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Topography (check one):

- Flat ☑
- Flat with gorges or gullies ☐
- Gently rolling ☐
- Heavily rolling ☐
- Mountainous ☐
- Rolling with gorges or gullies ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Vegetation (check one):

- Barren or low grass ☐
- Heavy grass and many shrubs ☐
- Heavy shrubs and trees ☐
- Low grass and few shrubs ☑
- Shrubs and some trees ☐
- Heavily wooded ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- Actual (Known) ☐
- Potential ☐
- No potential ☐
- Unknown ☑

Depth to Groundwater:

Groundwater Depth 350-490 Feet

MRS Located above drinking water aquifer?

- Yes ☑
- No ☐
- Not applicable (water range) ☐

Sole source aquifer?

- Yes ☑
- No ☐

Threatened or endangered species present?

- Yes ☑
- No ☐

Archaeological or cultural sites present?

- Yes ☐
- No ☑

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- Yes ☐
- No ☑

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- Yes ☐
- No ☐

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID DA782

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☐ ☑ No

If yes, what is the scope of the response activities?

Past practices ☐ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☐ ☐ Operation and maintenance
Investigation ☐ ☐ Monitoring
Response/remedial action ☐ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☐

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☐

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☐ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☑ Unknown

Risk Assessment Code (RAC):

Hazard Severity IV 3 RAC score
Hazard Probability A ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC score based on previous AFRIMS input. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID DA782

Access Control:

- ☐ No controls
- ☐ Signs
- ☐ Fencing around entire range
- ☐ Partial fencing
- ☐ Locked/secured gated
- ☐ Log-in book
- ☑ Security patrol
- ☐ Other*

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- ☐ Federal Agency
- ☐ Tribal government
- ☐ State Agency
- ☐ Local agency
- ☐ Private entity

☐ Ownership transfer to:

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- ☐ Yes
- ☐ No
- ☐ Unknown

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity
- ☑ None

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ED770

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Experimental Range (H-28)

Point of Contact:

Name Carl J. Lanz, P.G.
Organization KAFB Restoration Section
Phone (505) 853-6534
Email Carl.Lanz@kirtland.af.mil

2050 Wyoming Blvd. SE Address
Albuquerque City
NM State

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at Latitude
State various locations. Longitude
County

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply):

	☐		
Testing	☐	☐	Emergency Destruction
Training	☐	☑	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☐	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☑	Other*
Land-to-Air	☐		

*Please specify Experimental Range, OB/OD, Demo

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ED770

Site Type (check all that apply):

- [ ] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [ ] Buffer Zone
- [ ] Chemical Weapons
- [x] Surface Disposal Area
- [ ] Depleted Uranium
- [x] EOD Range
- [ ] Firing Line
- [ ] Fire Range
- [ ] Grenade Range
- [x] Heavy Explosive
- [x] Munitions Burial
- [ ] Medium/Large Caliber
- [x] Multi-Use Range
- [x] Open Burn
- [x] Open Detonation
- [x] Propellant and Pyrotechnics
- [ ] Pistol Range
- [ ] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [ ] Range Residue Graveyard (targets and debris)
- [ ] Safety Fan
- [ ] Strafing Run-in Line
- [ ] Small Arms Range
- [ ] Target Area
- [ ] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [x] EOD Area
- [ ] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	1480 (* 1848)	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		1480
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [ ] Medium/Large Caliber (20mm or larger)
- [x] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [ ] Explosive rockets
- [ ] Guided Missiles
- [x] Explosive detonators
- [x] Blasting Caps
- [ ] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [ ] Small arms expended
- [ ] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [x] Incendiary material
- [x] Primary or initiating explosives
- [x] Demolition charges
- [ ] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [x] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [ ] Riot control agents (vomiting, tear)
- [x] Bombs (explosive)
- [ ] Bombs (practice)
- [ ] Fuses, Booster, Bursters
- [ ] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [x] Mortars
- [ ] Torpedoes
- [x] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify MRA acreage has been reduced from 1848 acres due to encroachment of current operational range areas and explosive safety limits.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ED770

Anomaly Density (check one):

- ☐ Low (<= 10 anomalies per acre)
- ☐ Medium (10 to 50 anomalies peracre)
- ☑ High (> 50 anomalies per acre)

Predominant Soil Type (check one):

- ☐ Clay/Sand with Stone
- ☑ Sand/Gravel-Sand
- ☐ Sand-Silt/Sand-Clay
- ☐ Silt/Silty Clay
- ☐ Clay-Sand/Clay-Silt
- ☐ Gravel/Gravel-Sand
- ☐ Rock
- ☐ Water Range
- ☐ Other*

*Please specify_____

Predominant Topography (check one):

- ☑ Flat
- ☐ Flat with gorges or gullies
- ☐ Gently rolling
- ☐ Heavily rolling
- ☐ Mountainous
- ☐ Rolling with gorges or gullies
- ☐ Water Range
- ☐ Other*

*Please specify_____

Predominant Vegetation (check one):

- ☐ Barren or low grass
- ☐ Heavy grass and many shrubs
- ☐ Heavy shrubs and trees
- ☑ Low grass and few shrubs
- ☐ Shrubs and some trees
- ☐ Heavily wooded
- ☐ Water Range
- ☐ Other*

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- ☐ Actual (Known)
- ☐ Potential
- ☐ No potential
- ☑ Unknown

Depth to Groundwater:

Groundwater Depth 100-485 Feet

MRS Located above drinking water aquifer?

- ☑ Yes
- ☐ No
- ☐ Not applicable (water range)

Sole source aquifer?

- ☑ Yes
- ☐ No

Threatened or endangered species present?

- ☑ Yes
- ☐ No

Archaeological or cultural sites present?

- ☐ Yes
- ☑ No

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- ☐ Yes
- ☑ No

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- ☐ Yes
- ☐ No

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ED770

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☑ ☐ No

If yes, what is the scope of the response activities?

Past practices ☑ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☑ ☑ Operation and maintenance
Investigation ☑ ☑ Monitoring
Response/remedial action ☑ ☑ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☑

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☑

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☐ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☑ Unknown

Risk Assessment Code (RAC):

Hazard Severity II 2 RAC score
Hazard Probability B ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC score based on previous AFRIMS input. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ED770

Access Control:

- No controls ☐
- Signs ☑
- Fencing around entire range ☐
- Partial fencing ☑
- Locked/secured gated ☐
- Log-in book ☐
- Security patrol ☑
- Other* ☐

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- Federal Agency ☐
- Tribal government ☐
- State Agency ☐
- Local agency ☐
- Private entity ☐

☐ Ownership transfer to:

- Federal agency ☐
- Tribal government ☐
- State agency ☐
- Local agency ☐
- Private entity ☐

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- Yes ☐
- No ☐
- Unknown ☐

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- Federal agency ☐
- Tribal government ☐
- State agency ☐
- Local agency ☐
- Private entity ☐
- None ☑

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML125

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Field Firing Range (H-30)

Point of Contact:

Name Carl J. Lanz, P.G.
Organization KAFB Restoration Section
Phone (505) 853-6534
Email Carl.Lanz@kirtland.af.mil

2050 Wyoming Blvd. SE Address
Albuquerque City
NM State

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at various locations.
State
County

Latitude
Longitude

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply): ☐

Testing	☑	☐	Emergency Destruction
Training	☐	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☐	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☑	Other*
Land-to-Air	☐		

*Please specify Multi-Use Range

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML125

Site Type (check all that apply):

- [ ] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [ ] Buffer Zone
- [ ] Chemical Weapons
- [ ] Surface Disposal Area
- [ ] Depleted Uranium
- [ ] EOD Range
- [ ] Firing Line
- [x] Fire Range
- [ ] Grenade Range
- [ ] Heavy Explosive
- [ ] Munitions Burial
- [x] Medium/Large Caliber
- [x] Multi-Use Range
- [x] Open Burn
- [x] Open Detonation
- [x] Propellant and Pyrotechnics
- [ ] Pistol Range
- [ ] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [x] Range Residue Graveyard (targets and debris)
- [ ] Safety Fan
- [ ] Strafing Run-in Line
- [ ] Small Arms Range
- [x] Target Area
- [ ] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [ ] EOD Area
- [x] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	1993	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		1993
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [x] Medium/Large Caliber (20mm or larger)
- [ ] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [ ] Explosive rockets
- [ ] Guided Missiles
- [ ] Explosive detonators
- [ ] Blasting Caps
- [ ] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [ ] Small arms expended
- [x] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [ ] Incendiary material
- [x] Primary or initiating explosives
- [ ] Demolition charges
- [ ] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [ ] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [ ] Riot control agents (vomiting, tear)
- [ ] Bombs (explosive)
- [ ] Bombs (practice)
- [x] Fuses, Booster, Bursters
- [ ] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [ ] Mortars
- [ ] Torpedoes
- [ ] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML125

Anomaly Density (check one):

- ☐ Low (<= 10 anomalies per acre)
- ☐ Medium (10 to 50 anomalies peracre)
- ☑ High (> 50 anomalies per acre)

Predominant Soil Type (check one):

- ☐ Clay/Sand with Stone
- ☑ Sand/Gravel-Sand
- ☐ Sand-Silt/Sand-Clay
- ☐ Silt/Silty Clay
- ☐ Clay-Sand/Clay-Silt
- ☐ Gravel/Gravel-Sand
- ☐ Rock
- ☐ Water Range
- ☐ Other*

*Please specify_____

Predominant Topography (check one):

- ☐ Flat
- ☐ Flat with gorges or gullies
- ☐ Gently rolling
- ☐ Heavily rolling
- ☐ Mountainous
- ☐ Rolling with gorges or gullies
- ☐ Water Range
- ☑ Other*

*Please specify Mountainous to rolling to flat

Predominant Vegetation (check one):

- ☐ Barren or low grass
- ☐ Heavy grass and many shrubs
- ☑ Heavy shrubs and trees
- ☐ Low grass and few shrubs
- ☐ Shrubs and some trees
- ☐ Heavily wooded
- ☐ Water Range
- ☐ Other*

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- ☐ Actual (Known)
- ☐ Potential
- ☐ No potential
- ☑ Unknown

Depth to Groundwater:

Groundwater Depth 90-100 Feet

MRS Located above drinking water aquifer?

- ☐ Yes
- ☑ No
- ☐ Not applicable (water range)

Sole source aquifer?

- ☑ Yes
- ☐ No

Threatened or endangered species present?

- ☑ Yes
- ☐ No

Archaeological or cultural sites present?

- ☐ Yes
- ☑ No

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- ☐ Yes
- ☑ No

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- ☐ Yes
- ☐ No

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML125

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☑ ☐ No

If yes, what is the scope of the response activities?

Past practices ☑ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☑ ☐ Operation and maintenance
Investigation ☑ ☐ Monitoring
Response/remedial action ☑ ☑ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☑

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☑

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☑ UXO response actions associated with ERP activities
Emergency response actions ☑
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☐ Unknown

Risk Assessment Code (RAC):

Hazard Severity I _____ 1 _____ RAC score
Hazard Probability B _____ ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC score based on previous AFRIMS input. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML125

Access Control:

- No controls ☐
- Signs ☑
- Fencing around entire range ☐
- Partial fencing ☑
- Locked/secured gated ☐
- Log-in book ☐
- Security patrol ☑
- Other* ☐

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- Federal Agency ☐
- Tribal government ☐
- State Agency ☐
- Local agency ☐
- Private entity ☐

☐ Ownership transfer to:

- Federal agency ☐
- Tribal government ☐
- State agency ☐
- Local agency ☐
- Private entity ☐

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- Yes ☐
- No ☐
- Unknown ☐

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- Federal agency ☐
- Tribal government ☐
- State agency ☐
- Local agency ☐
- Private entity ☐
- None ☑

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML760

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Gun Fan Site (OB-7) *Off-base MRA not investigated under CSE Phase I*

Point of Contact:

Name Carl J. Lanz, P.G.
Organization KAFB Restoration Section
Phone (505) 853-6534
Email Carl.Lanz@kirtland.af.mil

2050 Wyoming Blvd. SE Address
Albuquerque City
NM State

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at various locations.
State
County

Latitude
Longitude

MRS Status (check one):

Closed	☐	☐	Active
Transferring	☐	☐	Inactive
Transferred	☑	☐	Other*

*Please specify

Classification (check all that apply):

	☐		
Testing	☑	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☐	Other*
Land-to-Air	☐		

*Please specify

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML760

Site Type (check all that apply):

- [ ] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [ ] Buffer Zone
- [ ] Chemical Weapons
- [ ] Surface Disposal Area
- [ ] Depleted Uranium
- [ ] EOD Range
- [ ] Firing Line
- [ ] Fire Range
- [ ] Grenade Range
- [ ] Heavy Explosive
- [ ] Munitions Burial
- [x] Medium/Large Caliber
- [ ] Multi-Use Range
- [ ] Open Burn
- [ ] Open Detonation
- [ ] Propellant and Pyrotechnics
- [ ] Pistol Range
- [ ] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [ ] Range Residue Graveyard (targets and debris)
- [ ] Safety Fan
- [ ] Strafing Run-in Line
- [ ] Small Arms Range
- [ ] Target Area
- [ ] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [ ] EOD Area
- [ ] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	8486	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		8486
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [x] Medium/Large Caliber (20mm or larger)
- [ ] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [x] Explosive rockets
- [ ] Guided Missiles
- [ ] Explosive detonators
- [ ] Blasting Caps
- [ ] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [ ] Small arms expended
- [ ] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [ ] Incendiary material
- [ ] Primary or initiating explosives
- [ ] Demolition charges
- [ ] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [ ] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [ ] Riot control agents (vomiting, tear)
- [ ] Bombs (explosive)
- [ ] Bombs (practice)
- [ ] Fuses, Booster, Bursters
- [ ] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [ ] Mortars
- [ ] Torpedoes
- [ ] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML760

Anomaly Density (check one):

- Low (<= 10 anomalies per acre) ☑
- Medium (10 to 50 anomalies peracre) ☐
- High (> 50 anomalies per acre) ☐

Predominant Soil Type (check one):

- Clay/Sand with Stone ☐
- Sand/Gravel-Sand ☑
- Sand-Silt/Sand-Clay ☐
- Silt/Silty Clay ☐
- Clay-Sand/Clay-Silt ☐
- Gravel/Gravel-Sand ☐
- Rock ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Topography (check one):

- Flat ☑
- Flat with gorges or gullies ☐
- Gently rolling ☐
- Heavily rolling ☐
- Mountainous ☐
- Rolling with gorges or gullies ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Vegetation (check one):

- Barren or low grass ☐
- Heavy grass and many shrubs ☐
- Heavy shrubs and trees ☐
- Low grass and few shrubs ☑
- Shrubs and some trees ☐
- Heavily wooded ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- Actual (Known) ☐
- Potential ☐
- No potential ☐
- Unknown ☑

Depth to Groundwater:

Groundwater Depth 350-450 Feet

MRS Located above drinking water aquifer?

- Yes ☑
- No ☐
- Not applicable (water range) ☐

Sole source aquifer?

- Yes ☑
- No ☐

Threatened or endangered species present?

- Yes ☑
- No ☐

Archaeological or cultural sites present?

- Yes ☐
- No ☑

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- Yes ☐
- No ☑

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- Yes ☐
- No ☐

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML760

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☑ ☐ No

If yes, what is the scope of the response activities?

Past practices ☑ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☑ ☐ Operation and maintenance
Investigation ☑ ☐ Monitoring
Response/remedial action ☐ ☑ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☑

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☑

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☐ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☑ Unknown

Risk Assessment Code (RAC):

Hazard Severity III 3 RAC score
Hazard Probability A ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☐ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☑ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC score based on previous AFRIMS input. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML760

Access Control:

- No controls ☑
- Signs ☐
- Fencing around entire range ☐
- Partial fencing ☐
- Locked/secured gated ☐
- Log-in book ☐
- Security patrol ☐
- Other* ☐

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- Federal Agency ☐
- Tribal government ☐
- State Agency ☐
- Local agency ☐
- Private entity ☐

☑ Ownership transfer to:

- Federal agency ☐
- Tribal government ☐
- State agency ☑
- Local agency ☑
- Private entity ☐

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- Yes ☐
- No ☑
- Unknown ☐

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- Federal agency ☐
- Tribal government ☐
- State agency ☑
- Local agency ☑
- Private entity ☐
- None ☐

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML762

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: McCormick Ranch Buffer (OB-1) *Off-base MRA not investigated under CSE Phase I*

Point of Contact:

Name Carl J. Lanz, P.G.
Organization KAFB Restoration Section
Phone (505) 853-6534
Email Carl.Lanz@kirtland.af.mil

2050 Wyoming Blvd. SE Address
Albuquerque City
NM State

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at various locations.
State
County

Latitude
Longitude

MRS Status (check one):

Closed	☐	☐	Active
Transferring	☐	☐	Inactive
Transferred	☑	☐	Other*

*Please specify

Classification (check all that apply):

	☐		
Testing	☑	☐	Emergency Destruction
Training	☐	☑	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☐	Other*
Land-to-Air	☐		

*Please specify

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML762

Site Type (check all that apply):

- [ ] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [ ] Buffer Zone
- [ ] Chemical Weapons
- [ ] Surface Disposal Area
- [ ] Depleted Uranium
- [ ] EOD Range
- [ ] Firing Line
- [ ] Fire Range
- [ ] Grenade Range
- [ ] Heavy Explosive
- [ ] Munitions Burial
- [x] Medium/Large Caliber
- [ ] Multi-Use Range
- [ ] Open Burn
- [ ] Open Detonation
- [ ] Propellant and Pyrotechnics
- [ ] Pistol Range
- [ ] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [ ] Range Residue Graveyard (targets and debris)
- [ ] Safety Fan
- [ ] Strafing Run-in Line
- [ ] Small Arms Range
- [ ] Target Area
- [ ] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [ ] EOD Area
- [ ] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	14	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		14
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [ ] Medium/Large Caliber (20mm or larger)
- [x] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [ ] Explosive rockets
- [ ] Guided Missiles
- [x] Explosive detonators
- [ ] Blasting Caps
- [ ] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [ ] Small arms expended
- [ ] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [ ] Incendiary material
- [ ] Primary or initiating explosives
- [ ] Demolition charges
- [ ] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [x] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [ ] Riot control agents (vomiting, tear)
- [ ] Bombs (explosive)
- [ ] Bombs (practice)
- [ ] Fuses, Booster, Bursters
- [ ] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [ ] Mortars
- [ ] Torpedoes
- [ ] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML762

Anomaly Density (check one):

- [x] Low (<= 10 anomalies per acre)
- [ ] Medium (10 to 50 anomalies peracre)
- [ ] High (> 50 anomalies per acre)

Predominant Soil Type (check one):

- [ ] Clay/Sand with Stone
- [ ] Sand/Gravel-Sand
- [x] Sand-Silt/Sand-Clay
- [ ] Silt/Silty Clay
- [ ] Clay-Sand/Clay-Silt
- [ ] Gravel/Gravel-Sand
- [ ] Rock
- [ ] Water Range
- [ ] Other*

*Please specify_____

Predominant Topography (check one):

- [x] Flat
- [ ] Flat with gorges or gullies
- [ ] Gently rolling
- [ ] Heavily rolling
- [ ] Mountainous
- [ ] Rolling with gorges or gullies
- [ ] Water Range
- [ ] Other*

*Please specify_____

Predominant Vegetation (check one):

- [x] Barren or low grass
- [ ] Heavy grass and many shrubs
- [ ] Heavy shrubs and trees
- [ ] Low grass and few shrubs
- [ ] Shrubs and some trees
- [ ] Heavily wooded
- [ ] Water Range
- [ ] Other*

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- [ ] Actual (Known)
- [ ] Potential
- [ ] No potential
- [x] Unknown

Depth to Groundwater:

Groundwater Depth 90-100 Feet

MRS Located above drinking water aquifer?

- [ ] Yes
- [x] No
- [ ] Not applicable (water range)

Sole source aquifer?

- [x] Yes
- [ ] No

Threatened or endangered species present?

- [x] Yes
- [ ] No

Archaeological or cultural sites present?

