Westcliffe Engineers, Inc.

FIELD VARIANCE FORM

DATE: 09-05-2008 **PROJECT NAME:** FORA ESCA RP **PROJECT LOCATION:** Former Fort Ord, CA

APPLICABLE DOCUMENT / SECTION: Final Addendum to Final OE-15SEA.1-4 Site-Specific Work Plan, Phase II Seaside Munitions Response Area (MRA) Removal Action, Former Fort Ord, dated January 24, 2008 ("the SSWP Addendum") & Standard Operating Procedure for Mechanical Soil Sifting, Seaside Munitions Response Area (April 22, 2008)

SUBJECT: Processing (Size Reduction) and Management of Oversize Reject Material

FIELD CHANGE CONDITION:

The Army requested use of oversize reject materials (materials rejected by the 6-inch [in.], 2-in. or 3/8-in. sifting screen), which had been generated by sifting operations for use in fuel break repair projects on the inland ranges of the former Fort Ord. A total of 88 truck loads (approximately 880 cubic yards) of oversize reject material were loaded and transported from the Seaside MRS 1 Sifting Plant area to the inland range within the former Fort Ord between the dates of August 7 to 11, 2008. The oversized reject material had undergone a sifting and inspection process as prescribed in Section 9.1 of the Standard Operating Procedure for Mechanical Soil Sifting (SOP), which included 100% visual inspection by unexploded ordnance (UXO) personnel assisted by a magnetometer and all-metals detector instruments. Visual inspection of the material consisted of spreading the material into a thin layer on the ground and manually moving the material around to determine if any munitions and explosives of concern or munitions debris (MEC/MD) were present. However, the significant amount of gravel rock and asphalt in the oversized reject stream caused the detector instruments to consistently ring off; therefore the UXO Technicians relied heavily on visual inspection of the material.

On Monday, August 11, 2008, the Army notified the ESCA RP Team that work operations were stopped when a 40-mm projectile was found in the oversize reject material being used for fuel break repairs during spreading operations. The WESTON Senior UXO Supervisor (SUXOS) immediately notified the WESTON Remediation Project Manager of this occurrence. The WESTON SUXOS then proceeded to inspect the item. The item was determined to be a 40-mm M407 A1 practice projectile (see attached photo). The appropriate notification chain was completed and is described as follows: Army's USACE Ordnance Safety Specialist to the WESTON SUXOS to the WESTON Remediation Project Manager to the FORA ESCA Program Manager. The FORA ESCA Program Manager provided a description of the incident in writing to the EPA Region 9 Remedial Project Manager and the DTSC Project Manager.

Based on the encounter of the 40-mm M407 A1 practice projectile in the oversize material taken by the Army, it is apparent that the current instrument-aided visual inspection technique is not sufficient for inspecting the relatively large volume of reject oversized material, comprised primarily of aggregate rock with lesser amounts of asphalt, concrete, nonferrous metal (soda cans), and wood debris.

Nearly all the MEC/MD items encountered to date are ferrous and have been removed by the magnets associated with the sifting plant. The amount of ferrous metal collected from the Seaside soil is relatively small, therefore visual inspection of the ferrous reject material recovered by the magnets is straightforward. The concern raised by this incident is the inability to provide adequate visual inspection of the much larger volume of aggregate rock and other oversized reject debris from the sift plant. As a contributing factor, the SSWP Addendum did not specify the controls to be implemented prior to off-site release of non-MEC debris or oversized material from the sift plant activities.

ROOT CAUSE ANALYSIS:

Based upon the finding of the 40-mm M407 A1 aluminum practice projectile the project team conducted a root cause analysis to determine how the practice projectile was inadvertently released from the Site. On the afternoon of August 11, 2008 representatives of the ESCA RP Team conducted a Site tour and interviewed UXO Technicians in order to determine the Site conditions leading up to the find. Based upon the Site walk, interviews with UXO Technicians, and follow up discussions with the project team, the following root causes were considered to be contributors to the release of the practice projectile:

1. The presence of the aluminum 40-mm practice projectile was not determined to be probable for MRA therefore was not considered in the design of the initial mechanical soil sifting operation.

