

**FIELD VARIANCE FORM**

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<b>DATE:</b> 6-OCT-11	<b>PROJECT NAME:</b> Interim Action Ranges (IAR) Munitions Response Area (MRA)	<b>PROJECT LOCATION:</b> Interim Action Ranges
<b>APPLICABLE DOCUMENT / SECTION:</b>	Final Phase II Interim Action Work Plan, Interim Action Ranges Munitions Response Area, Former Fort Ord, dated May 24, 2011	
<b>SUBJECT:</b>	Interim Remedial Action Recommended for Range 47 Special Case Area	

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**FIELD CHANGE CONDITION:**

The Design Study for Range 47 (R47) Special Case Area (SCA) has been completed in accordance with the Final Phase II Interim Action Work Plan for the Interim Action Ranges Munitions Response Area (IAR MRA) and Field Variance Form No. IARWP-002 for excavation and screening of the berm (Figure 1).

Design Study Findings

Eighty-five munitions and explosives of concern (MEC) consisting of 40 millimeter (mm) high explosive projectiles/components, and 498 pounds (lbs) of 40mm high explosive projectile munitions debris (MD) and 6,944 lbs of 40mm projectile unknown model MD were discovered during the R47 SCA Design Study activities. Of these totals, 72 MEC and approximately 4,789 lbs of MD were found in the berm (Figure 2). Several additional MEC were discovered during the R47 SCA Design Study activities, such as practice munitions and projectile fuzes; however, these items are not sensitively-fuzed munitions.

The Design Study activities confirmed the following:

- The majority of the R47 SCA was an impact area for 40mm projectiles, which are sensitively-fuzed munitions;
  - The berm was created by the military during range maintenance operations and was located outside the range fan (a digital geophysical mapping [DGM] survey conducted under the berm following excavation indicates that the remaining anomalies can be remediated through target investigation and removal);
  - Portions of the boundary grids along the northern and southern portions of the SCA were located outside of the range fan (a preliminary DGM survey in the northern boundary grids and a DGM survey along the transects following excavation in the southern boundary grids indicate that anomalies can be remediated through target investigation and removal); and
  - The depth of high density metallic debris from range usage was significantly reduced along grid transects through excavation of soil to a depth ranging from 6 to 24 inches.
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**RECOMMENDED APPROACH / CHANGE:**

The following conclusions have been made based on the Design Study findings:

- There is a high potential of finding additional subsurface sensitively-fuzed munitions within the range fan portion of the SCA (Area A; Figure 3) and the existing high density of metallic debris limits the effective use of DGM on the unexcavated soil surface. Therefore, soil excavation and screening to a depth ranging from approximately 6 to 24 inches followed by DGM survey and target investigation and removal is an effective remedial action approach for Area A;
- There is a potential of finding additional sensitively-fuzed munitions under the former berm (Area B; Figure 3) and in the northern and southern portions of the boundary grids (Area C; Figure 3); however, there is a low potential of finding a high density of metallic debris in these areas. Therefore, DGM survey with target investigation and removal is an effective and efficient remedial action approach in Areas B and C; and
- Continuation of the interim remedial action is warranted for the R47 SCA.

The interim remedial action will be conducted in accordance with the previously agreed upon procedures described in the Final Phase II Interim Action Work Plan.

Excavation and screening of soil is recommended in Area A (Figure 3), which will include the following activities:

- Vegetation removal and grinding to support the soil excavation (Section 2.3.1.3 of the Final Phase II Interim Action Work Plan)
- Excavation and screening of approximately 11.9 acres of soil to a depth of 6 to 24 inches to reduce anomaly density (Section 2.3.2 of the Final Phase II Interim Action Work Plan; excavation depth of 6 to 24 inches is based on the Design Study findings, as presented in the fourth bullet on Page 1 of this FVF, and has been selected in coordinated with the regulatory agencies and the Army)
- Post-excavation DGM survey (Section 2.3.4 of the Final Phase II Interim Action Work Plan)
- Processing of geophysical data and dig list preparation (Section 2.3.5 of the Final Phase II Interim Action Work Plan; targets with a DGM response amplitude of 50 mV or higher will be investigated with the objective of verifying removal of 40mm projectiles)
- Digital geophysical anomaly reacquisition (Section 2.3.6 of the Final Phase II Interim Action Work Plan)
- Excavation to depth of digitally reacquired anomaly targets with a response amplitude of 50 mV or higher (Sections 1.12 and 2.3.7 of the Final Phase II Interim Action Work Plan)
- Quality Control (QC) and Quality Assurance (QA)
  - Seeding of the Screen Plant (Section 9.3 of the Standard Operating Procedures for Mechanical Soil Sifting included as Appendix B of the Final Phase II Interim Action Work Plan)
  - Blind Seeding prior to DGM survey (Section 6.26.2 of the Final Phase II Interim Action Work Plan)
  - QC-1: Analog verification of anomaly removal at 100% of the anomalies selected for investigation (Section 6.25.1 of the Final Phase II Interim Action Work Plan)
  - QC-2: Digital resurveying of an area greater than or equal to 16% of the DGM survey areas (Section 6.25.2 of the Final Phase II Interim Action Work Plan)
  - FORA Third Party QA (Section 2.3.9 of the Final Phase II Interim Action Work Plan and Section 9.5 of the Standard Operating Procedures for Mechanical Soil Sifting included as Appendix B of the Final Phase II Interim Action Work Plan)

DGM survey and target investigation is recommended in Areas B and C (Figure 3), which will include the following activities:

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- Vegetation cutting, as necessary (Section 2.3.1.3 of the Final Phase II Interim Action Work Plan)
  - DGM survey of approximately 3.5 acres (Section 2.3.4 of the Final Phase II Interim Action Work Plan)
  - Processing of geophysical data and dig list preparation (Section 2.3.5 of the Final Phase II Interim Action Work Plan; targets with a DGM response amplitude of 50 mV or higher will be investigated with the objective of verifying removal of 40mm projectiles)
  - Digital geophysical anomaly reacquisition (Section 2.3.6 of the Final Phase II Interim Action Work Plan)
  - Excavation to depth of digitally reacquired anomalies targets with a response amplitude of 50 mV or higher (Sections 1.12 and 2.3.7 of the Final Phase II Interim Action Work Plan)
  - QC and QA
    - Blind Seeding prior to DGM survey (Section 6.26.2 of the Final Phase II Interim Action Work Plan)
    - QC-1: Analog verification of anomaly removal at 100% of the anomalies selected for investigation (Section 6.25.1 of the Final Phase II Interim Action Work Plan)
    - QC-2: Digital resurveying of an area greater than or equal to 16% of the DGM survey areas (Section 6.25.2 of the Final Phase II Interim Action Work Plan)
    - FORA Third Party QA (Section 2.3.9 of the Final Phase II Interim Action Work Plan)
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The results of the interim remedial action will be presented in a technical information paper.

#### Habitat Restoration

General habitat restoration requirements are outlined in Section 12 of the Final Phase II Interim Action Work Plan. Based on the Design Study findings, a detailed site-specific habitat restoration plan will be required and is currently being prepared for review and approval. Monitoring requirements of passive and active restoration areas will be identified in the plan.

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#### **IMPACT ON PRESENT AND COMPLETED WORK:**

No impact to present or completed work.

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**REQUESTED BY:** Kristie Reimer, ESCA Remediation Program Manager (ARCADIS)

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CLARIFICATION/FOR INFORMATION ONLY

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MINOR CHANGE

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MAJOR CHANGE

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**ESCA RP TEAM APPROVALS:** G. CLARK, L. TEMPLE, B. MOE

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**COMMENTS**

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## ACKNOWLEDGED BY:

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SIGNATURE

OCTOBER 6/11  
DATE

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## FORA APPROVAL:

## COMMENTS



APPROVED



REJECTED

STAN COOK

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MANAGER

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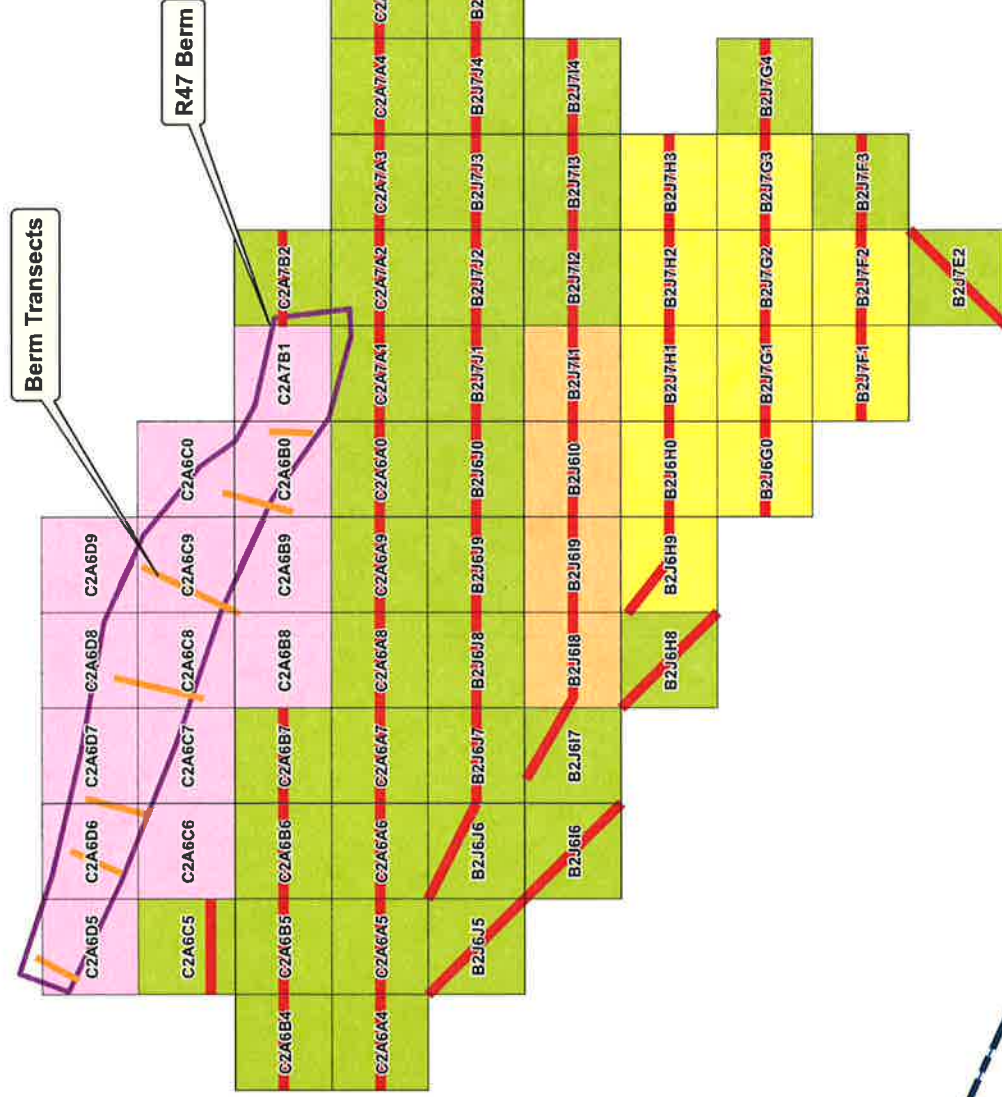
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DATE

## ATTACHMENTS:

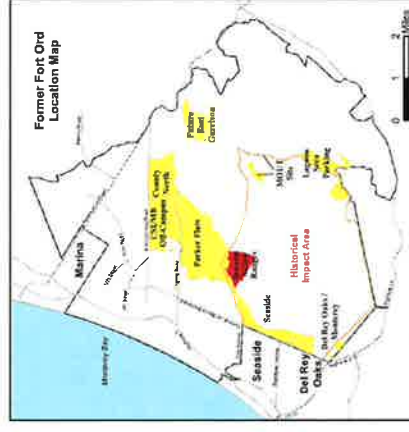
- Figure 1 - Interim Action Ranges MRA Range 47 SCA Design Study Area  
Figure 2 - Interim Action Ranges MRA Range 47 SCA Design Study Findings  
Figure 3 - Interim Action Ranges MRA Range 47 SCA Interim Remedial Action

# Legend

- Transect Excavated to 6-8 Inches
- Transect Excavated to 12 Inches
- Transect Excavated to 24 Inches
- No Grid Transect Excavation Conducted
- Range 47 SCA Transect
- Range 47 SCA Berm Transect
- Berm Boundary
- Interim Action Ranges MRA Boundary
- Munitions Response Site



MRS-Ranges 44-48



Interim Action Ranges MRA  
Range 47 SCA  
Design Study Area

FORA ESCA RP  
Monterey County, California

Figure 1