- [ ] Yes
- [x] No

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- [ ] Yes
- [x] No

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- [ ] Yes
- [ ] No

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML762

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☐ ☑ No

If yes, what is the scope of the response activities?

Past practices ☐ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☐ ☐ Operation and maintenance
Investigation ☐ ☐ Monitoring
Response/remedial action ☐ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☐

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☐

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☐ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☑ Unknown

Risk Assessment Code (RAC):

Hazard Severity III 2 RAC score
Hazard Probability A ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☐ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☑ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC scores based on previous AFRIMS data. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML762

Access Control:

- No controls ☑
- Signs ☐
- Fencing around entire range ☐
- Partial fencing ☐
- Locked/secured gated ☐
- Log-in book ☐
- Security patrol ☐
- Other* ☐

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- Federal Agency ☐
- Tribal government ☐
- State Agency ☐
- Local agency ☐
- Private entity ☐

☑ Ownership transfer to:

- Federal agency ☐
- Tribal government ☐
- State agency ☑
- Local agency ☐
- Private entity ☐

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- Yes ☐
- No ☑
- Unknown ☐

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- Federal agency ☐
- Tribal government ☐
- State agency ☑
- Local agency ☐
- Private entity ☐
- None ☐

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML774

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Gun Fan Site (H-12)

Point of Contact:

Name Carl J. Lanz, P.G. 2050 Wyoming Blvd. SE Address
Organization KAFB Restoration Section Albuquerque City
Phone (505) 853-6534 NM State
Email Carl.Lanz@kirtland.af.mil

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at Latitude
State various locations. Longitude
County

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply): ☐

Testing	☑	☐	Emergency Destruction
Training	☐	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☐	Other*
Land-to-Air	☐		

*Please specify

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML774

Site Type (check all that apply):

- [ ] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [ ] Buffer Zone
- [ ] Chemical Weapons
- [ ] Surface Disposal Area
- [x] Depleted Uranium
- [ ] EOD Range
- [ ] Firing Line
- [x] Fire Range
- [ ] Grenade Range
- [ ] Heavy Explosive
- [ ] Munitions Burial
- [x] Medium/Large Caliber
- [ ] Multi-Use Range
- [ ] Open Burn
- [ ] Open Detonation
- [ ] Propellant and Pyrotechnics
- [ ] Pistol Range
- [ ] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [ ] Range Residue Graveyard (targets and debris)
- [x] Safety Fan
- [ ] Strafing Run-in Line
- [ ] Small Arms Range
- [x] Target Area
- [ ] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [ ] EOD Area
- [x] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	634 (* 643)	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		634
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [x] Medium/Large Caliber (20mm or larger)
- [ ] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [ ] Explosive rockets
- [ ] Guided Missiles
- [ ] Explosive detonators
- [ ] Blasting Caps
- [ ] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [ ] Small arms expended
- [ ] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [ ] Incendiary material
- [ ] Primary or initiating explosives
- [ ] Demolition charges
- [ ] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [ ] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [ ] Riot control agents (vomiting, tear)
- [ ] Bombs (explosive)
- [ ] Bombs (practice)
- [ ] Fuses, Booster, Bursters
- [x] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [ ] Mortars
- [ ] Torpedoes
- [ ] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify MRA acreage has been reduced from 643 acres due to encroachment of current operational range areas and explosive safety limits.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML774

Anomaly Density (check one):

- Low (<= 10 anomalies per acre) ☑
- Medium (10 to 50 anomalies peracre) ☐
- High (> 50 anomalies per acre) ☐

Predominant Soil Type (check one):

- Clay/Sand with Stone ☐
- Sand/Gravel-Sand ☑
- Sand-Silt/Sand-Clay ☐
- Silt/Silty Clay ☐
- Clay-Sand/Clay-Silt ☐
- Gravel/Gravel-Sand ☐
- Rock ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Topography (check one):

- Flat ☑
- Flat with gorges or gullies ☐
- Gently rolling ☐
- Heavily rolling ☐
- Mountainous ☐
- Rolling with gorges or gullies ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Vegetation (check one):

- Barren or low grass ☐
- Heavy grass and many shrubs ☐
- Heavy shrubs and trees ☐
- Low grass and few shrubs ☑
- Shrubs and some trees ☐
- Heavily wooded ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- Actual (Known) ☐
- Potential ☐
- No potential ☐
- Unknown ☑

Depth to Groundwater:

Groundwater Depth 350-450 Feet

MRS Located above drinking water aquifer?

- Yes ☑
- No ☐
- Not applicable (water range) ☐

Sole source aquifer?

- Yes ☑
- No ☐

Threatened or endangered species present?

- Yes ☑
- No ☐

Archaeological or cultural sites present?

- Yes ☐
- No ☑

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- Yes ☐
- No ☑

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- Yes ☐
- No ☐

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML774

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☑ ☐ No

If yes, what is the scope of the response activities?

Past practices ☑ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☑ ☐ Operation and maintenance
Investigation ☑ ☐ Monitoring
Response/remedial action ☐ ☑ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☑

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☑

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☐ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☑ Unknown

Risk Assessment Code (RAC):

Hazard Severity II 2 RAC score
Hazard Probability B ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC score based on previous AFRIMS input. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML774

Access Control:

- ☐ No controls
- ☑ Signs
- ☐ Fencing around entire range
- ☑ Partial fencing
- ☐ Locked/secured gated
- ☐ Log-in book
- ☑ Security patrol
- ☐ Other*

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- ☐ Federal Agency
- ☐ Tribal government
- ☐ State Agency
- ☐ Local agency
- ☐ Private entity

☐ Ownership transfer to:

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- ☐ Yes
- ☐ No
- ☐ Unknown

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity
- ☑ None

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML781

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Firing In-Abutment (H-3)

Point of Contact:

Name Carl J. Lanz, P.G.
Organization KAFB Restoration Section
Phone (505) 853-6534
Email Carl.Lanz@kirtland.af.mil

2050 Wyoming Blvd. SE Address
Albuquerque City
NM State

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at
State various locations.
County

Latitude
Longitude

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply): ☐

Testing	☐	☐	Emergency Destruction
Training	☐	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☑	Other*
Disposal (Burial)	☐		

*Please specify Area used to unload aircraft weapons misfires and aircraft machine gun maintenance.

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☑	Other*
Land-to-Air	☐		

*Please specify Multi-Use Range

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML781

Site Type (check all that apply):

- [ ] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [ ] Buffer Zone
- [ ] Chemical Weapons
- [ ] Surface Disposal Area
- [ ] Depleted Uranium
- [ ] EOD Range
- [x] Firing Line
- [ ] Fire Range
- [ ] Grenade Range
- [ ] Heavy Explosive
- [ ] Munitions Burial
- [x] Medium/Large Caliber
- [x] Multi-Use Range
- [ ] Open Burn
- [ ] Open Detonation
- [ ] Propellant and Pyrotechnics
- [ ] Pistol Range
- [ ] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [ ] Range Residue Graveyard (targets and debris)
- [ ] Safety Fan
- [ ] Strafing Run-in Line
- [ ] Small Arms Range
- [x] Target Area
- [ ] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [ ] EOD Area
- [ ] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	1 (* 6)	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		1
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [x] Medium/Large Caliber (20mm or larger)
- [ ] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [ ] Explosive rockets
- [ ] Guided Missiles
- [ ] Explosive detonators
- [ ] Blasting Caps
- [ ] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [ ] Small arms expended
- [ ] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [ ] Incendiary material
- [ ] Primary or initiating explosives
- [ ] Demolition charges
- [ ] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [ ] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [ ] Riot control agents (vomiting, tear)
- [ ] Bombs (explosive)
- [ ] Bombs (practice)
- [ ] Fuses, Booster, Bursters
- [x] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [ ] Mortars
- [ ] Torpedoes
- [ ] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify MRA acreage has been reduced from 6 acres due to corrections to MRA boundary.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML781

Anomaly Density (check one):

- [x] Low (<= 10 anomalies per acre)
- [ ] Medium (10 to 50 anomalies peracre)
- [ ] High (> 50 anomalies per acre)

Predominant Soil Type (check one):

- [ ] Clay/Sand with Stone
- [x] Sand/Gravel-Sand
- [ ] Sand-Silt/Sand-Clay
- [ ] Silt/Silty Clay
- [ ] Clay-Sand/Clay-Silt
- [ ] Gravel/Gravel-Sand
- [ ] Rock
- [ ] Water Range
- [ ] Other*

*Please specify_____

Predominant Topography (check one):

- [x] Flat
- [ ] Flat with gorges or gullies
- [ ] Gently rolling
- [ ] Heavily rolling
- [ ] Mountainous
- [ ] Rolling with gorges or gullies
- [ ] Water Range
- [ ] Other*

*Please specify_____

Predominant Vegetation (check one):

- [ ] Barren or low grass
- [ ] Heavy grass and many shrubs
- [ ] Heavy shrubs and trees
- [x] Low grass and few shrubs
- [ ] Shrubs and some trees
- [ ] Heavily wooded
- [ ] Water Range
- [ ] Other*

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- [ ] Actual (Known)
- [ ] Potential
- [ ] No potential
- [x] Unknown

Depth to Groundwater:

Groundwater Depth 400-450 Feet

MRS Located above drinking water aquifer?

- [x] Yes
- [ ] No
- [ ] Not applicable (water range)

Sole source aquifer?

- [x] Yes
- [ ] No

Threatened or endangered species present?

- [ ] Yes
- [x] No

Archaeological or cultural sites present?

- [ ] Yes
- [x] No

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- [ ] Yes
- [x] No

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- [ ] Yes
- [ ] No

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML781

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☐ ☑ No

If yes, what is the scope of the response activities?

Past practices ☐ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☐ ☐ Operation and maintenance
Investigation ☐ ☐ Monitoring
Response/remedial action ☐ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☐

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☐

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☐ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☑ Unknown

Risk Assessment Code (RAC):

Hazard Severity IV 3 RAC score
Hazard Probability A ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC score based on previous AFRIMS input. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML781

Access Control:

- ☐ No controls
- ☐ Signs
- ☐ Fencing around entire range
- ☐ Partial fencing
- ☐ Locked/secured gated
- ☐ Log-in book
- ☑ Security patrol
- ☐ Other*

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- ☐ Federal Agency
- ☐ Tribal government
- ☐ State Agency
- ☐ Local agency
- ☐ Private entity

☐ Ownership transfer to:

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- ☐ Yes
- ☐ No
- ☐ Unknown

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity
- ☑ None

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML784

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: 40mm Test and Training Range *not MMRP eligible - within operational range area*

Point of Contact:

Name Carl J. Lanz, P.G.
Organization KAFB Restoration Section
Phone (505) 853-6534
Email Carl.Lanz@kirtland.af.mil

2050 Wyoming Blvd. SE Address
Albuquerque City
NM State

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at various locations.
State
County

Latitude
Longitude

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply):

	☐		
Testing	☑	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☐	Other*
Land-to-Air	☐		

*Please specify

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML784

Site Type (check all that apply):

- [ ] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [ ] Buffer Zone
- [ ] Chemical Weapons
- [ ] Surface Disposal Area
- [ ] Depleted Uranium
- [ ] EOD Range
- [ ] Firing Line
- [x] Fire Range
- [x] Grenade Range
- [ ] Heavy Explosive
- [ ] Munitions Burial
- [ ] Medium/Large Caliber
- [ ] Multi-Use Range
- [ ] Open Burn
- [ ] Open Detonation
- [ ] Propellant and Pyrotechnics
- [ ] Pistol Range
- [ ] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [ ] Range Residue Graveyard (targets and debris)
- [ ] Safety Fan
- [ ] Strafing Run-in Line
- [ ] Small Arms Range
- [ ] Target Area
- [ ] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [ ] EOD Area
- [ ] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	150	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		150
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [ ] Medium/Large Caliber (20mm or larger)
- [ ] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [ ] Explosive rockets
- [ ] Guided Missiles
- [ ] Explosive detonators
- [ ] Blasting Caps
- [x] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [ ] Small arms expended
- [ ] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [ ] Incendiary material
- [ ] Primary or initiating explosives
- [ ] Demolition charges
- [ ] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [ ] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [ ] Riot control agents (vomiting, tear)
- [ ] Bombs (explosive)
- [ ] Bombs (practice)
- [ ] Fuses, Booster, Bursters
- [ ] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [ ] Mortars
- [ ] Torpedoes
- [ ] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML784

Anomaly Density (check one):

- Low (<= 10 anomalies per acre) ☑
- Medium (10 to 50 anomalies peracre) ☐
- High (> 50 anomalies per acre) ☐

Predominant Soil Type (check one):

- Clay/Sand with Stone ☐
- Sand/Gravel-Sand ☑
- Sand-Silt/Sand-Clay ☐
- Silt/Silty Clay ☐
- Clay-Sand/Clay-Silt ☐
- Gravel/Gravel-Sand ☐
- Rock ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Topography (check one):

- Flat ☐
- Flat with gorges or gullies ☐
- Gently rolling ☐
- Heavily rolling ☐
- Mountainous ☑
- Rolling with gorges or gullies ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Vegetation (check one):

- Barren or low grass ☐
- Heavy grass and many shrubs ☐
- Heavy shrubs and trees ☐
- Low grass and few shrubs ☐
- Shrubs and some trees ☑
- Heavily wooded ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- Actual (Known) ☐
- Potential ☐
- No potential ☐
- Unknown ☑

Depth to Groundwater:

Groundwater Depth 90-100 Feet

MRS Located above drinking water aquifer?

- Yes ☐
- No ☑
- Not applicable (water range) ☐

Sole source aquifer?

- Yes ☑
- No ☐

Threatened or endangered species present?

- Yes ☑
- No ☐

Archaeological or cultural sites present?

- Yes ☐
- No ☑

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- Yes ☐
- No ☑

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- Yes ☐
- No ☐

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML784

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☐ ☑ No

If yes, what is the scope of the response activities?

Past practices ☐ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☐ ☐ Operation and maintenance
Investigation ☐ ☐ Monitoring
Response/remedial action ☐ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☐

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☐

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☐ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☑ Unknown

Risk Assessment Code (RAC):

Hazard Severity IV 4 RAC score
Hazard Probability C ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC scores based on previous AFRIMS data. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID ML784

Access Control:

- No controls ☐
- Signs ☐
- Fencing around entire range ☐
- Partial fencing ☑
- Locked/secured gated ☐
- Log-in book ☐
- Security patrol ☑
- Other* ☐

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- Federal Agency ☐
- Tribal government ☐
- State Agency ☐
- Local agency ☐
- Private entity ☐

☐ Ownership transfer to:

- Federal agency ☐
- Tribal government ☐
- State agency ☐
- Local agency ☐
- Private entity ☐

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- Yes ☐
- No ☐
- Unknown ☐

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- Federal agency ☐
- Tribal government ☐
- State agency ☐
- Local agency ☐
- Private entity ☐
- None ☑

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID MU772

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: H-25 Site

Point of Contact:

Name Carl J. Lanz, P.G.
Organization KAFB Restoration Section
Phone (505) 853-6534
Email Carl.Lanz@kirtland.af.mil

2050 Wyoming Blvd. SE Address
Albuquerque City
NM State

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at various locations.
State
County

Latitude
Longitude

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply): ☐

Testing	☐	☐	Emergency Destruction
Training	☐	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☑	Other*
Disposal (Burial)	☐		

*Please specify Purpose of the Site is not known

Range Type (check all that apply):

Air-to-Air	☐	☐	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☑	Other*
Land-to-Air	☐		

*Please specify Multi-Use Range

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID MU772

Site Type (check all that apply):

- ☐ Air-to Land
- ☐ Air-to-Water
- ☐ Burn Pit
- ☐ Biological Warfare
- ☐ Buffer Zone
- ☐ Chemical Weapons
- ☐ Surface Disposal Area
- ☐ Depleted Uranium
- ☐ EOD Range
- ☐ Firing Line
- ☐ Fire Range
- ☐ Grenade Range
- ☐ Heavy Explosive
- ☐ Munitions Burial
- ☐ Medium/Large Caliber
- ☑ Multi-Use Range
- ☐ Open Burn
- ☐ Open Detonation
- ☐ Propellant and Pyrotechnics
- ☐ Pistol Range
- ☐ Pyrotechnics
- ☐ Residue Holding Area (expended munitions, range clearance, etc.)
- ☐ Range Residue Graveyard (targets and debris)
- ☐ Safety Fan
- ☐ Strafing Run-in Line
- ☐ Small Arms Range
- ☐ Target Area
- ☐ Training and Maneuver Area
- ☐ Trap and Skeet Range
- ☐ EOD Area
- ☑ Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	☐	133	
Acreage confirmed as containing UXO	☐		0
Acreage suspected or potentially containing UXO	☐		133
Acreage confirmed as NOT containing UXO	☐		0

Ordnance Types (check all that apply):

- ☐ Medium/Large Caliber (20mm or larger)
- ☐ Explosive grenades (hand or rifle)
- ☐ Explosive landmine
- ☐ Explosive rockets
- ☐ Guided Missiles
- ☐ Explosive detonators
- ☐ Blasting Caps
- ☐ Practice Grenades (with spotting charges)
- ☐ Practice landmines (with spotting charges)
- ☐ Small Arms complete round (.22-.50 cal)
- ☐ Small arms expended
- ☐ Practice ordnance (without spotting charges)
- ☐ White phosphorous
- ☐ Incendiary material
- ☐ Primary or initiating explosives
- ☐ Demolition charges
- ☐ Other*
- ☐ Military dynamite
- ☐ Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- ☐ Solid or Liquid propellants
- ☐ Toxic chemical agents (choking, nerve, blood, blister)
- ☐ Water gas identification sets
- ☐ Radiological ordnance (e.g. depleted Uranium)
- ☐ Riot control agents (vomiting, tear)
- ☐ Bombs (explosive)
- ☐ Bombs (practice)
- ☐ Fuses, Booster, Bursters
- ☑ Flares, signals, and simulators (other than white phosphorous)
- ☐ Ballistics Missiles
- ☐ Skeet
- ☑ Mortars
- ☐ Torpedoes
- ☐ Warheads
- ☑ Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID MU772

Anomaly Density (check one):

- Low (<= 10 anomalies per acre) ☑
- Medium (10 to 50 anomalies peracre) ☐
- High (> 50 anomalies per acre) ☐

Predominant Soil Type (check one):

- Clay/Sand with Stone ☐
- Sand/Gravel-Sand ☐
- Sand-Silt/Sand-Clay ☐
- Silt/Silty Clay ☐
- Clay-Sand/Clay-Silt ☐
- Gravel/Gravel-Sand ☐
- Rock ☐
- Water Range ☐
- Other* ☑

*Please specify Shallow to deep, loamy, stony soils and rock.

Predominant Topography (check one):

- Flat ☐
- Flat with gorges or gullies ☐
- Gently rolling ☐
- Heavily rolling ☐
- Mountainous ☐
- Rolling with gorges or gullies ☑
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Vegetation (check one):

- Barren or low grass ☐
- Heavy grass and many shrubs ☐
- Heavy shrubs and trees ☑
- Low grass and few shrubs ☐
- Shrubs and some trees ☐
- Heavily wooded ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- Actual (Known) ☐
- Potential ☐
- No potential ☐
- Unknown ☑

Depth to Groundwater:

Groundwater Depth 90-100 Feet

MRS Located above drinking water aquifer?

- Yes ☐
- No ☑
- Not applicable (water range) ☐

Sole source aquifer?

- Yes ☑
- No ☐

Threatened or endangered species present?

- Yes ☑
- No ☐

Archaeological or cultural sites present?

- Yes ☐
- No ☑

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- Yes ☐
- No ☑

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- Yes ☐
- No ☐

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID MU772

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☑ ☐ No

If yes, what is the scope of the response activities?