2. Magnets in screening process are not designed to remove aluminum, therefore, nonferrous items are to be removed by instrument aided visual inspection.
3. The effectiveness of inspections aided by metals detectors on the reject material was reduced by signal interference from the asphalt and related debris.
4. Projectile was of similar size, shape and color to the material it was supposed to be removed from making visual observation difficult/ineffective.
5. During weekend retrieval of aggregate material by BLM/Army, the loading process was not observed by ESCA RP Team personnel. Therefore, release/receipt documentation was not completed for these materials and/or individual loads, even though these materials were visually inspected in accordance with the SOP for Mechanical Soil Sifting.
6. Communications of concerns regarding the inefficacy of existing SOP for Mechanical Soil Sifting (metal detectors continuously ringing off during the inspection process) was not adequate to allow SUXOS and Remediation Project Manager to evaluate the efficacy of the screening process.

Following the determination of contributing causes by the project team, the team considered what additional MEC items may be present at the Site but also be missed by the existing reject material inspection process. The team determined that aluminum flares may also be introduced into the sifting operations and therefore in the debris pile. Since the aluminum flares are much larger than a 40 mm practice item this was not considered a concern for the debris.

Based upon the information gathered during the root cause analysis the project team suggested re-processing of the oversized reject material through a rock crusher set to 1.0-in. would be prudent to reduce the size of the material to a size smaller than the 40mm practice projectile following the full sifting process including 100% visual inspection.

RECOMMENDED APPROACH / CHANGE:

A more rigorous approach for processing the oversize material is needed. The project team also proposes documentation of validation inspections performed on the oversized reject material, and SUXOS and UXO Quality Control Specialist certification that the material is free from explosives (FFE). The ESCA RP Team proposes to process the oversized reject material through a rock crusher to size reduce this stream to approximately 1.0-inch or smaller and perform a quality control check of a portion of the reprocessed reject material in a similar manner as prescribed for the sifted soil in the April 22, 2008 Standard Operating Procedure (SOP) for Mechanical Soil Sifting, Seaside MRA (Soil Sifting SOP, Material Type 5). The amended SOP for Mechanical Soil Sifting, Seaside MRA (attached) is revised to incorporate this change, which would create a Material Type 6, along with the requirement for the inspectors and the SUXOS to independently inspect and document that the material is FFE (using Form 1348 or equivalent) prior to the regulatory approved disposition of material from the Site. An amendment to the Land Disposal Site Plan (ESS) was submitted and Army Technical Center for Explosives Safety (TCES) approved this change. The ESS was submitted to Department of Defense Explosives Safety Board approval.

IMPACT ON PRESENT AND COMPLETED WORK:

The proposed change would essentially eliminate the potential for MEC posing a hazard to be present in the reject material after processing through the rock crusher, in addition to the existing visual inspection for identifying and removing nonferrous MEC/MD from the oversized reject stream (Soil Sifting SOP, Material Types 1 and 3, up to 12 inches or larger if compatible with the crusher). The addition documentation requirement will provide additional control of the final material.

REQUESTED BY: Dwight Gemar, Remediation Project Manager

☐	CLARIFICATION/FOR INFORMATION ONLY	X	MINOR CHANGE	☐	MAJOR CHANGE

WESTON SOLUTIONS

Westcliffe Engineers, Inc.

ESCA RP TEAM APPROVALS:

COMMENTS

APPROVED BY:	K. Reimer **PROGRAM MANAGER**	**SIGNATURE**	**DATE**	9/12/08
AKNOWLEDGED BY:	Bruce M. Moe **SENIOR UXO SUPERVISOR**	**SIGNATURE**	**DATE**	9/12/08
ACKNOWLEDGED BY:	Christopher G. Spill **TECHNICAL PROJECT MANAGER**	**SIGNATURE**	**DATE**	9/12/08
ACKNOWLEDGED BY:	Linda L. Temple **ESCA REMEDIATION PROJECT MANAGER**	**SIGNATURE**	**DATE**	9/12/08

FORA APPROVAL:

COMMENTS

☒ **APPROVED** ☐ **REJECTED**	STAN Cook **FORA ESCA PROGRAM PROGRAM MANAGER**	**SIGNATURE**	**DATE**	9/15/08