Past practices ☑ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☑ ☐ Operation and maintenance
Investigation ☑ ☐ Monitoring
Response/remedial action ☑ ☑ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☑

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☑

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☐ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☑ Unknown

Risk Assessment Code (RAC):

Hazard Severity II 1 RAC score
Hazard Probability A ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC score based on previous AFRIMS input. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID MU772

Access Control:

- ☐ No controls
- ☑ Signs
- ☐ Fencing around entire range
- ☑ Partial fencing
- ☐ Locked/secured gated
- ☐ Log-in book
- ☑ Security patrol
- ☐ Other*

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- ☐ Federal Agency
- ☐ Tribal government
- ☐ State Agency
- ☐ Local agency
- ☐ Private entity

☐ Ownership transfer to:

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- ☐ Yes
- ☐ No
- ☐ Unknown

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity
- ☑ None

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID PT123

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Tijeras Small Arms Range (H-20)

Point of Contact:

Name Carl J. Lanz, P.G.
Organization KAFB Restoration Section
Phone (505) 853-6534
Email Carl.Lanz@kirtland.af.mil

2050 Wyoming Blvd. SE Address
Albuquerque City
NM State

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at various locations.
State
County

Latitude
Longitude

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply): ☐

Testing	☐	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☐	Other*
Land-to-Air	☐		

*Please specify

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID PT123

Site Type (check all that apply):

- [ ] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [ ] Buffer Zone
- [ ] Chemical Weapons
- [ ] Surface Disposal Area
- [ ] Depleted Uranium
- [ ] EOD Range
- [ ] Firing Line
- [ ] Fire Range
- [ ] Grenade Range
- [ ] Heavy Explosive
- [ ] Munitions Burial
- [ ] Medium/Large Caliber
- [x] Multi-Use Range
- [ ] Open Burn
- [ ] Open Detonation
- [ ] Propellant and Pyrotechnics
- [ ] Pistol Range
- [x] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [ ] Range Residue Graveyard (targets and debris)
- [ ] Safety Fan
- [ ] Strafing Run-in Line
- [x] Small Arms Range
- [ ] Target Area
- [ ] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [ ] EOD Area
- [ ] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	434 (* 812)	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		434
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [ ] Medium/Large Caliber (20mm or larger)
- [ ] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [ ] Explosive rockets
- [ ] Guided Missiles
- [ ] Explosive detonators
- [ ] Blasting Caps
- [ ] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [x] Small arms expended
- [ ] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [ ] Incendiary material
- [ ] Primary or initiating explosives
- [ ] Demolition charges
- [ ] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [ ] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [ ] Riot control agents (vomiting, tear)
- [ ] Bombs (explosive)
- [ ] Bombs (practice)
- [ ] Fuses, Booster, Bursters
- [x] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [ ] Mortars
- [ ] Torpedoes
- [ ] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify Surface area of MRA was reduced from 812 acres due to encroachment of current operation range areas (Manzano Area explosive safety limit).

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID PT123

Anomaly Density (check one):

- Low (<= 10 anomalies per acre) ☑
- Medium (10 to 50 anomalies peracre) ☐
- High (> 50 anomalies per acre) ☐

Predominant Soil Type (check one):

- Clay/Sand with Stone ☐
- Sand/Gravel-Sand ☐
- Sand-Silt/Sand-Clay ☐
- Silt/Silty Clay ☐
- Clay-Sand/Clay-Silt ☐
- Gravel/Gravel-Sand ☐
- Rock ☐
- Water Range ☐
- Other* ☑

*Please specify Shallow to deep, loamy, stony, cobbly soils

Predominant Topography (check one):

- Flat ☐
- Flat with gorges or gullies ☐
- Gently rolling ☐
- Heavily rolling ☐
- Mountainous ☑
- Rolling with gorges or gullies ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Vegetation (check one):

- Barren or low grass ☐
- Heavy grass and many shrubs ☐
- Heavy shrubs and trees ☐
- Low grass and few shrubs ☐
- Shrubs and some trees ☑
- Heavily wooded ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- Actual (Known) ☐
- Potential ☐
- No potential ☐
- Unknown ☑

Depth to Groundwater:

Groundwater Depth 100-485 Feet

MRS Located above drinking water aquifer?

- Yes ☐
- No ☑
- Not applicable (water range) ☐

Sole source aquifer?

- Yes ☑
- No ☐

Threatened or endangered species present?

- Yes ☑
- No ☐

Archaeological or cultural sites present?

- Yes ☐
- No ☑

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- Yes ☐
- No ☑

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- Yes ☐
- No ☐

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID PT123

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☐ ☑ No

If yes, what is the scope of the response activities?

Past practices ☐ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☐ ☐ Operation and maintenance
Investigation ☐ ☐ Monitoring
Response/remedial action ☐ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☐

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☐

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☐ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☑ Unknown

Risk Assessment Code (RAC):

Hazard Severity II 1 RAC score
Hazard Probability A ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC scores based on previous AFRIMS data. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID PT123

Access Control:

No controls	☐	☐	Locked/secured gated
Signs	☑	☐	Log-in book
Fencing around entire range	☐	☑	Security patrol
Partial fencing	☑	☐	Other*

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

Federal Agency	☐	☐	Local agency
Tribal government	☐	☐	Private entity
State Agency	☐		

☐ Ownership transfer to:

Federal agency	☐	☐	Local agency
Tribal government	☐	☐	Private entity
State agency	☐		

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land
☐ Base realignment/closure action
Planned or mandated date for transfer?_____
☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

Yes	☐	☐	Unknown
No	☐		

If yes:

Point of contact:_____
Phone #:_____
Year of transfer:_____
Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

Federal agency	☐	☐	Local agency
Tribal government	☐	☐	Private entity
State agency	☐	☑	None

Please provide a brief description of the organization with ownership or control:

_____
_____
_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID PT761

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Tijeras Small Arms and Training Range (OB-6)

Point of Contact:

Name Carl J. Lanz, P.G.
Organization KAFB Restoration Section
Phone (505) 853-6534
Email Carl.Lanz@kirtland.af.mil

2050 Wyoming Blvd. SE Address
Albuquerque City
NM State

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at various locations.
State
County

Latitude
Longitude

MRS Status (check one):

Closed	☐	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☑	Other*

*Please specify Area outside the northern Kirtland AFB boundary owned by City of Albuquerque.

Classification (check all that apply):

	☐		
Testing	☐	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☐	Other*
Land-to-Air	☐		

*Please specify

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID PT761

Site Type (check all that apply):

- [ ] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [ ] Buffer Zone
- [ ] Chemical Weapons
- [ ] Surface Disposal Area
- [ ] Depleted Uranium
- [ ] EOD Range
- [ ] Firing Line
- [ ] Fire Range
- [ ] Grenade Range
- [ ] Heavy Explosive
- [ ] Munitions Burial
- [ ] Medium/Large Caliber
- [x] Multi-Use Range
- [ ] Open Burn
- [ ] Open Detonation
- [ ] Propellant and Pyrotechnics
- [ ] Pistol Range
- [x] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [ ] Range Residue Graveyard (targets and debris)
- [ ] Safety Fan
- [ ] Strafing Run-in Line
- [x] Small Arms Range
- [ ] Target Area
- [x] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [ ] EOD Area
- [ ] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	575	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		575
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [ ] Medium/Large Caliber (20mm or larger)
- [ ] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [ ] Explosive rockets
- [ ] Guided Missiles
- [ ] Explosive detonators
- [ ] Blasting Caps
- [ ] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [x] Small arms expended
- [ ] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [ ] Incendiary material
- [ ] Primary or initiating explosives
- [ ] Demolition charges
- [ ] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [ ] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [ ] Riot control agents (vomiting, tear)
- [ ] Bombs (explosive)
- [ ] Bombs (practice)
- [ ] Fuses, Booster, Bursters
- [ ] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [ ] Mortars
- [ ] Torpedoes
- [ ] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID PT761

Anomaly Density (check one):

- Low (<= 10 anomalies per acre) ☑
- Medium (10 to 50 anomalies peracre) ☐
- High (> 50 anomalies per acre) ☐

Predominant Soil Type (check one):

- Clay/Sand with Stone ☐
- Sand/Gravel-Sand ☐
- Sand-Silt/Sand-Clay ☐
- Silt/Silty Clay ☐
- Clay-Sand/Clay-Silt ☐
- Gravel/Gravel-Sand ☐
- Rock ☐
- Water Range ☐
- Other* ☑

*Please specify Shallow to deep, loamy, stony, cobbly soils

Predominant Topography (check one):

- Flat ☐
- Flat with gorges or gullies ☐
- Gently rolling ☐
- Heavily rolling ☐
- Mountainous ☑
- Rolling with gorges or gullies ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Vegetation (check one):

- Barren or low grass ☐
- Heavy grass and many shrubs ☐
- Heavy shrubs and trees ☐
- Low grass and few shrubs ☐
- Shrubs and some trees ☑
- Heavily wooded ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- Actual (Known) ☐
- Potential ☐
- No potential ☐
- Unknown ☑

Depth to Groundwater:

Groundwater Depth 100-485 Feet

MRS Located above drinking water aquifer?

- Yes ☐
- No ☑
- Not applicable (water range) ☐

Sole source aquifer?

- Yes ☑
- No ☐

Threatened or endangered species present?

- Yes ☑
- No ☐

Archaeological or cultural sites present?

- Yes ☐
- No ☑

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- Yes ☐
- No ☑

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- Yes ☐
- No ☐

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID PT761

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☐ ☑ No

If yes, what is the scope of the response activities?

Past practices ☐ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☐ ☐ Operation and maintenance
Investigation ☐ ☐ Monitoring
Response/remedial action ☐ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☐

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☐

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☐ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☑ Unknown

Risk Assessment Code (RAC):

Hazard Severity III 2 RAC score
Hazard Probability A ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☐ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☑ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify_____
_____
_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID PT761

Access Control:

- No controls ☑
- Signs ☐
- Fencing around entire range ☐
- Partial fencing ☐
- Locked/secured gated ☐
- Log-in book ☐
- Security patrol ☐
- Other* ☐

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- Federal Agency ☐
- Tribal government ☐
- State Agency ☐
- Local agency ☐
- Private entity ☐

☐ Ownership transfer to:

- Federal agency ☐
- Tribal government ☐
- State agency ☐
- Local agency ☐
- Private entity ☐

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- Yes ☐
- No ☐
- Unknown ☐

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- Federal agency ☐
- Tribal government ☐
- State agency ☐
- Local agency ☑
- Private entity ☐
- None ☐

Please provide a brief description of the organization with ownership or control:

The land of PT761 lies outside the KAFB boundary. There are no controls on the property that is now populated with several, large, private residences. There are signs in the area indicating portions of the MRA are owned by the city of Albuquerque.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID PT773

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Coyote Canyon Tech Site (H-18)

Point of Contact:

Name Carl J. Lanz, P.G.
Organization KAFB Restoration Section
Phone (505) 853-6534
Email Carl.Lanz@kirtland.af.mil

2050 Wyoming Blvd. SE Address
Albuquerque City
NM State

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at Latitude
State various locations. Longitude
County

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply): ☐

Testing	☑	☐	Emergency Destruction
Training	☐	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☑	Other*
Land-to-Air	☐		

*Please specify Explosive Testing, possible OB conducted

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID PT773

Site Type (check all that apply):

- [ ] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [ ] Buffer Zone
- [ ] Chemical Weapons
- [ ] Surface Disposal Area
- [ ] Depleted Uranium
- [ ] EOD Range
- [ ] Firing Line
- [ ] Fire Range
- [ ] Grenade Range
- [x] Heavy Explosive
- [ ] Munitions Burial
- [ ] Medium/Large Caliber
- [x] Multi-Use Range
- [x] Open Burn
- [x] Open Detonation
- [ ] Propellant and Pyrotechnics
- [ ] Pistol Range
- [x] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [ ] Range Residue Graveyard (targets and debris)
- [ ] Safety Fan
- [ ] Strafing Run-in Line
- [ ] Small Arms Range
- [ ] Target Area
- [ ] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [ ] EOD Area
- [ ] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	77 (* 131)	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		77
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [ ] Medium/Large Caliber (20mm or larger)
- [ ] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [x] Explosive rockets
- [ ] Guided Missiles
- [x] Explosive detonators
- [ ] Blasting Caps
- [ ] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [ ] Small arms expended
- [ ] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [ ] Incendiary material
- [x] Primary or initiating explosives
- [x] Demolition charges
- [ ] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [ ] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [ ] Riot control agents (vomiting, tear)
- [ ] Bombs (explosive)
- [ ] Bombs (practice)
- [ ] Fuses, Booster, Bursters
- [x] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [ ] Mortars
- [ ] Torpedoes
- [ ] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify MRA acreage was erroneously reported as 131 acres in previous inventory.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID PT773

Anomaly Density (check one):

- ☐ Low (<= 10 anomalies per acre)
- ☐ High (> 50 anomalies per acre)
- ☑ Medium (10 to 50 anomalies peracre)

Predominant Soil Type (check one):

- ☐ Clay/Sand with Stone
- ☐ Gravel/Gravel-Sand
- ☑ Sand/Gravel-Sand
- ☐ Rock
- ☐ Sand-Silt/Sand-Clay
- ☐ Water Range
- ☐ Silt/Silty Clay
- ☐ Other*
- ☐ Clay-Sand/Clay-Silt

*Please specify_____

Predominant Topography (check one):

- ☐ Flat
- ☐ Mountainous
- ☐ Flat with gorges or gullies
- ☑ Rolling with gorges or gullies
- ☐ Gently rolling
- ☐ Water Range
- ☐ Heavily rolling
- ☐ Other*

*Please specify_____

Predominant Vegetation (check one):

- ☐ Barren or low grass
- ☐ Shrubs and some trees
- ☐ Heavy grass and many shrubs
- ☐ Heavily wooded
- ☐ Heavy shrubs and trees
- ☐ Water Range
- ☑ Low grass and few shrubs
- ☐ Other*

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- ☐ Actual (Known)
- ☐ No potential
- ☐ Potential
- ☑ Unknown

Depth to Groundwater:

Groundwater Depth 90-100 Feet

MRS Located above drinking water aquifer?

- ☐ Yes
- ☐ Not applicable (water range)
- ☑ No

Sole source aquifer?

- ☑ Yes
- ☐ No

Threatened or endangered species present?

- ☑ Yes
- ☐ No

Archaeological or cultural sites present?

- ☐ Yes
- ☑ No

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- ☐ Yes
- ☑ No

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- ☐ Yes
- ☐ No

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID PT773

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☑ ☐ No

If yes, what is the scope of the response activities?

Past practices ☑ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☑ ☐ Operation and maintenance
Investigation ☑ ☑ Monitoring
Response/remedial action ☑ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☑

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☑

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☑ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☐ Unknown

Risk Assessment Code (RAC):

Hazard Severity II 2 RAC score
Hazard Probability B ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC scores based on previous AFRIMS data. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID PT773

Access Control:

No controls	☐	☐	Locked/secured gated
Signs	☑	☐	Log-in book
Fencing around entire range	☐	☑	Security patrol
Partial fencing	☑	☐	Other*

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

Federal Agency	☐	☐	Local agency
Tribal government	☐	☐	Private entity
State Agency	☐		

☐ Ownership transfer to:

Federal agency	☐	☐	Local agency
Tribal government	☐	☐	Private entity
State agency	☐		

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land
☐ Base realignment/closure action
Planned or mandated date for transfer?_____
☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

Yes	☐	☐	Unknown
No	☐		

If yes:

Point of contact:_____
Phone #:_____
Year of transfer:_____
Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

Federal agency	☐	☐	Local agency
Tribal government	☐	☐	Private entity
State agency	☐	☑	None

Please provide a brief description of the organization with ownership or control:

_____
_____
_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID PT783

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Bazooka Training Range (H-23)

Point of Contact:

Name Carl J. Lanz, P.G.
Organization KAFB Restoration Section
Phone (505) 853-6534
Email Carl.Lanz@kirtland.af.mil

2050 Wyoming Blvd. SE Address
Albuquerque City
NM State

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at Latitude
State various locations. Longitude
County

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply): ☐

Testing	☐	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☐	Other*
Land-to-Air	☐		

*Please specify

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID PT783

Site Type (check all that apply):

- [ ] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [ ] Buffer Zone
- [ ] Chemical Weapons
- [ ] Surface Disposal Area
- [ ] Depleted Uranium
- [ ] EOD Range
- [ ] Firing Line
- [ ] Fire Range
- [ ] Grenade Range
- [ ] Heavy Explosive
- [ ] Munitions Burial
- [ ] Medium/Large Caliber
- [x] Multi-Use Range
- [ ] Open Burn
- [ ] Open Detonation
- [ ] Propellant and Pyrotechnics
- [ ] Pistol Range
- [ ] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [ ] Range Residue Graveyard (targets and debris)
- [ ] Safety Fan
- [ ] Strafing Run-in Line
- [ ] Small Arms Range
- [ ] Target Area
- [x] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [ ] EOD Area
- [ ] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	354	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		354
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [ ] Medium/Large Caliber (20mm or larger)
- [ ] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [x] Explosive rockets
- [ ] Guided Missiles
- [ ] Explosive detonators
- [ ] Blasting Caps
- [ ] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [x] Small arms expended
- [x] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [ ] Incendiary material
- [ ] Primary or initiating explosives
- [ ] Demolition charges
- [x] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [ ] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [ ] Riot control agents (vomiting, tear)
- [ ] Bombs (explosive)
- [ ] Bombs (practice)
- [ ] Fuses, Booster, Bursters
- [x] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [ ] Mortars
- [ ] Torpedoes
- [ ] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify Training Rounds.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID PT783

Anomaly Density (check one):

- ☐ Low (<= 10 anomalies per acre)
- ☐ High (> 50 anomalies per acre)
- ☑ Medium (10 to 50 anomalies peracre)

Predominant Soil Type (check one):

- ☐ Clay/Sand with Stone
- ☐ Gravel/Gravel-Sand
- ☑ Sand/Gravel-Sand
- ☐ Rock
- ☐ Sand-Silt/Sand-Clay
- ☐ Water Range
- ☐ Silt/Silty Clay
- ☐ Other*
- ☐ Clay-Sand/Clay-Silt

*Please specify_____

Predominant Topography (check one):

- ☐ Flat
- ☐ Mountainous
- ☐ Flat with gorges or gullies
- ☑ Rolling with gorges or gullies
- ☐ Gently rolling
- ☐ Water Range
- ☐ Heavily rolling
- ☐ Other*

*Please specify_____

Predominant Vegetation (check one):

- ☐ Barren or low grass
- ☐ Shrubs and some trees
- ☐ Heavy grass and many shrubs
- ☐ Heavily wooded
- ☐ Heavy shrubs and trees
- ☐ Water Range
- ☑ Low grass and few shrubs
- ☐ Other*

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- ☐ Actual (Known)
- ☐ No potential
- ☐ Potential
- ☑ Unknown

Depth to Groundwater:

Groundwater Depth 90-100 Feet

MRS Located above drinking water aquifer?

- ☐ Yes
- ☐ Not applicable (water range)
- ☑ No

Sole source aquifer?

- ☑ Yes
- ☐ No

Threatened or endangered species present?

- ☑ Yes
- ☐ No

Archaeological or cultural sites present?

- ☐ Yes
- ☑ No

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- ☐ Yes
- ☑ No

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- ☐ Yes
- ☐ No

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID PT783

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☑ ☐ No

If yes, what is the scope of the response activities?

Past practices ☑ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☑ ☐ Operation and maintenance
Investigation ☑ ☑ Monitoring
Response/remedial action ☑ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☑

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☑

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☑ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☐ Unknown

Risk Assessment Code (RAC):

Hazard Severity II 2 RAC score
Hazard Probability B ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC scores based on previous AFRIMS data. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID PT783

Access Control:

- ☐ No controls
- ☐ Signs
- ☐ Fencing around entire range
- ☐ Partial fencing
- ☐ Locked/secured gated
- ☐ Log-in book
- ☑ Security patrol
- ☐ Other*

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- ☐ Federal Agency
- ☐ Tribal government
- ☐ State Agency
- ☐ Local agency
- ☐ Private entity

☐ Ownership transfer to:

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- ☐ Yes
- ☐ No
- ☐ Unknown

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity
- ☑ None

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR763

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Rifle Range (H-17)

Point of Contact:

Name Carl J. Lanz, P.G. 2050 Wyoming Blvd. SE Address
Organization KAFB Restoration Section Albuquerque City
Phone (505) 853-6534 NM State
Email Carl.Lanz@kirtland.af.mil

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at Latitude
State various locations. Longitude
County

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply): ☐

Testing	☐	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☑	Other*
Disposal (Burial)	☐		

*Please specify Listed as a Small Arms Range. Recon and archive research indicates old landfill on site.

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☐	Other*
Land-to-Air	☐		

*Please specify For information on landfill see KAFB document: "Interim Corrective Measure SWMU LF-02 on MRA SR763" p.33

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR763

Site Type (check all that apply):

- ☐ Air-to Land
- ☐ Air-to-Water
- ☐ Burn Pit
- ☐ Biological Warfare
- ☐ Buffer Zone
- ☐ Chemical Weapons
- ☐ Surface Disposal Area
- ☐ Depleted Uranium
- ☐ EOD Range
- ☐ Firing Line
- ☐ Fire Range
- ☐ Grenade Range
- ☐ Heavy Explosive
- ☐ Munitions Burial
- ☐ Medium/Large Caliber
- ☐ Multi-Use Range
- ☐ Open Burn
- ☐ Open Detonation
- ☐ Propellant and Pyrotechnics
- ☐ Pistol Range
- ☐ Pyrotechnics
- ☐ Residue Holding Area (expended munitions, range clearance, etc.)
- ☐ Range Residue Graveyard (targets and debris)
- ☐ Safety Fan
- ☐ Strafing Run-in Line
- ☑ Small Arms Range
- ☐ Target Area
- ☐ Training and Maneuver Area
- ☐ Trap and Skeet Range
- ☐ EOD Area
- ☐ Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	☐	232 (* 500)	
Acreage confirmed as containing UXO	☐		0
Acreage suspected or potentially containing UXO	☐		232
Acreage confirmed as NOT containing UXO	☐		0

Ordnance Types (check all that apply):

- ☑ Medium/Large Caliber (20mm or larger)
- ☐ Explosive grenades (hand or rifle)
- ☐ Explosive landmine
- ☐ Explosive rockets
- ☐ Guided Missiles
- ☐ Explosive detonators
- ☐ Blasting Caps
- ☐ Practice Grenades (with spotting charges)
- ☐ Practice landmines (with spotting charges)
- ☐ Small Arms complete round (.22-.50 cal)
- ☑ Small arms expended
- ☐ Practice ordnance (without spotting charges)
- ☐ White phosphorous
- ☐ Incendiary material
- ☐ Primary or initiating explosives
- ☐ Demolition charges
- ☐ Other*
- ☐ Military dynamite
- ☐ Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- ☐ Solid or Liquid propellants
- ☐ Toxic chemical agents (choking, nerve, blood, blister)
- ☐ Water gas identification sets
- ☐ Radiological ordnance (e.g. depleted Uranium)
- ☐ Riot control agents (vomiting, tear)
- ☐ Bombs (explosive)
- ☐ Bombs (practice)
- ☐ Fuses, Booster, Bursters
- ☐ Flares, signals, and simulators (other than white phosphorous)
- ☐ Ballistics Missiles
- ☐ Skeet
- ☐ Mortars
- ☐ Torpedoes
- ☐ Warheads
- ☐ Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify MRA acreage has decreased from 500 acres due to corrections to range location/boundary and elimination of overlap with other Sandia Base small arms ranges.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR763

Anomaly Density (check one):

- Low (<= 10 anomalies per acre) ☑
- Medium (10 to 50 anomalies peracre) ☐
- High (> 50 anomalies per acre) ☐

Predominant Soil Type (check one):

- Clay/Sand with Stone ☐
- Sand/Gravel-Sand ☐
- Sand-Silt/Sand-Clay ☑
- Silt/Silty Clay ☐
- Clay-Sand/Clay-Silt ☐
- Gravel/Gravel-Sand ☐
- Rock ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Topography (check one):

- Flat ☐
- Flat with gorges or gullies ☐
- Gently rolling ☐
- Heavily rolling ☐
- Mountainous ☐
- Rolling with gorges or gullies ☑
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Vegetation (check one):

- Barren or low grass ☐
- Heavy grass and many shrubs ☑
- Heavy shrubs and trees ☐
- Low grass and few shrubs ☐
- Shrubs and some trees ☐
- Heavily wooded ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- Actual (Known) ☐
- Potential ☐
- No potential ☐
- Unknown ☑

Depth to Groundwater:

Groundwater Depth 350-490 Feet

MRS Located above drinking water aquifer?

- Yes ☑
- No ☐
- Not applicable (water range) ☐

Sole source aquifer?

- Yes ☑
- No ☐

Threatened or endangered species present?

- Yes ☑
- No ☐

Archaeological or cultural sites present?

- Yes ☐
- No ☑

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- Yes ☐
- No ☑

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- Yes ☐
- No ☐

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR763

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☑ ☐ No

If yes, what is the scope of the response activities?

Past practices ☑ ☑ Chemical contamination
Current practices ☑ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☑ ☑ Operation and maintenance
Investigation ☑ ☑ Monitoring
Response/remedial action ☑ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☑

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☑

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☑ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☐ Unknown

Risk Assessment Code (RAC):

Hazard Severity IV 3 RAC score
Hazard Probability A ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC scores based on previous AFRIMS data. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR763

Access Control:

- ☐ No controls
- ☐ Signs
- ☐ Fencing around entire range
- ☐ Partial fencing
- ☐ Locked/secured gated
- ☐ Log-in book
- ☑ Security patrol
- ☐ Other*

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- ☐ Federal Agency
- ☐ Tribal government
- ☐ State Agency
- ☐ Local agency
- ☐ Private entity

☐ Ownership transfer to:

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- ☐ Yes
- ☐ No
- ☐ Unknown

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity
- ☑ None

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR764

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Rifle Range (H-8)

Point of Contact:

Name Carl J. Lanz, P.G. 2050 Wyoming Blvd. SE Address
Organization KAFB Restoration Section Albuquerque City
Phone (505) 853-6534 NM State
Email Carl.Lanz@kirtland.af.mil

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at Latitude
State various locations. Longitude
County

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply):

	☐		
Testing	☐	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☑	Other*
Disposal (Burial)	☐		

*Please specify Rifle Range.

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☐	Other*
Land-to-Air	☐		

*Please specify

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR764

Site Type (check all that apply):

- [ ] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [ ] Buffer Zone
- [ ] Chemical Weapons
- [ ] Surface Disposal Area
- [ ] Depleted Uranium
- [ ] EOD Range
- [x] Firing Line
- [ ] Fire Range
- [ ] Grenade Range
- [ ] Heavy Explosive
- [ ] Munitions Burial
- [ ] Medium/Large Caliber
- [ ] Multi-Use Range
- [ ] Open Burn
- [ ] Open Detonation
- [ ] Propellant and Pyrotechnics
- [ ] Pistol Range
- [ ] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [ ] Range Residue Graveyard (targets and debris)
- [x] Safety Fan
- [ ] Strafing Run-in Line
- [x] Small Arms Range
- [ ] Target Area
- [ ] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [ ] EOD Area
- [ ] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	116	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		116
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [ ] Medium/Large Caliber (20mm or larger)
- [ ] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [ ] Explosive rockets
- [ ] Guided Missiles
- [ ] Explosive detonators
- [ ] Blasting Caps
- [ ] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [x] Small arms expended
- [ ] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [ ] Incendiary material
- [ ] Primary or initiating explosives
- [ ] Demolition charges
- [ ] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [ ] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [ ] Riot control agents (vomiting, tear)
- [ ] Bombs (explosive)
- [ ] Bombs (practice)
- [ ] Fuses, Booster, Bursters
- [ ] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [ ] Mortars
- [ ] Torpedoes
- [ ] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR764

Anomaly Density (check one):

- Low (<= 10 anomalies per acre) ☑
- Medium (10 to 50 anomalies peracre) ☐
- High (> 50 anomalies per acre) ☐

Predominant Soil Type (check one):

- Clay/Sand with Stone ☐
- Sand/Gravel-Sand ☐
- Sand-Silt/Sand-Clay ☑
- Silt/Silty Clay ☐
- Clay-Sand/Clay-Silt ☐
- Gravel/Gravel-Sand ☐
- Rock ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Topography (check one):

- Flat ☐
- Flat with gorges or gullies ☐
- Gently rolling ☐
- Heavily rolling ☐
- Mountainous ☐
- Rolling with gorges or gullies ☑
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Vegetation (check one):

- Barren or low grass ☐
- Heavy grass and many shrubs ☑
- Heavy shrubs and trees ☐
- Low grass and few shrubs ☐
- Shrubs and some trees ☐
- Heavily wooded ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- Actual (Known) ☐
- Potential ☐
- No potential ☐
- Unknown ☑

Depth to Groundwater:

Groundwater Depth 350-490 Feet

MRS Located above drinking water aquifer?

- Yes ☑
- No ☐
- Not applicable (water range) ☐

Sole source aquifer?

- Yes ☑
- No ☐

Threatened or endangered species present?

- Yes ☑
- No ☐

Archaeological or cultural sites present?

- Yes ☐
- No ☑

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- Yes ☐
- No ☑

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- Yes ☐
- No ☐

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR764

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☑ ☐ No

If yes, what is the scope of the response activities?

Past practices ☑ ☑ Chemical contamination
Current practices ☑ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☑ ☑ Operation and maintenance
Investigation ☑ ☑ Monitoring
Response/remedial action ☑ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☑

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☑

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☑ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☐ Unknown

Risk Assessment Code (RAC):

Hazard Severity IV 3 RAC score
Hazard Probability A ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC scores based on previous AFRIMS data. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR764

Access Control:

- ☐ No controls
- ☐ Signs
- ☐ Fencing around entire range
- ☐ Partial fencing
- ☐ Locked/secured gated
- ☐ Log-in book
- ☑ Security patrol
- ☐ Other*

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- ☐ Federal Agency
- ☐ Tribal government
- ☐ State Agency
- ☐ Local agency
- ☐ Private entity

☐ Ownership transfer to:

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- ☐ Yes
- ☐ No
- ☐ Unknown

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity
- ☑ None

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR765

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: WWII Pistol Range (H-14)

Point of Contact:

Name Carl J. Lanz, P.G. 2050 Wyoming Blvd. SE Address
Organization KAFB Restoration Section Albuquerque City
Phone (505) 853-6534 NM State
Email Carl.Lanz@kirtland.af.mil

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at Latitude
State various locations. Longitude
County

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply):

	☐		
Testing	☐	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☑	Other*
Disposal (Burial)	☐		

*Please specify Listed as a abandoned WWII era Small Arms Range.

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☐	Other*
Land-to-Air	☐		

*Please specify

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR765

Site Type (check all that apply):

- [ ] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [ ] Buffer Zone
- [ ] Chemical Weapons
- [ ] Surface Disposal Area
- [ ] Depleted Uranium
- [ ] EOD Range
- [x] Firing Line
- [ ] Fire Range
- [ ] Grenade Range
- [ ] Heavy Explosive
- [ ] Munitions Burial
- [ ] Medium/Large Caliber
- [ ] Multi-Use Range
- [ ] Open Burn
- [ ] Open Detonation
- [ ] Propellant and Pyrotechnics
- [x] Pistol Range
- [ ] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [ ] Range Residue Graveyard (targets and debris)
- [x] Safety Fan
- [ ] Strafing Run-in Line
- [x] Small Arms Range
- [ ] Target Area
- [ ] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [ ] EOD Area
- [ ] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	3 (* 242)	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		3
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [ ] Medium/Large Caliber (20mm or larger)
- [ ] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [ ] Explosive rockets
- [ ] Guided Missiles
- [ ] Explosive detonators
- [ ] Blasting Caps
- [ ] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [x] Small arms expended
- [ ] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [ ] Incendiary material
- [ ] Primary or initiating explosives
- [ ] Demolition charges
- [ ] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [ ] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [ ] Riot control agents (vomiting, tear)
- [ ] Bombs (explosive)
- [ ] Bombs (practice)
- [ ] Fuses, Booster, Bursters
- [ ] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [ ] Mortars
- [ ] Torpedoes
- [ ] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify MRA acreage has decreased from 242 acres due to corrections to range location/boundary and elimination of overlap with other Sandia Base small arms ranges.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR765

Anomaly Density (check one):

- Low (<= 10 anomalies per acre) ☑
- Medium (10 to 50 anomalies peracre) ☐
- High (> 50 anomalies per acre) ☐

Predominant Soil Type (check one):

- Clay/Sand with Stone ☐
- Sand/Gravel-Sand ☐
- Sand-Silt/Sand-Clay ☑
- Silt/Silty Clay ☐
- Clay-Sand/Clay-Silt ☐
- Gravel/Gravel-Sand ☐
- Rock ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Topography (check one):

- Flat ☐
- Flat with gorges or gullies ☐
- Gently rolling ☐
- Heavily rolling ☐
- Mountainous ☐
- Rolling with gorges or gullies ☑
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Vegetation (check one):

- Barren or low grass ☐
- Heavy grass and many shrubs ☑
- Heavy shrubs and trees ☐
- Low grass and few shrubs ☐
- Shrubs and some trees ☐
- Heavily wooded ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- Actual (Known) ☐
- Potential ☐
- No potential ☐
- Unknown ☑

Depth to Groundwater:

Groundwater Depth 350-490 Feet

MRS Located above drinking water aquifer?

- Yes ☑
- No ☐
- Not applicable (water range) ☐

Sole source aquifer?

- Yes ☑
- No ☐

Threatened or endangered species present?

- Yes ☑
- No ☐

Archaeological or cultural sites present?

- Yes ☐
- No ☑

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- Yes ☐
- No ☑

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- Yes ☐
- No ☐

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR765

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☑ ☐ No

If yes, what is the scope of the response activities?

Past practices ☑ ☑ Chemical contamination
Current practices ☑ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☑ ☑ Operation and maintenance
Investigation ☑ ☑ Monitoring
Response/remedial action ☑ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☑

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☑

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☑ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☐ Unknown

Risk Assessment Code (RAC):

Hazard Severity IV 3 RAC score
Hazard Probability A ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC scores based on previous AFRIMS data. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR765

Access Control:

- ☐ No controls
- ☐ Signs
- ☐ Fencing around entire range
- ☐ Partial fencing
- ☐ Locked/secured gated
- ☐ Log-in book
- ☑ Security patrol
- ☐ Other*

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- ☐ Federal Agency
- ☐ Tribal government
- ☐ State Agency
- ☐ Local agency
- ☐ Private entity

☐ Ownership transfer to:

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- ☐ Yes
- ☐ No
- ☐ Unknown

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity
- ☑ None

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR766

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Sub-Machine Gun (H-10)

Point of Contact:

Name Carl J. Lanz, P.G. 2050 Wyoming Blvd. SE Address
Organization KAFB Restoration Section Albuquerque City
Phone (505) 853-6534 NM State
Email Carl.Lanz@kirtland.af.mil

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at Latitude
State various locations. Longitude
County

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply): ☐

Testing	☐	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☑	Other*
Disposal (Burial)	☐		

*Please specify Listed as a WWII era submachine gun range co-located with SR764 Rifle Range.

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☐	Other*
Land-to-Air	☐		

*Please specify

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR766

Site Type (check all that apply):

- [ ] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [ ] Buffer Zone
- [ ] Chemical Weapons
- [ ] Surface Disposal Area
- [ ] Depleted Uranium
- [ ] EOD Range
- [x] Firing Line
- [ ] Fire Range
- [ ] Grenade Range
- [ ] Heavy Explosive
- [ ] Munitions Burial
- [ ] Medium/Large Caliber
- [ ] Multi-Use Range
- [ ] Open Burn
- [ ] Open Detonation
- [ ] Propellant and Pyrotechnics
- [ ] Pistol Range
- [ ] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [ ] Range Residue Graveyard (targets and debris)
- [x] Safety Fan
- [ ] Strafing Run-in Line
- [x] Small Arms Range
- [ ] Target Area
- [ ] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [ ] EOD Area
- [ ] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	59 (*149)	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		59
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [ ] Medium/Large Caliber (20mm or larger)
- [ ] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [ ] Explosive rockets
- [ ] Guided Missiles
- [ ] Explosive detonators
- [ ] Blasting Caps
- [ ] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [x] Small arms expended
- [ ] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [ ] Incendiary material
- [ ] Primary or initiating explosives
- [ ] Demolition charges
- [ ] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [ ] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [ ] Riot control agents (vomiting, tear)
- [ ] Bombs (explosive)
- [ ] Bombs (practice)
- [ ] Fuses, Booster, Bursters
- [ ] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [ ] Mortars
- [ ] Torpedoes
- [ ] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify MRA acreage has decreased from 149 acres due to corrections to range location/boundary and elimination of overlap with other Sandia Base small arms ranges.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR766

Anomaly Density (check one):

- Low (<= 10 anomalies per acre) ☑
- Medium (10 to 50 anomalies peracre) ☐
- High (> 50 anomalies per acre) ☐

Predominant Soil Type (check one):

- Clay/Sand with Stone ☐
- Sand/Gravel-Sand ☑
- Sand-Silt/Sand-Clay ☐
- Silt/Silty Clay ☐
- Clay-Sand/Clay-Silt ☐
- Gravel/Gravel-Sand ☐
- Rock ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Topography (check one):

- Flat ☑
- Flat with gorges or gullies ☐
- Gently rolling ☐
- Heavily rolling ☐
- Mountainous ☐
- Rolling with gorges or gullies ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Vegetation (check one):

- Barren or low grass ☐
- Heavy grass and many shrubs ☐
- Heavy shrubs and trees ☐
- Low grass and few shrubs ☑
- Shrubs and some trees ☐
- Heavily wooded ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- Actual (Known) ☐
- Potential ☐
- No potential ☐
- Unknown ☑

Depth to Groundwater:

Groundwater Depth 350-490 Feet

MRS Located above drinking water aquifer?

- Yes ☑
- No ☐
- Not applicable (water range) ☐

Sole source aquifer?

- Yes ☑
- No ☐

Threatened or endangered species present?

- Yes ☑
- No ☐

Archaeological or cultural sites present?

- Yes ☐
- No ☑

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- Yes ☐
- No ☑

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- Yes ☐
- No ☐

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR766

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☑ ☐ No

If yes, what is the scope of the response activities?

Past practices ☑ ☑ Chemical contamination
Current practices ☑ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☑ ☑ Operation and maintenance
Investigation ☑ ☑ Monitoring
Response/remedial action ☑ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☑

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☑

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☑ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☐ Unknown

Risk Assessment Code (RAC):

Hazard Severity IV 3 RAC score
Hazard Probability A ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC score based on previous AFRIMS data. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR766

Access Control:

- ☐ No controls
- ☐ Signs
- ☐ Fencing around entire range
- ☐ Partial fencing
- ☐ Locked/secured gated
- ☐ Log-in book
- ☑ Security patrol
- ☐ Other*

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- ☐ Federal Agency
- ☐ Tribal government
- ☐ State Agency
- ☐ Local agency
- ☐ Private entity

☐ Ownership transfer to:

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- ☐ Yes
- ☐ No
- ☐ Unknown

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity
- ☑ None

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR767

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Rifle Range (H-11)

Point of Contact:

Name Carl J. Lanz, P.G.
Organization KAFB Restoration Section
Phone (505) 853-6534
Email Carl.Lanz@kirtland.af.mil

2050 Wyoming Blvd. SE Address
Albuquerque City
NM State

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at various locations.
State
County

Latitude
Longitude

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply):

	☐		
Testing	☐	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☐	Other*
Land-to-Air	☐		

*Please specify

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR767

Site Type (check all that apply):

- [ ] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [ ] Buffer Zone
- [ ] Chemical Weapons
- [ ] Surface Disposal Area
- [ ] Depleted Uranium
- [ ] EOD Range
- [x] Firing Line
- [ ] Fire Range
- [ ] Grenade Range
- [ ] Heavy Explosive
- [ ] Munitions Burial
- [ ] Medium/Large Caliber
- [ ] Multi-Use Range
- [ ] Open Burn
- [ ] Open Detonation
- [ ] Propellant and Pyrotechnics
- [ ] Pistol Range
- [ ] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [ ] Range Residue Graveyard (targets and debris)
- [x] Safety Fan
- [ ] Strafing Run-in Line
- [x] Small Arms Range
- [ ] Target Area
- [ ] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [ ] EOD Area
- [ ] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	4 (* 189)	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		4
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [ ] Medium/Large Caliber (20mm or larger)
- [ ] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [ ] Explosive rockets
- [ ] Guided Missiles
- [ ] Explosive detonators
- [ ] Blasting Caps
- [ ] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [x] Small arms expended
- [ ] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [ ] Incendiary material
- [ ] Primary or initiating explosives
- [ ] Demolition charges
- [ ] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [ ] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [ ] Riot control agents (vomiting, tear)
- [ ] Bombs (explosive)
- [ ] Bombs (practice)
- [ ] Fuses, Booster, Bursters
- [ ] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [ ] Mortars
- [ ] Torpedoes
- [ ] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify MRA acreage has decreased from 189 acres due to corrections to range location/boundary and elimination of overlap with other Sandia Base small arms ranges.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR767

Anomaly Density (check one):

- [x] Low (<= 10 anomalies per acre)
- [ ] Medium (10 to 50 anomalies peracre)
- [ ] High (> 50 anomalies per acre)

Predominant Soil Type (check one):

- [ ] Clay/Sand with Stone
- [ ] Sand/Gravel-Sand
- [x] Sand-Silt/Sand-Clay
- [ ] Silt/Silty Clay
- [ ] Clay-Sand/Clay-Silt
- [ ] Gravel/Gravel-Sand
- [ ] Rock
- [ ] Water Range
- [ ] Other*

*Please specify_____

Predominant Topography (check one):

- [x] Flat
- [ ] Flat with gorges or gullies
- [ ] Gently rolling
- [ ] Heavily rolling
- [ ] Mountainous
- [ ] Rolling with gorges or gullies
- [ ] Water Range
- [ ] Other*

*Please specify_____

Predominant Vegetation (check one):

- [ ] Barren or low grass
- [ ] Heavy grass and many shrubs
- [ ] Heavy shrubs and trees
- [x] Low grass and few shrubs
- [ ] Shrubs and some trees
- [ ] Heavily wooded
- [ ] Water Range
- [ ] Other*

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- [ ] Actual (Known)
- [ ] Potential
- [ ] No potential
- [x] Unknown

Depth to Groundwater:

Groundwater Depth 350-490 Feet

MRS Located above drinking water aquifer?

- [x] Yes
- [ ] No
- [ ] Not applicable (water range)

Sole source aquifer?

- [x] Yes
- [ ] No

Threatened or endangered species present?

- [x] Yes
- [ ] No

Archaeological or cultural sites present?

- [ ] Yes
- [x] No

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- [ ] Yes
- [x] No

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- [ ] Yes
- [ ] No

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR767

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☑ ☐ No

If yes, what is the scope of the response activities?

Past practices ☑ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☑ ☐ Operation and maintenance
Investigation ☑ ☐ Monitoring
Response/remedial action ☑ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☑

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☑

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☑ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☐ Unknown

Risk Assessment Code (RAC):

Hazard Severity IV 3 RAC score
Hazard Probability A ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC scores based on previous AFRIMS data. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR767

Access Control:

- ☐ No controls
- ☐ Signs
- ☐ Fencing around entire range
- ☐ Partial fencing
- ☐ Locked/secured gated
- ☐ Log-in book
- ☑ Security patrol
- ☐ Other*

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- ☐ Federal Agency
- ☐ Tribal government
- ☐ State Agency
- ☐ Local agency
- ☐ Private entity

☐ Ownership transfer to:

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- ☐ Yes
- ☐ No
- ☐ Unknown

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity
- ☑ None

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR768

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Close Combat Infiltration Course (H-26)

Point of Contact:

Name Carl J. Lanz, P.G.
Organization KAFB Restoration Section
Phone (505) 853-6534
Email Carl.Lanz@kirtland.af.mil

2050 Wyoming Blvd. SE Address
Albuquerque City
NM State

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at various locations.
State
County

Latitude
Longitude

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply):

	☐		
Testing	☐	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☐	Other*
Land-to-Air	☐		

*Please specify

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR768

Site Type (check all that apply):

- [ ] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [ ] Buffer Zone
- [ ] Chemical Weapons
- [ ] Surface Disposal Area
- [ ] Depleted Uranium
- [ ] EOD Range
- [x] Firing Line
- [ ] Fire Range
- [ ] Grenade Range
- [ ] Heavy Explosive
- [ ] Munitions Burial
- [ ] Medium/Large Caliber
- [ ] Multi-Use Range
- [ ] Open Burn
- [ ] Open Detonation
- [ ] Propellant and Pyrotechnics
- [x] Pistol Range
- [ ] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [ ] Range Residue Graveyard (targets and debris)
- [x] Safety Fan
- [ ] Strafing Run-in Line
- [x] Small Arms Range
- [ ] Target Area
- [x] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [ ] EOD Area
- [ ] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	536	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		536
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [x] Medium/Large Caliber (20mm or larger)
- [ ] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [x] Explosive rockets
- [ ] Guided Missiles
- [ ] Explosive detonators
- [ ] Blasting Caps
- [ ] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [x] Small arms expended
- [ ] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [ ] Incendiary material
- [ ] Primary or initiating explosives
- [ ] Demolition charges
- [ ] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [ ] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [ ] Riot control agents (vomiting, tear)
- [ ] Bombs (explosive)
- [ ] Bombs (practice)
- [ ] Fuses, Booster, Bursters
- [ ] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [ ] Mortars
- [ ] Torpedoes
- [ ] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR768

Anomaly Density (check one):

- Low (<= 10 anomalies per acre) ☑
- Medium (10 to 50 anomalies peracre) ☐
- High (> 50 anomalies per acre) ☐

Predominant Soil Type (check one):

- Clay/Sand with Stone ☐
- Sand/Gravel-Sand ☐
- Sand-Silt/Sand-Clay ☐
- Silt/Silty Clay ☐
- Clay-Sand/Clay-Silt ☐
- Gravel/Gravel-Sand ☐
- Rock ☐
- Water Range ☐
- Other* ☑

*Please specify Shallow to deep, loamy, stony, cobbly soils

Predominant Topography (check one):

- Flat ☐
- Flat with gorges or gullies ☐
- Gently rolling ☐
- Heavily rolling ☐
- Mountainous ☑
- Rolling with gorges or gullies ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Vegetation (check one):

- Barren or low grass ☐
- Heavy grass and many shrubs ☐
- Heavy shrubs and trees ☑
- Low grass and few shrubs ☐
- Shrubs and some trees ☐
- Heavily wooded ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- Actual (Known) ☐
- Potential ☐
- No potential ☐
- Unknown ☑

Depth to Groundwater:

Groundwater Depth 90-100 Feet

MRS Located above drinking water aquifer?

- Yes ☐
- No ☑
- Not applicable (water range) ☐

Sole source aquifer?

- Yes ☑
- No ☐

Threatened or endangered species present?

- Yes ☑
- No ☐

Archaeological or cultural sites present?

- Yes ☐
- No ☑

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- Yes ☐
- No ☑

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- Yes ☐
- No ☐

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR768

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☑ ☐ No

If yes, what is the scope of the response activities?

Past practices ☑ ☐ Chemical contamination
Current practices ☐ ☑ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☑ ☐ Operation and maintenance
Investigation ☑ ☐ Monitoring
Response/remedial action ☑ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☑

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☑

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☑ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☐ Unknown

Risk Assessment Code (RAC):

Hazard Severity II _____ 1 _____ RAC score
Hazard Probability A _____ ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC scores based on previous AFRIMS data. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR768

Access Control:

- ☐ No controls
- ☐ Signs
- ☐ Fencing around entire range
- ☐ Partial fencing
- ☐ Locked/secured gated
- ☐ Log-in book
- ☑ Security patrol
- ☐ Other*

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- ☐ Federal Agency
- ☐ Tribal government
- ☐ State Agency
- ☐ Local agency
- ☐ Private entity

☐ Ownership transfer to:

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- ☐ Yes
- ☐ No
- ☐ Unknown

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity
- ☑ None

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR777

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Rifle Range (H-16)

Point of Contact:

Name Carl J. Lanz, P.G. 2050 Wyoming Blvd. SE Address
Organization KAFB Restoration Section Albuquerque City
Phone (505) 853-6534 NM State
Email Carl.Lanz@kirtland.af.mil

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at Latitude
State various locations. Longitude
County

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply): ☐

Testing	☑	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☐	Other*
Land-to-Air	☐		

*Please specify Abandoned Rifle Range

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR777

Site Type (check all that apply):

- [ ] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [ ] Buffer Zone
- [ ] Chemical Weapons
- [ ] Surface Disposal Area
- [ ] Depleted Uranium
- [ ] EOD Range
- [ ] Firing Line
- [x] Fire Range
- [ ] Grenade Range
- [ ] Heavy Explosive
- [ ] Munitions Burial
- [ ] Medium/Large Caliber
- [ ] Multi-Use Range
- [ ] Open Burn
- [ ] Open Detonation
- [ ] Propellant and Pyrotechnics
- [ ] Pistol Range
- [ ] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [ ] Range Residue Graveyard (targets and debris)
- [ ] Safety Fan
- [ ] Strafing Run-in Line
- [x] Small Arms Range
- [ ] Target Area
- [ ] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [ ] EOD Area
- [ ] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	57	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		57
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [ ] Medium/Large Caliber (20mm or larger)
- [ ] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [ ] Explosive rockets
- [ ] Guided Missiles
- [ ] Explosive detonators
- [ ] Blasting Caps
- [ ] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [x] Small arms expended
- [ ] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [ ] Incendiary material
- [ ] Primary or initiating explosives
- [ ] Demolition charges
- [ ] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [ ] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [ ] Riot control agents (vomiting, tear)
- [ ] Bombs (explosive)
- [ ] Bombs (practice)
- [ ] Fuses, Booster, Bursters
- [ ] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [ ] Mortars
- [ ] Torpedoes
- [ ] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR777

Anomaly Density (check one):

- Low (<= 10 anomalies per acre) ☑
- Medium (10 to 50 anomalies peracre) ☐
- High (> 50 anomalies per acre) ☐

Predominant Soil Type (check one):

- Clay/Sand with Stone ☐
- Sand/Gravel-Sand ☐
- Sand-Silt/Sand-Clay ☑
- Silt/Silty Clay ☐
- Clay-Sand/Clay-Silt ☐
- Gravel/Gravel-Sand ☐
- Rock ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Topography (check one):

- Flat ☐
- Flat with gorges or gullies ☐
- Gently rolling ☐
- Heavily rolling ☐
- Mountainous ☐
- Rolling with gorges or gullies ☑
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Vegetation (check one):

- Barren or low grass ☐
- Heavy grass and many shrubs ☐
- Heavy shrubs and trees ☐
- Low grass and few shrubs ☑
- Shrubs and some trees ☐
- Heavily wooded ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- Actual (Known) ☐
- Potential ☐
- No potential ☐
- Unknown ☑

Depth to Groundwater:

Groundwater Depth 200 Feet

MRS Located above drinking water aquifer?

- Yes ☑
- No ☐
- Not applicable (water range) ☐

Sole source aquifer?

- Yes ☑
- No ☐

Threatened or endangered species present?

- Yes ☑
- No ☐

Archaeological or cultural sites present?

- Yes ☐
- No ☑

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- Yes ☐
- No ☑

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- Yes ☐
- No ☐

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR777

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☐ ☑ No

If yes, what is the scope of the response activities?

Past practices ☐ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☐ ☐ Operation and maintenance
Investigation ☐ ☐ Monitoring
Response/remedial action ☐ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☐

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☐

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☐ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☑ Unknown

Risk Assessment Code (RAC):

Hazard Severity I 4 RAC score
Hazard Probability E ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC scores based on previous AFRIMS data. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR777

Access Control:

- No controls ☑
- Signs ☐
- Fencing around entire range ☐
- Partial fencing ☐
- Locked/secured gated ☐
- Log-in book ☐
- Security patrol ☐
- Other* ☐

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- Federal Agency ☐
- Tribal government ☐
- State Agency ☐
- Local agency ☐
- Private entity ☐

☐ Ownership transfer to:

- Federal agency ☐
- Tribal government ☐
- State agency ☐
- Local agency ☐
- Private entity ☐

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- Yes ☐
- No ☐
- Unknown ☐

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- Federal agency ☐
- Tribal government ☐
- State agency ☐
- Local agency ☐
- Private entity ☐
- None ☑

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR778

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Airfield Pistol Range (H-2)

Point of Contact:

Name Carl J. Lanz, P.G.
Organization KAFB Restoration Section
Phone (505) 853-6534
Email Carl.Lanz@kirtland.af.mil

2050 Wyoming Blvd. SE Address
Albuquerque City
NM State

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at
State various locations.
County

Latitude
Longitude

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply): ☐

Testing	☑	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☐	Other*
Land-to-Air	☐		

*Please specify WWII era Pistol Range

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR778

Site Type (check all that apply):

- ☐ Air-to Land
- ☐ Air-to-Water
- ☐ Burn Pit
- ☐ Biological Warfare
- ☐ Buffer Zone
- ☐ Chemical Weapons
- ☐ Surface Disposal Area
- ☐ Depleted Uranium
- ☐ EOD Range
- ☐ Firing Line
- ☐ Fire Range
- ☐ Grenade Range
- ☐ Heavy Explosive
- ☐ Munitions Burial
- ☐ Medium/Large Caliber
- ☐ Multi-Use Range
- ☐ Open Burn
- ☐ Open Detonation
- ☐ Propellant and Pyrotechnics
- ☑ Pistol Range
- ☐ Pyrotechnics
- ☐ Residue Holding Area (expended munitions, range clearance, etc.)
- ☐ Range Residue Graveyard (targets and debris)
- ☐ Safety Fan
- ☐ Strafing Run-in Line
- ☑ Small Arms Range
- ☐ Target Area
- ☐ Training and Maneuver Area
- ☐ Trap and Skeet Range
- ☐ EOD Area
- ☐ Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	☐	86	
Acreage confirmed as containing UXO	☐		0
Acreage suspected or potentially containing UXO	☐		86
Acreage confirmed as NOT containing UXO	☐		0

Ordnance Types (check all that apply):

- ☐ Medium/Large Caliber (20mm or larger)
- ☐ Explosive grenades (hand or rifle)
- ☐ Explosive landmine
- ☐ Explosive rockets
- ☐ Guided Missiles
- ☐ Explosive detonators
- ☐ Blasting Caps
- ☐ Practice Grenades (with spotting charges)
- ☐ Practice landmines (with spotting charges)
- ☐ Small Arms complete round (.22-.50 cal)
- ☑ Small arms expended
- ☐ Practice ordnance (without spotting charges)
- ☐ White phosphorous
- ☐ Incendiary material
- ☐ Primary or initiating explosives
- ☐ Demolition charges
- ☐ Other*
- ☐ Military dynamite
- ☐ Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- ☐ Solid or Liquid propellants
- ☐ Toxic chemical agents (choking, nerve, blood, blister)
- ☐ Water gas identification sets
- ☐ Radiological ordnance (e.g. depleted Uranium)
- ☐ Riot control agents (vomiting, tear)
- ☐ Bombs (explosive)
- ☐ Bombs (practice)
- ☐ Fuses, Booster, Bursters
- ☐ Flares, signals, and simulators (other than white phosphorous)
- ☐ Ballistics Missiles
- ☐ Skeet
- ☐ Mortars
- ☐ Torpedoes
- ☐ Warheads
- ☐ Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify No MEC found during investigation.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR778

Anomaly Density (check one):

- Low (<= 10 anomalies per acre) ☑
- Medium (10 to 50 anomalies peracre) ☐
- High (> 50 anomalies per acre) ☐

Predominant Soil Type (check one):

- Clay/Sand with Stone ☐
- Sand/Gravel-Sand ☑
- Sand-Silt/Sand-Clay ☐
- Silt/Silty Clay ☐
- Clay-Sand/Clay-Silt ☐
- Gravel/Gravel-Sand ☐
- Rock ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Topography (check one):

- Flat ☐
- Flat with gorges or gullies ☐
- Gently rolling ☐
- Heavily rolling ☐
- Mountainous ☐
- Rolling with gorges or gullies ☑
- Water Range ☐
- Other* ☐

*Please specify_____

Predominant Vegetation (check one):

- Barren or low grass ☐
- Heavy grass and many shrubs ☐
- Heavy shrubs and trees ☐
- Low grass and few shrubs ☑
- Shrubs and some trees ☐
- Heavily wooded ☐
- Water Range ☐
- Other* ☐

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- Actual (Known) ☐
- Potential ☐
- No potential ☐
- Unknown ☑

Depth to Groundwater:

Groundwater Depth 350-490 Feet

MRS Located above drinking water aquifer?

- Yes ☑
- No ☐
- Not applicable (water range) ☐

Sole source aquifer?

- Yes ☑
- No ☐

Threatened or endangered species present?

- Yes ☑
- No ☐

Archaeological or cultural sites present?

- Yes ☐
- No ☑

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- Yes ☐
- No ☑

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- Yes ☐
- No ☐

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR778

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☑ ☐ No

If yes, what is the scope of the response activities?

Past practices ☑ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☑ ☑ Operation and maintenance
Investigation ☑ ☑ Monitoring
Response/remedial action ☑ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☑

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☑

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☐ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☑ Unknown

Risk Assessment Code (RAC):

Hazard Severity IV 3 RAC score
Hazard Probability A ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC scores based on previous AFRIMS data. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR778

Access Control:

- No controls ☑
- Signs ☐
- Fencing around entire range ☐
- Partial fencing ☐
- Locked/secured gated ☐
- Log-in book ☐
- Security patrol ☐
- Other* ☐

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- Federal Agency ☐
- Tribal government ☐
- State Agency ☐
- Local agency ☐
- Private entity ☐

☐ Ownership transfer to:

- Federal agency ☐
- Tribal government ☐
- State agency ☐
- Local agency ☐
- Private entity ☐

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- Yes ☐
- No ☐
- Unknown ☐

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- Federal agency ☐
- Tribal government ☐
- State agency ☐
- Local agency ☐
- Private entity ☐
- None ☑

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR780

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Impact Area (H-29) *not MMRP eligible - within operational range area*

Point of Contact:

Name Carl J. Lanz, P.G. 2050 Wyoming Blvd. SE Address
Organization KAFB Restoration Section Albuquerque City
Phone (505) 853-6534 NM State
Email Carl.Lanz@kirtland.af.mil

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at Latitude
State various locations. Longitude
County

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply): ☐

Testing	☑	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☑	Other*
Land-to-Air	☐		

*Please specify Multi-use Range

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR780

Site Type (check all that apply):

- [ ] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [ ] Buffer Zone
- [ ] Chemical Weapons
- [ ] Surface Disposal Area
- [ ] Depleted Uranium
- [ ] EOD Range
- [ ] Firing Line
- [ ] Fire Range
- [ ] Grenade Range
- [ ] Heavy Explosive
- [ ] Munitions Burial
- [x] Medium/Large Caliber
- [x] Multi-Use Range
- [ ] Open Burn
- [ ] Open Detonation
- [ ] Propellant and Pyrotechnics
- [ ] Pistol Range
- [ ] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [ ] Range Residue Graveyard (targets and debris)
- [ ] Safety Fan
- [ ] Strafing Run-in Line
- [x] Small Arms Range
- [ ] Target Area
- [ ] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [ ] EOD Area
- [ ] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	88	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		88
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [x] Medium/Large Caliber (20mm or larger)
- [ ] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [ ] Explosive rockets
- [ ] Guided Missiles
- [ ] Explosive detonators
- [ ] Blasting Caps
- [ ] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [x] Small arms expended
- [ ] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [ ] Incendiary material
- [ ] Primary or initiating explosives
- [ ] Demolition charges
- [ ] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [ ] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [ ] Riot control agents (vomiting, tear)
- [ ] Bombs (explosive)
- [ ] Bombs (practice)
- [ ] Fuses, Booster, Bursters
- [ ] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [ ] Mortars
- [ ] Torpedoes
- [ ] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR780

Anomaly Density (check one):

- [x] Low (<= 10 anomalies per acre)
- [ ] Medium (10 to 50 anomalies peracre)
- [ ] High (> 50 anomalies per acre)

Predominant Soil Type (check one):

- [ ] Clay/Sand with Stone
- [x] Sand/Gravel-Sand
- [ ] Sand-Silt/Sand-Clay
- [ ] Silt/Silty Clay
- [ ] Clay-Sand/Clay-Silt
- [ ] Gravel/Gravel-Sand
- [ ] Rock
- [ ] Water Range
- [ ] Other*

*Please specify_____

Predominant Topography (check one):

- [ ] Flat
- [ ] Flat with gorges or gullies
- [ ] Gently rolling
- [ ] Heavily rolling
- [x] Mountainous
- [ ] Rolling with gorges or gullies
- [ ] Water Range
- [ ] Other*

*Please specify_____

Predominant Vegetation (check one):

- [ ] Barren or low grass
- [ ] Heavy grass and many shrubs
- [ ] Heavy shrubs and trees
- [ ] Low grass and few shrubs
- [x] Shrubs and some trees
- [ ] Heavily wooded
- [ ] Water Range
- [ ] Other*

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- [ ] Actual (Known)
- [ ] Potential
- [ ] No potential
- [x] Unknown

Depth to Groundwater:

Groundwater Depth 90-100 Feet

MRS Located above drinking water aquifer?

- [ ] Yes
- [x] No
- [ ] Not applicable (water range)

Sole source aquifer?

- [x] Yes
- [ ] No

Threatened or endangered species present?

- [x] Yes
- [ ] No

Archaeological or cultural sites present?

- [ ] Yes
- [x] No

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- [ ] Yes
- [x] No

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- [ ] Yes
- [ ] No

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR780

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☐ ☑ No

If yes, what is the scope of the response activities?

Past practices ☐ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☐ ☐ Operation and maintenance
Investigation ☐ ☐ Monitoring
Response/remedial action ☐ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☐

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☐

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☐ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☑ Unknown

Risk Assessment Code (RAC):

Hazard Severity II 2 RAC score
Hazard Probability B ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC scores based on previous AFRIMS data. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID SR780

Access Control:

- ☐ No controls
- ☐ Signs
- ☐ Fencing around entire range
- ☐ Partial fencing
- ☐ Locked/secured gated
- ☐ Log-in book
- ☑ Security patrol
- ☐ Other*

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- ☐ Federal Agency
- ☐ Tribal government
- ☐ State Agency
- ☐ Local agency
- ☐ Private entity

☐ Ownership transfer to:

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- ☐ Yes
- ☐ No
- ☐ Unknown

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity
- ☑ None

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID TS756

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Skeet Range (OB-12) *not AF MMRP eligible - transferred to FUDS MMRP*

Point of Contact:

Name Carl J. Lanz, P.G.
Organization KAFB Restoration Section
Phone (505) 853-6534
Email Carl.Lanz@kirtland.af.mil

2050 Wyoming Blvd. SE Address
Albuquerque City
NM State

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at various locations.
State
County

Latitude
Longitude

MRS Status (check one):

Closed	☐	☐	Active
Transferring	☐	☐	Inactive
Transferred	☑	☐	Other*

*Please specify

Classification (check all that apply):

	☐		
Testing	☐	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☐	Other*
Land-to-Air	☐		

*Please specify

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID TS756

Site Type (check all that apply):

- ☐ Air-to Land
- ☐ Air-to-Water
- ☐ Burn Pit
- ☐ Biological Warfare
- ☐ Buffer Zone
- ☐ Chemical Weapons
- ☐ Surface Disposal Area
- ☐ Depleted Uranium
- ☐ EOD Range
- ☐ Firing Line
- ☐ Fire Range
- ☐ Grenade Range
- ☐ Heavy Explosive
- ☐ Munitions Burial
- ☐ Medium/Large Caliber
- ☐ Multi-Use Range
- ☐ Open Burn
- ☐ Open Detonation
- ☐ Propellant and Pyrotechnics
- ☐ Pistol Range
- ☐ Pyrotechnics
- ☐ Residue Holding Area (expended munitions, range clearance, etc.)
- ☐ Range Residue Graveyard (targets and debris)
- ☐ Safety Fan
- ☐ Strafing Run-in Line
- ☐ Small Arms Range
- ☐ Target Area
- ☐ Training and Maneuver Area
- ☑ Trap and Skeet Range
- ☐ EOD Area
- ☐ Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	☐	9	
Acreage confirmed as containing UXO	☐		0
Acreage suspected or potentially containing UXO	☐		9
Acreage confirmed as NOT containing UXO	☐		0

Ordnance Types (check all that apply):

- ☐ Medium/Large Caliber (20mm or larger)
- ☐ Explosive grenades (hand or rifle)
- ☐ Explosive landmine
- ☐ Explosive rockets
- ☐ Guided Missiles
- ☐ Explosive detonators
- ☐ Blasting Caps
- ☐ Practice Grenades (with spotting charges)
- ☐ Practice landmines (with spotting charges)
- ☐ Small Arms complete round (.22-.50 cal)
- ☑ Small arms expended
- ☐ Practice ordnance (without spotting charges)
- ☐ White phosphorous
- ☐ Incendiary material
- ☐ Primary or initiating explosives
- ☐ Demolition charges
- ☐ Other*
- ☐ Military dynamite
- ☐ Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- ☐ Solid or Liquid propellants
- ☐ Toxic chemical agents (choking, nerve, blood, blister)
- ☐ Water gas identification sets
- ☐ Radiological ordnance (e.g. depleted Uranium)
- ☐ Riot control agents (vomiting, tear)
- ☐ Bombs (explosive)
- ☐ Bombs (practice)
- ☐ Fuses, Booster, Bursters
- ☐ Flares, signals, and simulators (other than white phosphorous)
- ☐ Ballistics Missiles
- ☑ Skeet
- ☐ Mortars
- ☐ Torpedoes
- ☐ Warheads
- ☐ Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID TS756

Anomaly Density (check one):

- [x] Low (<= 10 anomalies per acre)
- [ ] Medium (10 to 50 anomalies peracre)
- [ ] High (> 50 anomalies per acre)

Predominant Soil Type (check one):

- [ ] Clay/Sand with Stone
- [x] Sand/Gravel-Sand
- [ ] Sand-Silt/Sand-Clay
- [ ] Silt/Silty Clay
- [ ] Clay-Sand/Clay-Silt
- [ ] Gravel/Gravel-Sand
- [ ] Rock
- [ ] Water Range
- [ ] Other*

*Please specify_____

Predominant Topography (check one):

- [x] Flat
- [ ] Flat with gorges or gullies
- [ ] Gently rolling
- [ ] Heavily rolling
- [ ] Mountainous
- [ ] Rolling with gorges or gullies
- [ ] Water Range
- [ ] Other*

*Please specify_____

Predominant Vegetation (check one):

- [ ] Barren or low grass
- [ ] Heavy grass and many shrubs
- [ ] Heavy shrubs and trees
- [x] Low grass and few shrubs
- [ ] Shrubs and some trees
- [ ] Heavily wooded
- [ ] Water Range
- [ ] Other*

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- [ ] Actual (Known)
- [ ] Potential
- [ ] No potential
- [x] Unknown

Depth to Groundwater:

Groundwater Depth 350-490 Feet

MRS Located above drinking water aquifer?

- [x] Yes
- [ ] No
- [ ] Not applicable (water range)

Sole source aquifer?

- [x] Yes
- [ ] No

Threatened or endangered species present?

- [ ] Yes
- [x] No

Archaeological or cultural sites present?

- [ ] Yes
- [x] No

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- [ ] Yes
- [x] No

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- [ ] Yes
- [ ] No

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID TS756

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☑ ☐ No

If yes, what is the scope of the response activities?

Past practices ☑ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☑ ☐ Operation and maintenance
Investigation ☑ ☐ Monitoring
Response/remedial action ☐ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☑

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☑

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☐ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☑ Unknown

Risk Assessment Code (RAC):

Hazard Severity IV 3 RAC score
Hazard Probability A ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC scores based on previous AFRIMS data. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID TS756

Access Control:

- No controls ☑
- Signs ☐
- Fencing around entire range ☐
- Partial fencing ☐
- Locked/secured gated ☐
- Log-in book ☐
- Security patrol ☐
- Other* ☐

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- Federal Agency ☐
- Tribal government ☐
- State Agency ☐
- Local agency ☐
- Private entity ☐

☑ Ownership transfer to:

- Federal agency ☐
- Tribal government ☐
- State agency ☐
- Local agency ☑
- Private entity ☐

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- Yes ☐
- No ☐
- Unknown ☑

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- Federal agency ☐
- Tribal government ☐
- State agency ☐
- Local agency ☑
- Private entity ☐
- None ☐

Please provide a brief description of the organization with ownership or control:

Local government

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID TS775

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Airfield Skeet Range (ST-351) (H-1)

Point of Contact:

Name Carl J. Lanz, P.G.
Organization KAFB Restoration Section
Phone (505) 853-6534
Email Carl.Lanz@kirtland.af.mil

2050 Wyoming Blvd. SE Address
Albuquerque City
NM State

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at various locations.
State
County

Latitude
Longitude

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply):

	☐		
Testing	☐	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☐	Other*
Land-to-Air	☐		

*Please specify

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID TS775

Site Type (check all that apply):

- ☐ Air-to Land
- ☐ Air-to-Water
- ☐ Burn Pit
- ☐ Biological Warfare
- ☐ Buffer Zone
- ☐ Chemical Weapons
- ☐ Surface Disposal Area
- ☐ Depleted Uranium
- ☐ EOD Range
- ☐ Firing Line
- ☐ Fire Range
- ☐ Grenade Range
- ☐ Heavy Explosive
- ☐ Munitions Burial
- ☐ Medium/Large Caliber
- ☐ Multi-Use Range
- ☐ Open Burn
- ☐ Open Detonation
- ☐ Propellant and Pyrotechnics
- ☐ Pistol Range
- ☐ Pyrotechnics
- ☐ Residue Holding Area (expended munitions, range clearance, etc.)
- ☐ Range Residue Graveyard (targets and debris)
- ☐ Safety Fan
- ☐ Strafing Run-in Line
- ☑ Small Arms Range
- ☐ Target Area
- ☐ Training and Maneuver Area
- ☑ Trap and Skeet Range
- ☐ EOD Area
- ☐ Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	☐	25	
Acreage confirmed as containing UXO	☐		0
Acreage suspected or potentially containing UXO	☐		25
Acreage confirmed as NOT containing UXO	☐		0

Ordnance Types (check all that apply):

- ☐ Medium/Large Caliber (20mm or larger)
- ☐ Explosive grenades (hand or rifle)
- ☐ Explosive landmine
- ☐ Explosive rockets
- ☐ Guided Missiles
- ☐ Explosive detonators
- ☐ Blasting Caps
- ☐ Practice Grenades (with spotting charges)
- ☐ Practice landmines (with spotting charges)
- ☐ Small Arms complete round (.22-.50 cal)
- ☑ Small arms expended
- ☐ Practice ordnance (without spotting charges)
- ☐ White phosphorous
- ☐ Incendiary material
- ☐ Primary or initiating explosives
- ☐ Demolition charges
- ☐ Other*
- ☐ Military dynamite
- ☐ Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- ☐ Solid or Liquid propellants
- ☐ Toxic chemical agents (choking, nerve, blood, blister)
- ☐ Water gas identification sets
- ☐ Radiological ordnance (e.g. depleted Uranium)
- ☐ Riot control agents (vomiting, tear)
- ☐ Bombs (explosive)
- ☐ Bombs (practice)
- ☐ Fuses, Booster, Bursters
- ☐ Flares, signals, and simulators (other than white phosphorous)
- ☐ Ballistics Missiles
- ☑ Skeet
- ☐ Mortars
- ☐ Torpedoes
- ☐ Warheads
- ☐ Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify No Recon conducted due secure access/airport flight line

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID TS775

Anomaly Density (check one):

- [x] Low (<= 10 anomalies per acre)
- [ ] Medium (10 to 50 anomalies peracre)
- [ ] High (> 50 anomalies per acre)

Predominant Soil Type (check one):

- [ ] Clay/Sand with Stone
- [x] Sand/Gravel-Sand
- [ ] Sand-Silt/Sand-Clay
- [ ] Silt/Silty Clay
- [ ] Clay-Sand/Clay-Silt
- [ ] Gravel/Gravel-Sand
- [ ] Rock
- [ ] Water Range
- [ ] Other*

*Please specify_____

Predominant Topography (check one):

- [x] Flat
- [ ] Flat with gorges or gullies
- [ ] Gently rolling
- [ ] Heavily rolling
- [ ] Mountainous
- [ ] Rolling with gorges or gullies
- [ ] Water Range
- [ ] Other*

*Please specify_____

Predominant Vegetation (check one):

- [ ] Barren or low grass
- [ ] Heavy grass and many shrubs
- [ ] Heavy shrubs and trees
- [x] Low grass and few shrubs
- [ ] Shrubs and some trees
- [ ] Heavily wooded
- [ ] Water Range
- [ ] Other*

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- [ ] Actual (Known)
- [ ] Potential
- [ ] No potential
- [x] Unknown

Depth to Groundwater:

Groundwater Depth 350-490 Feet

MRS Located above drinking water aquifer?

- [x] Yes
- [ ] No
- [ ] Not applicable (water range)

Sole source aquifer?

- [x] Yes
- [ ] No

Threatened or endangered species present?

- [ ] Yes
- [x] No

Archaeological or cultural sites present?

- [ ] Yes
- [x] No

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- [ ] Yes
- [x] No

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- [ ] Yes
- [ ] No

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID TS775

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☑ ☐ No

If yes, what is the scope of the response activities?

Past practices ☑ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☑ ☑ Operation and maintenance
Investigation ☑ ☑ Monitoring
Response/remedial action ☑ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☑

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☑

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☐ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☑ Unknown

Risk Assessment Code (RAC):

Hazard Severity IV 3 RAC score
Hazard Probability A ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC scores based on previous AFRIMS data. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID TS775

Access Control:

- No controls ☐
- Signs ☑
- Fencing around entire range ☐
- Partial fencing ☑
- Locked/secured gated ☐
- Log-in book ☐
- Security patrol ☑
- Other* ☐

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- Federal Agency ☐
- Tribal government ☐
- State Agency ☐
- Local agency ☐
- Private entity ☐

☐ Ownership transfer to:

- Federal agency ☐
- Tribal government ☐
- State agency ☐
- Local agency ☐
- Private entity ☐

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- Yes ☐
- No ☐
- Unknown ☐

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- Federal agency ☐
- Tribal government ☐
- State agency ☐
- Local agency ☐
- Private entity ☐
- None ☑

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID TS776

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Skeet Range (H-9)

Point of Contact:

Name Carl J. Lanz, P.G. 2050 Wyoming Blvd. SE Address
Organization KAFB Restoration Section Albuquerque City
Phone (505) 853-6534 NM State
Email Carl.Lanz@kirtland.af.mil

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at Latitude
State various locations. Longitude
County

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply): ☐

Testing	☐	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☑	Other*
Land-to-Air	☐		

*Please specify This range is from the WWII and post-WWII era.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID TS776

Site Type (check all that apply):

- ☐ Air-to Land
- ☐ Air-to-Water
- ☐ Burn Pit
- ☐ Biological Warfare
- ☐ Buffer Zone
- ☐ Chemical Weapons
- ☐ Surface Disposal Area
- ☐ Depleted Uranium
- ☐ EOD Range
- ☐ Firing Line
- ☐ Fire Range
- ☐ Grenade Range
- ☐ Heavy Explosive
- ☐ Munitions Burial
- ☐ Medium/Large Caliber
- ☐ Multi-Use Range
- ☐ Open Burn
- ☐ Open Detonation
- ☐ Propellant and Pyrotechnics
- ☐ Pistol Range
- ☐ Pyrotechnics
- ☐ Residue Holding Area (expended munitions, range clearance, etc.)
- ☐ Range Residue Graveyard (targets and debris)
- ☐ Safety Fan
- ☐ Strafing Run-in Line
- ☑ Small Arms Range
- ☐ Target Area
- ☐ Training and Maneuver Area
- ☑ Trap and Skeet Range
- ☐ EOD Area
- ☐ Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	☐	29	
Acreage confirmed as containing UXO	☐		0
Acreage suspected or potentially containing UXO	☐		29
Acreage confirmed as NOT containing UXO	☐		0

Ordnance Types (check all that apply):

- ☐ Medium/Large Caliber (20mm or larger)
- ☐ Explosive grenades (hand or rifle)
- ☐ Explosive landmine
- ☐ Explosive rockets
- ☐ Guided Missiles
- ☐ Explosive detonators
- ☐ Blasting Caps
- ☐ Practice Grenades (with spotting charges)
- ☐ Practice landmines (with spotting charges)
- ☐ Small Arms complete round (.22-.50 cal)
- ☑ Small arms expended
- ☐ Practice ordnance (without spotting charges)
- ☐ White phosphorous
- ☐ Incendiary material
- ☐ Primary or initiating explosives
- ☐ Demolition charges
- ☐ Other*
- ☐ Military dynamite
- ☐ Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- ☐ Solid or Liquid propellants
- ☐ Toxic chemical agents (choking, nerve, blood, blister)
- ☐ Water gas identification sets
- ☐ Radiological ordnance (e.g. depleted Uranium)
- ☐ Riot control agents (vomiting, tear)
- ☐ Bombs (explosive)
- ☐ Bombs (practice)
- ☐ Fuses, Booster, Bursters
- ☐ Flares, signals, and simulators (other than white phosphorous)
- ☐ Ballistics Missiles
- ☑ Skeet
- ☐ Mortars
- ☐ Torpedoes
- ☐ Warheads
- ☐ Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify No evidence of MEC found during survey.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID TS776

Anomaly Density (check one):

- [x] Low (<= 10 anomalies per acre)
- [ ] Medium (10 to 50 anomalies peracre)
- [ ] High (> 50 anomalies per acre)

Predominant Soil Type (check one):

- [ ] Clay/Sand with Stone
- [ ] Sand/Gravel-Sand
- [x] Sand-Silt/Sand-Clay
- [ ] Silt/Silty Clay
- [ ] Clay-Sand/Clay-Silt
- [ ] Gravel/Gravel-Sand
- [ ] Rock
- [ ] Water Range
- [ ] Other*

*Please specify_____

Predominant Topography (check one):

- [x] Flat
- [ ] Flat with gorges or gullies
- [ ] Gently rolling
- [ ] Heavily rolling
- [ ] Mountainous
- [ ] Rolling with gorges or gullies
- [ ] Water Range
- [ ] Other*

*Please specify_____

Predominant Vegetation (check one):

- [ ] Barren or low grass
- [ ] Heavy grass and many shrubs
- [ ] Heavy shrubs and trees
- [x] Low grass and few shrubs
- [ ] Shrubs and some trees
- [ ] Heavily wooded
- [ ] Water Range
- [ ] Other*

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- [ ] Actual (Known)
- [ ] Potential
- [ ] No potential
- [x] Unknown

Depth to Groundwater:

Groundwater Depth 350-490 Feet

MRS Located above drinking water aquifer?

- [x] Yes
- [ ] No
- [ ] Not applicable (water range)

Sole source aquifer?

- [x] Yes
- [ ] No

Threatened or endangered species present?

- [ ] Yes
- [x] No

Archaeological or cultural sites present?

- [ ] Yes
- [x] No

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- [ ] Yes
- [x] No

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- [ ] Yes
- [ ] No

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID TS776

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☑ ☐ No

If yes, what is the scope of the response activities?

Past practices ☑ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☑ ☐ Operation and maintenance
Investigation ☑ ☑ Monitoring
Response/remedial action ☑ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☑

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☑

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☐ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☑ Unknown

Risk Assessment Code (RAC):

Hazard Severity IV 3 RAC score
Hazard Probability A ***SEE BELOW***

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify RAC scores based on previous AFRIMS data. FOR REFERENCE PURPOSES ONLY.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID TS776

Access Control:

- No controls ☑
- Signs ☐
- Fencing around entire range ☐
- Partial fencing ☐
- Locked/secured gated ☐
- Log-in book ☐
- Security patrol ☐
- Other* ☐

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- Federal Agency ☐
- Tribal government ☐
- State Agency ☐
- Local agency ☐
- Private entity ☐

☐ Ownership transfer to:

- Federal agency ☐
- Tribal government ☐
- State agency ☐
- Local agency ☐
- Private entity ☐

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- Yes ☐
- No ☐
- Unknown ☐

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- Federal agency ☐
- Tribal government ☐
- State agency ☐
- Local agency ☐
- Private entity ☐
- None ☑

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID Not Assigned

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Sandia Base Howitzer Range

Point of Contact:

Name Carl J. Lanz, P.G.
Organization KAFB Restoration Section
Phone (505) 853-6534
Email Carl.Lanz@kirtland.af.mil

2050 Wyoming Blvd. SE Address
Albuquerque City
NM State

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archive Records Searches have been conducted on various dates.

Location:

City **Archive Records Searches have been conducted at various locations.
State
County

Latitude
Longitude

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply):

	☐		
Testing	☐	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☐	Other*
Disposal (Burial)	☐		

*Please specify Practice artillery range

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☐	Other*
Land-to-Air	☐		

*Please specify

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID Not Assigned

Site Type (check all that apply):

- [ ] Air-to Land
- [ ] Air-to-Water
- [ ] Burn Pit
- [ ] Biological Warfare
- [ ] Buffer Zone
- [ ] Chemical Weapons
- [ ] Surface Disposal Area
- [ ] Depleted Uranium
- [ ] EOD Range
- [ ] Firing Line
- [ ] Fire Range
- [ ] Grenade Range
- [ ] Heavy Explosive
- [ ] Munitions Burial
- [x] Medium/Large Caliber
- [ ] Multi-Use Range
- [ ] Open Burn
- [ ] Open Detonation
- [ ] Propellant and Pyrotechnics
- [ ] Pistol Range
- [ ] Pyrotechnics
- [ ] Residue Holding Area (expended munitions, range clearance, etc.)
- [ ] Range Residue Graveyard (targets and debris)
- [ ] Safety Fan
- [ ] Strafing Run-in Line
- [x] Small Arms Range
- [ ] Target Area
- [ ] Training and Maneuver Area
- [ ] Trap and Skeet Range
- [ ] EOD Area
- [ ] Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	[ ]	743	
Acreage confirmed as containing UXO	[ ]		0
Acreage suspected or potentially containing UXO	[ ]		743
Acreage confirmed as NOT containing UXO	[ ]		0

Ordnance Types (check all that apply):

- [x] Medium/Large Caliber (20mm or larger)
- [ ] Explosive grenades (hand or rifle)
- [ ] Explosive landmine
- [ ] Explosive rockets
- [ ] Guided Missiles
- [ ] Explosive detonators
- [ ] Blasting Caps
- [ ] Practice Grenades (with spotting charges)
- [ ] Practice landmines (with spotting charges)
- [ ] Small Arms complete round (.22-.50 cal)
- [ ] Small arms expended
- [ ] Practice ordnance (without spotting charges)
- [ ] White phosphorous
- [ ] Incendiary material
- [ ] Primary or initiating explosives
- [ ] Demolition charges
- [ ] Other*
- [ ] Military dynamite
- [ ] Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- [ ] Solid or Liquid propellants
- [ ] Toxic chemical agents (choking, nerve, blood, blister)
- [ ] Water gas identification sets
- [ ] Radiological ordnance (e.g. depleted Uranium)
- [ ] Riot control agents (vomiting, tear)
- [ ] Bombs (explosive)
- [ ] Bombs (practice)
- [ ] Fuses, Booster, Bursters
- [ ] Flares, signals, and simulators (other than white phosphorous)
- [ ] Ballistics Missiles
- [ ] Skeet
- [ ] Mortars
- [ ] Torpedoes
- [ ] Warheads
- [ ] Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify 76mm practice projectile, fired, found during CSE Phase I survey.

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID Not Assigned

Anomaly Density (check one):

- [x] Low (<= 10 anomalies per acre)
- [ ] Medium (10 to 50 anomalies peracre)
- [ ] High (> 50 anomalies per acre)

Predominant Soil Type (check one):

- [ ] Clay/Sand with Stone
- [ ] Sand/Gravel-Sand
- [x] Sand-Silt/Sand-Clay
- [ ] Silt/Silty Clay
- [ ] Clay-Sand/Clay-Silt
- [ ] Gravel/Gravel-Sand
- [ ] Rock
- [ ] Water Range
- [ ] Other*

*Please specify_____

Predominant Topography (check one):

- [ ] Flat
- [ ] Flat with gorges or gullies
- [ ] Gently rolling
- [ ] Heavily rolling
- [ ] Mountainous
- [x] Rolling with gorges or gullies
- [ ] Water Range
- [ ] Other*

*Please specify_____

Predominant Vegetation (check one):

- [ ] Barren or low grass
- [x] Heavy grass and many shrubs
- [ ] Heavy shrubs and trees
- [ ] Low grass and few shrubs
- [ ] Shrubs and some trees
- [ ] Heavily wooded
- [ ] Water Range
- [ ] Other*

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- [ ] Actual (Known)
- [ ] Potential
- [ ] No potential
- [x] Unknown

Depth to Groundwater:

Groundwater Depth 350-490 Feet

MRS Located above drinking water aquifer?

- [x] Yes
- [ ] No
- [ ] Not applicable (water range)

Sole source aquifer?

- [x] Yes
- [ ] No

Threatened or endangered species present?

- [x] Yes
- [ ] No

Archaeological or cultural sites present?

- [ ] Yes
- [x] No

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- [ ] Yes
- [x] No

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- [ ] Yes
- [ ] No

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID Not Assigned

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☑ ☐ No

If yes, what is the scope of the response activities?

Past practices ☑ ☑ Chemical contamination
Current practices ☑ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☑ ☑ Operation and maintenance
Investigation ☑ ☑ Monitoring
Response/remedial action ☑ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☑

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☑

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☑ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☐ Unknown

Risk Assessment Code (RAC):

Hazard Severity _____ _____ RAC score
Hazard Probability _____

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify_____
_____
_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID Not Assigned

Access Control:

- ☐ No controls
- ☐ Signs
- ☐ Fencing around entire range
- ☐ Partial fencing
- ☐ Locked/secured gated
- ☐ Log-in book
- ☑ Security patrol
- ☐ Other*

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- ☐ Federal Agency
- ☐ Tribal government
- ☐ State Agency
- ☐ Local agency
- ☐ Private entity

☐ Ownership transfer to:

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- ☐ Yes
- ☐ No
- ☐ Unknown

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity
- ☑ None

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID Not Assigned

Installation Name: Kirtland Air Force Base **FFID:** NM657182442300

City: Albuquerque **State:** New Mexico

Site Name: Sandia Base Howitzer Range Buffer

Point of Contact:

Name Carl J. Lanz, P.G. 2050 Wyoming Blvd. SE Address
Organization KAFB Restoration Section Albuquerque City
Phone (505) 853-6534 NM State
Email Carl.Lanz@kirtland.af.mil

Has an Archive Records Search been conducted/planned?

No ☐
Yes ☑

If yes, please list month/year. **Archives Records Searches have been conducted on various dates.

Location:

City **Archives Records Searches have been conducted at Latitude
State various locations. Longitude
County

MRS Status (check one):

Closed	☑	☐	Active
Transferring	☐	☐	Inactive
Transferred	☐	☐	Other*

*Please specify

Classification (check all that apply): ☐

Testing	☐	☐	Emergency Destruction
Training	☑	☐	Open Burning/Open Detonation (OB/OD)
Buffer	☐	☐	Other*
Disposal (Burial)	☐		

*Please specify

Range Type (check all that apply):

Air-to-Air	☐	☑	Land-to Land
Air-to-Water	☐	☐	Land-to-Water
Air-to-Land	☐	☐	Other*
Land-to-Air	☐		

*Please specify

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID Not Assigned

Site Type (check all that apply):

- ☐ Air-to Land
- ☐ Air-to-Water
- ☐ Burn Pit
- ☐ Biological Warfare
- ☐ Buffer Zone
- ☐ Chemical Weapons
- ☐ Surface Disposal Area
- ☐ Depleted Uranium
- ☐ EOD Range
- ☐ Firing Line
- ☐ Fire Range
- ☐ Grenade Range
- ☐ Heavy Explosive
- ☐ Munitions Burial
- ☑ Medium/Large Caliber
- ☐ Multi-Use Range
- ☐ Open Burn
- ☐ Open Detonation
- ☐ Propellant and Pyrotechnics
- ☐ Pistol Range
- ☐ Pyrotechnics
- ☐ Residue Holding Area (expended munitions, range clearance, etc.)
- ☐ Range Residue Graveyard (targets and debris)
- ☑ Safety Fan
- ☐ Strafing Run-in Line
- ☐ Small Arms Range
- ☐ Target Area
- ☐ Training and Maneuver Area
- ☐ Trap and Skeet Range
- ☐ EOD Area
- ☐ Unexploded Munitions Area

Area:

		Acreage Known	Acreage Estimated?
Total Acreage	☐	710	
Acreage confirmed as containing UXO	☐		0
Acreage suspected or potentially containing UXO	☐		710
Acreage confirmed as NOT containing UXO	☐		0

Ordnance Types (check all that apply):

- ☑ Medium/Large Caliber (20mm or larger)
- ☐ Explosive grenades (hand or rifle)
- ☐ Explosive landmine
- ☐ Explosive rockets
- ☐ Guided Missiles
- ☐ Explosive detonators
- ☐ Blasting Caps
- ☐ Practice Grenades (with spotting charges)
- ☐ Practice landmines (with spotting charges)
- ☐ Small Arms complete round (.22-.50 cal)
- ☐ Small arms expended
- ☐ Practice ordnance (without spotting charges)
- ☐ White phosphorous
- ☐ Incendiary material
- ☐ Primary or initiating explosives
- ☐ Demolition charges
- ☐ Other*
- ☐ Military dynamite
- ☐ Less sensitive explosives (Ammonium Nitrate, Explosives D, etc.)
- ☐ Solid or Liquid propellants
- ☐ Toxic chemical agents (choking, nerve, blood, blister)
- ☐ Water gas identification sets
- ☐ Radiological ordnance (e.g. depleted Uranium)
- ☐ Riot control agents (vomiting, tear)
- ☐ Bombs (explosive)
- ☐ Bombs (practice)
- ☐ Fuses, Booster, Bursters
- ☐ Flares, signals, and simulators (other than white phosphorous)
- ☐ Ballistics Missiles
- ☐ Skeet
- ☐ Mortars
- ☐ Torpedoes
- ☐ Warheads
- ☐ Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)

*Please specify_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID Not Assigned

Anomaly Density (check one):

- ☐ Low (<= 10 anomalies per acre)
- ☐ Medium (10 to 50 anomalies peracre)
- ☑ High (> 50 anomalies per acre)

Predominant Soil Type (check one):

- ☐ Clay/Sand with Stone
- ☑ Sand/Gravel-Sand
- ☐ Sand-Silt/Sand-Clay
- ☐ Silt/Silty Clay
- ☐ Clay-Sand/Clay-Silt
- ☐ Gravel/Gravel-Sand
- ☐ Rock
- ☐ Water Range
- ☐ Other*

*Please specify_____

Predominant Topography (check one):

- ☑ Flat
- ☐ Flat with gorges or gullies
- ☐ Gently rolling
- ☐ Heavily rolling
- ☐ Mountainous
- ☐ Rolling with gorges or gullies
- ☐ Water Range
- ☐ Other*

*Please specify_____

Predominant Vegetation (check one):

- ☐ Barren or low grass
- ☐ Heavy grass and many shrubs
- ☐ Heavy shrubs and trees
- ☑ Low grass and few shrubs
- ☐ Shrubs and some trees
- ☐ Heavily wooded
- ☐ Water Range
- ☐ Other*

*Please specify_____

Potential for Contamination of Drinking Water (check one):

- ☐ Actual (Known)
- ☐ Potential
- ☐ No potential
- ☑ Unknown

Depth to Groundwater:

Groundwater Depth 350-485 Feet

MRS Located above drinking water aquifer?

- ☑ Yes
- ☐ No
- ☐ Not applicable (water range)

Sole source aquifer?

- ☑ Yes
- ☐ No

Threatened or endangered species present?

- ☑ Yes
- ☐ No

Archaeological or cultural sites present?

- ☐ Yes
- ☑ No

Has a RCRA Subpart X permit been pursues for waste management activities at this site?

- ☐ Yes
- ☑ No

If yes, does the permit or permit application have RCRA corrective action requirements that apply?

- ☐ Yes
- ☐ No

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID Not Assigned

Are there any wetlands associated with this site?

Yes ☐ If yes, please list acreage: _____
No ☑
Unknown ☐

Have environmental response activities been initiated/conducted on this MRS?

Yes ☑ ☐ No

If yes, what is the scope of the response activities?

Past practices ☑ ☐ Chemical contamination
Current practices ☐ ☐ Ordnance and explosives, including UXO

If yes, what is the status of the environmental response activities? (check all that apply)

Data collection ☑ ☐ Operation and maintenance
Investigation ☑ ☐ Monitoring
Response/remedial action ☐ ☐ Close out

If yes, contamination monitoring (i.e. groundwater sampling and analysis) needed?

Yes ☐ ☐ No
Unknown ☑

If yes, under what authority were/are response actions conducted?

CERCLA ☐ ☐ Both CERCLA and RCRA
RCRA ☑

What types of response actions have been initiated/conducted on the site? (check all that apply)

Routine range clearance/maintenance ☐ ☐ UXO response actions associated with ERP activities
Emergency response actions ☐
Time-critical removal actions ☐ ☐ None
Non-time-critical removal actions with Engineering Evaluation/Cost Analysis ☐ ☐ Other
☑ Unknown

Risk Assessment Code (RAC):

Hazard Severity _____ _____ RAC score
Hazard Probability _____

MRS Prioritization Protocol:

EHE Rating _____ _____ MRS priority
CHE Rating _____
HHE Rating _____

Land Use Restrictions:

☑ No Public access authorized
☐ Limited public access (livestock, grazing, wildlife preserve)
☐ Public access (agriculture/forestry, surface recreation, hunting, vehicle parking, surface supply)
☐ Unrestricted (commercial, residential, utility, subsurface recreation, and construction)
☐ Other*

*Please specify_____
_____
_____

AF MMRP CSE PHASE 1

AFRIMS DATA INPUT WORKSHEET

Site ID Not Assigned

Access Control:

- ☐ No controls
- ☐ Signs
- ☐ Fencing around entire range
- ☐ Partial fencing
- ☐ Locked/secured gated
- ☐ Log-in book
- ☑ Security patrol
- ☐ Other*

*Please specify_____

For transferred and transferring ranges, what is the nature of the transfer?

☐ Lease to:

- ☐ Federal Agency
- ☐ Tribal government
- ☐ State Agency
- ☐ Local agency
- ☐ Private entity

☐ Ownership transfer to:

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity

☐ Termination of lease

List entities receiving the land:_____

☐ Revocation of withdrawn land

☐ Base realignment/closure action

Planned or mandated date for transfer?_____

☐ Other _____

For transferred ranges only:

Have portions been investigated under the FUDS site ERP?

- ☐ Yes
- ☐ No
- ☐ Unknown

If yes:

Point of contact:_____

Phone #:_____

Year of transfer:_____

Current land owner:_____

Indicate entities other than a DOD component with current ownership or control of the land or its resources (check all that apply):

- ☐ Federal agency
- ☐ Tribal government
- ☐ State agency
- ☐ Local agency
- ☐ Private entity
- ☑ None

Please provide a brief description of the organization with ownership or control:

_____

_____

_____

APPENDIX J. DOCUMENTATION OF PUBLIC PARTICIPATION SUPPORT (FACT SHEETS)

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Air Force Military Munitions Response Program Comprehensive Site Evaluation Phase I at Kirtland Air Force Base Albuquerque, New Mexico

December 2005

Background

In 1986 Congress amended the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to create the Defense Environmental Restoration Program (DERP) under the management of the Department of Defense (DoD). Within the DERP, DoD established the Military Munitions Response Program (MMRP) in 2001 to address the unique hazards of unexploded ordnance, waste military munitions, and chemical residue of munitions remaining from past operations at other than operational ranges and formerly used defense sites.

MMRP sites at active installations are called Munitions Response Areas (MRAs) and are managed by their respective military components (e.g., Army, Navy, and Air Force). The goal of the Air Force MMRP is to make MRAs safe for reuse with their appropriate future land use and to protect human health and the environment in the process.

Through fiscal year 2004, the Air Force completed response actions at 52 MRAs and retained 293 MRAs in its MMRP sites inventory.

Facility Descriptions

Kirtland Air Force Base (AFB) is located in Bernalillo County, New Mexico (see attached map). The base covers 51,558 acres on a high, arid mesa approximately 5 miles east of the Rio Grande.

Historically, munitions development, testing and training exercises have been an integral part of operations conducted at Kirtland AFB. Kirtland AFB currently has 31 MRAs in its MMRP site inventory and more may exists as a result of these past operations.

Comprehensive Site Evaluation Phase I at Kirtland AFB

Under the Air Force MMRP, Kirtland AFB and the U.S. Army Corps of Engineers have teamed to perform a preliminary study of Kirtland AFB, known as the Comprehensive Site Evaluation (CSE) Phase I. Consistent with the CERCLA Preliminary Assessment, the CSE Phase I is a limited-field-effort investigation based on existing site information.

The purpose of the CSE Phase I is to:

- locate and retrieve all appropriate documentation and anecdotal information on past munitions related activities;
- identify areas where those activities have impacted the environment; and,
- determine if further investigation is necessary.

During the CSE Phase I, the project team will:

- Review existing historical information from National, regional, and local archives and data repositories;
- Interview personnel identified as having information or knowledge of past munitions related activities in potentially impacted areas; and
- Inspect potentially impacted areas to identify any evidence of contamination or presence of military munitions.

The collected data and supporting documents will be used to score the potential hazards at each MRA and prioritize the MRAs for subsequent investigation and clean-up. MRAs determined to pose no threat to human health or the environmental will be recommended for No Further Action. MRAs requiring response or oversight by other agencies will either be referred to or jointly managed with those agencies. The Completion of the CSE Phase I at Kirtland AFB is projected for September 2006.

Public Involvement

It is Air Force policy to involve the local community in the environmental restoration process as early as possible and to seek continued community involvement throughout the environmental restoration process. To request information or provide input to the CSE Phase I at Kirtland AFB, please contact Steve Milligan, Chief, Environmental Public Affairs, at (505) 846-9003 or by E-mail at robert.milligan@kirtland.af.mil.

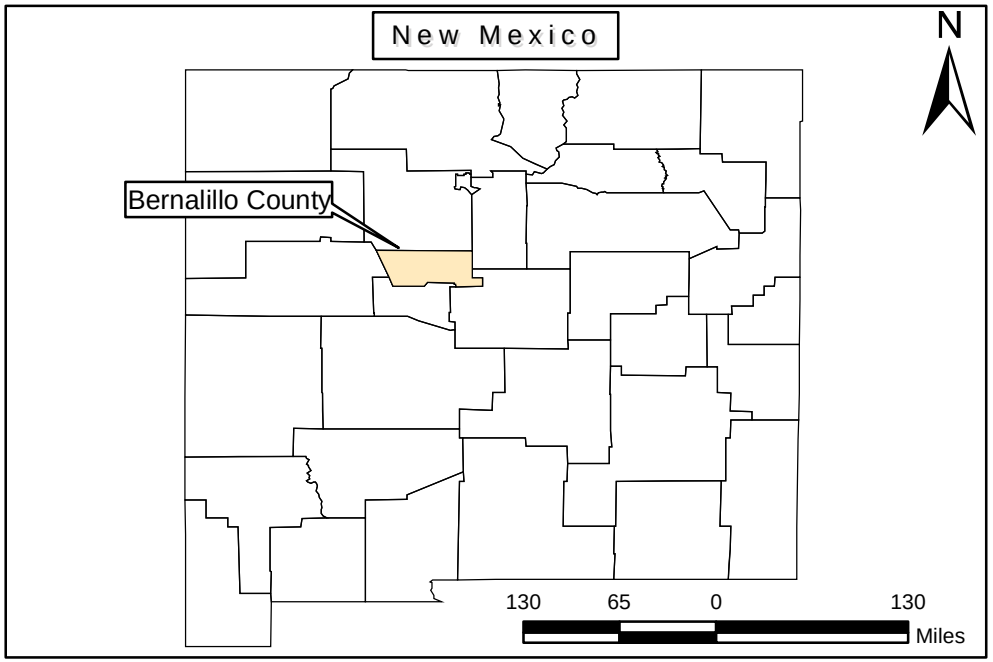
Technical Questions

If you have any technical questions about the CSE Phase I at Kirtland AFB, you may contact Carl Lanz, Chief, Restoration Section, at (505) 853-6534 or by E-mail at carl.lanz@kirtland.af.mil.

Munitions Finds

If you find any items that you suspect might be munitions, *DO NOT TOUCH THEM*. Notify local law enforcement officials immediately or call 9-1-1. Note the location of the suspicious item, but *never* touch, move or disturb the item. Munitions, regardless of its age or physical shape, can be dangerous.

Produced by the 377th Environmental Management Branch, Environmental Public Affairs • 2050 Wyoming Boulevard SE, Suite 122, Kirtland AFB, New Mexico 87117. 505- 846-9003 •October 2005.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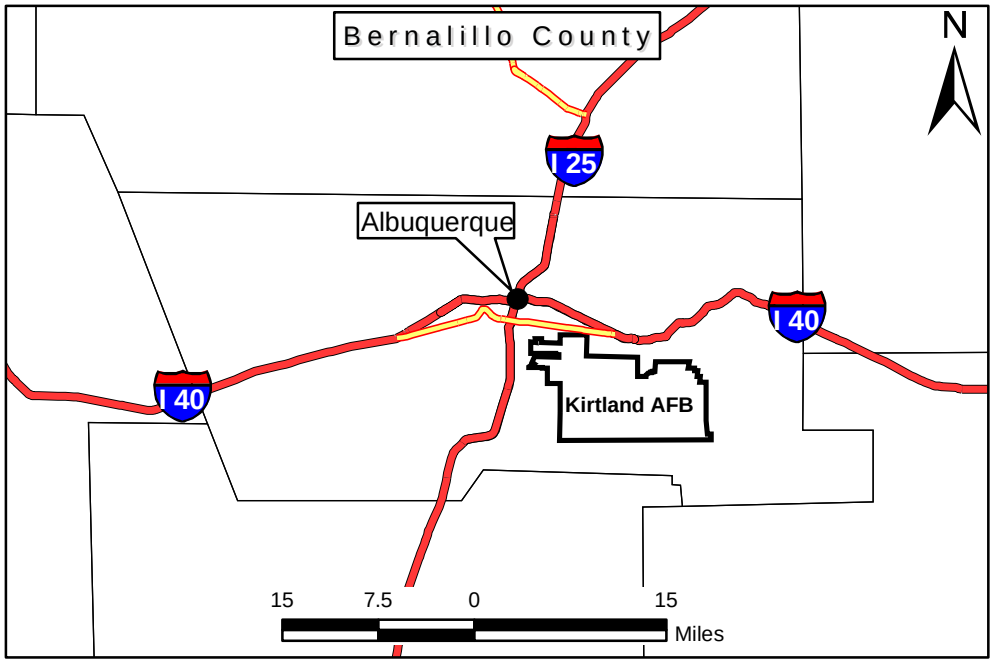
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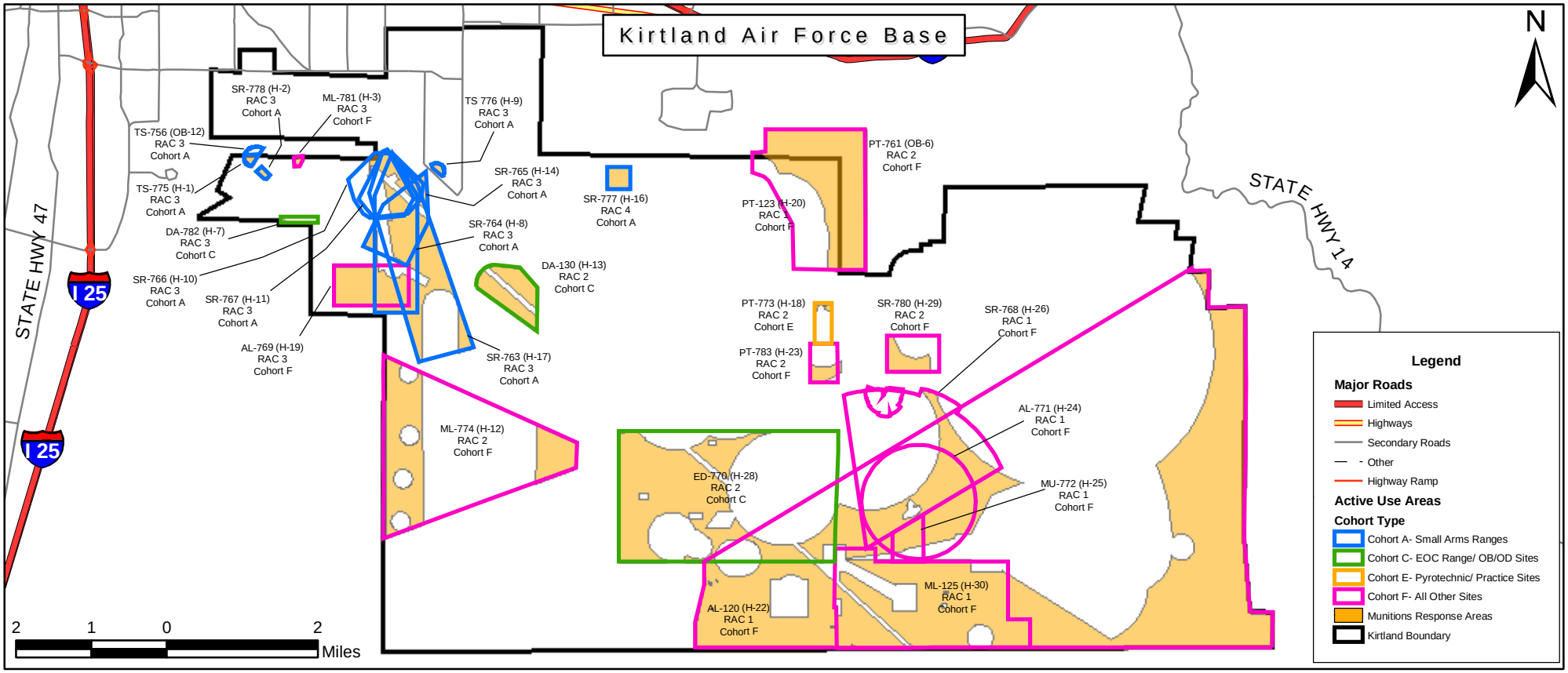
Kirtland Air Force Base
N
STATE HWY 47
I 25
I 25
STATE HWY 14
SR-778 (H-2) RAC 3 Cohort A
ML-781 (H-3) RAC 3 Cohort F
TS 776 (H-9) RAC 3 Cohort A
TS-756 (OB-12) RAC 3 Cohort A
TS-775 (H-1) RAC 3 Cohort A
SR-765 (H-14) RAC 3 Cohort A
SR-777 (H-16) RAC 4 Cohort A
PT-761 (OB-6) RAC 2 Cohort F
PT-123 (H-20) RAC 1 Cohort F
DA-782 (H-7) RAC 3 Cohort C
SR-764 (H-8) RAC 3 Cohort A
DA-130 (H-13) RAC 2 Cohort C
SR-766 (H-10) RAC 3 Cohort A
SR-767 (H-11) RAC 3 Cohort A
AL-769 (H-19) RAC 3 Cohort F
SR-763 (H-17) RAC 3 Cohort A
PT-773 (H-18) RAC 2 Cohort E
PT-783 (H-23) RAC 2 Cohort F
SR-780 (H-29) RAC 2 Cohort F
SR-768 (H-26) RAC 1 Cohort F
AL-771 (H-24) RAC 1 Cohort F
ML-774 (H-12) RAC 2 Cohort F
ED-770 (H-28) RAC 2 Cohort C
MU-772 (H-25) RAC 1 Cohort F
ML-125 (H-30) RAC 1 Cohort F
AL-120 (H-22) RAC 1 Cohort F
2
1
0
2
Miles
Legend
Major Roads
Limited Access
Highways
Secondary Roads
Other
Highway Ramp
Active Use Areas
Cohort Type
Cohort A- Small Arms Ranges
Cohort C- EOC Range/ OB/OD Sites
Cohort E- Pyrotechnic/ Practice Sites
Cohort F- All Other Sites
Munitions Response Areas
Kirtland Boundary

Kirtland Air Force Base
Military Munitions Response Program

MMRP Update

January 2007

Base Completes the First of Two-Phase Study of Closed Ranges at Kirtland Air Force Base

Introduction

The Air Force recently completed the first of a two-phase initial study of closed ranges and target areas at Kirtland Air Force Base. This initial study helped to determine whether past military training and firing of military munitions (i.e., any ammunition used for national defense, including bombs, missiles, rockets, grenades, and small arms ammunition) have impacted the environment at Kirtland Air Force Base. This study will also help the Air Force identify areas that need further investigation and cleanup to protect human health and the environment.

Background

Decades of military training, weapons testing, and munitions disposal at Air Force bases throughout the country have left unexploded ordnance, discarded military munitions, and munitions constituents on the ranges where training and testing occurred. Unexploded ordnance are munitions that have been armed and fired, but have not exploded. Discarded military munitions are munitions that were not properly disposed of. Munitions constituents are pollutants originating from military munitions.

In 1986, Congress created the Defense Environmental Restoration Program to clean sites owned or used by the Department of Defense. For nearly 20 years, this program has focused on cleanup of hazardous chemicals (e.g., solvents, oils, and pesticides) in soil and water. However, in 2004, the Department of Defense launched the Military Munitions Response Program (MMRP) to address the hazards of munitions and munitions constituents on non-operational ranges and target areas. These non-operational ranges and target areas are called munitions response areas (MRAs).

The goal of the MMRP is to protect human health and the environment by making MRAs safe for reuse.

Comprehensive Site Evaluation

Under the Air Force program, Kirtland Air Force Base and the U.S. Army Corps of Engineers teamed together to perform the initial study of MRAs at Kirtland Air Force Base. This initial study is called the Comprehensive Site Evaluation (CSE).

This study is a two-phase process that investigates the unique safety and environmental issues often found within MRAs.

CSE Phase I Activities

The Air Force recently completed the CSE Phase I. The purpose of the CSE Phase I was to gather available information on past munitions training, testing, and disposal activities at Kirtland Air Force Base to support further investigation of previously identified MRAs, as well as identify new MRAs.

During the CSE Phase I, the Air Force: 1) reviewed available historical documents and maps relating to munitions activities at Kirtland Air Force Base; 2) interviewed people who have information on past munitions activities at Kirtland Air Force Base; and 3) performed metal-detector surveys of those areas known or suspected to have military munitions.

The Air Force completed the CSE Phase I field activities in December 2005. The report of findings was published in February 2007.

CSE Phase I Findings

The historical document reviews and interviews indicate that past munitions activities at 26 previously identified MRAs may have impacted the environment. The historical and interview data also identified three new MRA that encompasses an additional 4,716 acres within Kirtland Air Force Base.

Subsequent metal detector surveys identified munitions-related items on the ground surface at 20 MRAs associated with Kirtland Air Force Base, including 4 unexploded ordnance and 85 other munitions items that may also be dangerous. These items have been reported to the Explosive Ordnance Disposal Flight at Kirtland AFB for safe management and disposal.

Produced by the 377th Mission Support Group, Civil Engineer Division, Environmental Management Branch
377 MSG/CEVR, 2050 Wyoming Blvd SE, Suite 122, Kirtland AFB, NM 87117 – January 2007.

Munitions-Related Findings

Unexploded 5-inch Projectile with Nose Fuze

Unexploded 40mm Rifle Grenade, Riot Control

Solid Rocket Propellant

Munitions Disposal Area, Mostly 3.5-inch Rockets

Of the MRAs investigated, 24 existing MRAs (11,450 acres) and 3 new MRAs (4,716 acres) are recommended for further investigation under the MMRP. The findings indicate that additional dangerous items may exist on the surface or below ground at these MRAs. Two MRAs are recommended for administrative closure or No Further Action because there is no evidence of impact from past munitions-related activities.

Follow-On Work

Based on the CSE Phase I findings, 24 MRAs investigated have been recommended for further investigation under the CSE Phase II. The CSE Phase II will involve digital geophysical mapping (i.e., detecting and mapping metals below the ground surface), as well as sampling of soils for munitions and munitions constituents.

The Air Force will use the information gathered from both CSE studies to determine what steps need to be taken to make MRAs at Kirtland Air Force Base safe for current and future use. The Air Force will prioritize the MRAs for further investigation and cleanup according to the level of risk that each MRA poses to human health and the environment. MRAs that pose the highest risk will be addressed first. MRAs that pose no threat to human health or the environment will be recommended for No Further Action.

Public Involvement

It is Air Force policy to involve the local community in the environmental restoration process as early as possible and to seek continued community involvement throughout the process. To request information or provide input to the ongoing study at Kirtland Air Force Base, please contact Carl Lanz, Chief, Restoration Section, at (505) 853-6534 or by E-mail at carl.lanz@kirtland.af.mil.

What to do if you find munitions…

If you find any items that you suspect might be munitions, *DO NOT TOUCH THEM*. Notify local law enforcement officials immediately or call 9-1-1. Note the location of the suspicious item, but *never* touch, move, or disturb the item. Munitions, regardless of age or physical shape, can be dangerous.

Produced by the 377th Mission Support Group, Civil Engineer Division, Environmental Management Branch
377 MSG/CEVR, 2050 Wyoming Blvd SE, Suite 122, Kirtland AFB, NM 87117 – January 2007.

APPENDIX K. CSE PHASE I CHECKLIST

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This checklist shall be used to determine when the CSE Phase I documentation and activities meet established requirements. The checklist shall accompany the final CSE Phase I Report.

Checklist Preparer: David A. Synakorn, P.E. MR Technical Mgr.
(Name/Title)
USA Environmental, Inc
(Company)
720 Brooker Creek Blvd. Suite 204
(Address)
dsynakorn@usatampa.com 813-343-6372
(E-mail address) (Phone)

Site Location: Kirtland Air Force Base
(Installation)
2050 Wyoming Blvd. SE
(Street)
Kirtland AFB, NM 87117
(City / State / Zip)

FFID No: NM657182442300

Latitude: 35.044N **Longitude:** -106.596W

Complete the following checklist. If "NO" is checked for any response, please explain in the PAGE provided below.	**YES**	**NO**
1. Are all Munitions Response Areas (MRAs) listed in the AF MMRP Inventory?	**X**	
2. Are all proposed Munitions Response Sites listed in the AF MMRP Inventory?		**X**
PERFORMANCE TASK #1		
3. Does the Final Work Plan contain:		
a. A list of on-site/off-site data repositories that will be visited for information about the potential releases for each MRA; such as pathway(s) of exposure, targets, sources, and nature of the release been performed	**X**	
b. A review of historical aerial photographs	**X**	
c. A preliminary conceptual site model for each MRA in tabular and graphic form	**X**	
d. A schedule and coordination requirements for a visual survey of each MRA	**X**	
e. A schedule of interviews with persons knowledgeable of MEC-related activities at each MRA	**X**	
f. A schedule of interviews with persons knowledgeable of waste management activities at each MRA	**X**	
g. Incorporation the Systematic Planning Process approach (or equivalent)	**X**	
4. Has a Site-Specific Health and Safety Plan (SSHSP) been developed that addresses both explosives safety and hazards associated with chemical releases, in accordance with AFMAN 91-201, *Explosive Safety Standards* (revised) and DoDD 6055-9, *DoD Ammunition and Explosive Safety Standards*?	**X**	
PERFORMANCE TASK #2		
5. Has the entrance briefing been performed?	**X**	
6. Has the exit briefing been performed?	**X**	

Complete the following checklist. If "NO" is checked for any response, please explain in the PAGE provided below.	**YES**	**NO**
PERFORMANCE TASK #3		
7. Has the "Introduction to the CSE Phase I" fact sheet been submitted?	**X**	
8. Has the "Findings of the CSE Phase I" fact sheet been submitted?	**X**	
PERFORMANCE TASK #4		
9. Does the CSE Phase I Report contain:		
a) A description of the historical, physical and environmental setting of installation and each MRA	**X**	
b) A description/history/nature of waste handling for each MRA/MRS	**X**	
c) A description/history/nature of activities involving MEC at each MRA/MRS	**X**	
d) Recommendations for establishing new MRS(s) within the existing MRAs	**X**	
e) Recommendations and justification for any new MRAs	**X**	
f) A description of known/suspected hazardous substances, pollutants and contaminants of concern (COCs) at each MRA/MRS	**X**	
g) A description of known or suspected MCs at each MRA/MRS	**X**	
h) Justification and rationale for the potential for perchlorate contamination at each MRA/MRS	**X**	
i) A description of the nature and location of suspected releases at each MRA	**X**	
j) A description of known/suspected MEC at each MRA	**X**	
k) A description of pathways of migration for MEC, MC, hazardous substances, pollutants, COCs and MC for each MRA/MRS	**X**	
l) A comprehensive list of applicable or relevant and appropriate requirements for each MRA/MRS	**X**	
m) A description of pathways of migration of MEC for each MRA/MRS	**X**	
n) An identification and description of sensitive human and environmental receptors for MEC, MC, hazardous substances, pollutants and COCs for each MRA/MRS	**X**	
o) A recommendation for further action or investigation, if required, for each MRA/MRS	**X**	
p) Recommendations for sampling, field analysis, and laboratory analytical methods for COCs	**X**	
q) An interim conceptual site model for each MRA/MRS	**X**	
r) Clear identification of any MRA/MRS that (is)are not included in the current AF MMRP inventory	**X**	
s) Completed tables (28) for the EHE, HHE, and CHE modules of the DoD Prioritization Protocol for each MRA/MRS	**X**	
t) An MRS Priority for each MRA/MRS	**X**	
u) A completed Remedial Action Cost Engineering Requirements (RACER) Data Input Worksheet for each MRA/MRS	**X**	
v) A completed Air Force Restoration Information Management System (AFRIMS) Data Input Worksheet for each MRA/MRS	**X**	
w) A cohort assignment for each MRA/MRS	**X**	
x) A determination and justification for natural resources injury for each MRA/MRS	**X**	
y) A compilation of required elements for a future Explosive Safety Submission, to include: site history, identification of future land use, appropriate UXO detection methods, appropriate detection depths and equipment, and mention of greatest fragmentation distance	**X**	
z) Documentation of assumptions made in data analysis	**X**	
aa) List of sources for all data	**X**	

Complete the following checklist. If "NO" is checked for any response, please explain in the PAGE provided below.	**YES**	**NO**
10. Have aerial photographs, maps and digitally recorded and geo-referenced information in a format compatible with existing MAJCOM GIS tools been provided?	**X**	
11. Has a map that meets the requirements of FY02 NDAA, Section 311 been submitted for each MRS?	**X**	
PERFORMANCE TASK #5		
12. Has Administrative Record and Information Repository documentation been provided in the appropriate format and sufficient quantity?	**X**	

Provide a brief explanation of "no" responses shown above (attach additional sheets as needed): ____
Item 2: New MRSs were identified during the CSE Phase I.

David A. Synakorn/USA Environmental
(Checklist Preparer Printed Name / Organization)

(Checklist Preparer Signature / Date)

(Air Force Reviewer Printed Name / Organization)

(Air Force Reviewer Signature / Date)

(State Regulatory Reviewer Printed Name / Organization)

(State Regulatory Reviewer Signature / Date)

(EPA Regional Reviewer Printed Name / Organization)

(EPA Regional Reviewer Signature / Date)

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