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May 28, 2014

Mr. Scott J. Bolton  
Site Manager  
US Army Transition Force  
P.O. Box 5022  
Fort McClellan, Alabama 36205

**RE: ADEM Review and Comments:** *Draft Work Plan for the Charlie Area Remedial Investigation/Feasibility Study (RI/FS)*; dated January 2014.  
Fort McClellan, Calhoun County, Alabama  
Facility I.D. No. AL5000053611

Dear Mr. Bolton:

The Alabama Department of Environmental Management (ADEM or the Department) has reviewed Fort McClellan's *Draft Work Plan for the Charlie Area RI/FS*. ADEM comments are attached for your review and response.

If you have any questions or concerns regarding this matter please contact Ms. Julie Ange of the Remediation Engineering Section at 334-270-5646 or via email at [jange@adem.state.al.us](mailto:jange@adem.state.al.us).

Sincerely,

A handwritten signature in black ink, appearing to read "Stephen A. Cobb".

Stephen A. Cobb, Chief  
Governmental Hazardous Waste Branch  
Land Division

SAC/TPS/JLA/akr

cc: Ms. Leigh Lattimore/EPA Region 4  
Mr. Bob Beacham/USA COE, Mobile District  
Mrs. Tracy P. Strickland/ADEM

Mr. Robin Scott /MDA  
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**ATTACHMENT**  
**ADEM Review Comments**  
***Draft Work Plan for the Charlie Area RI/FS***  
**Fort McClellan, Alabama**

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1. Page 1-13, Figure 1-3: The conceptual site model (CSM) identifies the subsurface munitions and explosives of concern (MEC) pathway for recreational users as incomplete. The potential exists for recreational users to disturb the ground surface and unearth MEC. Additionally, erosion of the ground surface may expose receptors to MEC. Therefore, a potentially complete pathway for MEC in the subsurface is present. Please revise the CSM.
2. Page 2-2, Sections 2.2.6.1 and 2.2.6.2: Please identify the statistical method to be used to determine the 95% confidence level of detecting MEC for target/impact areas and the residual MEC density for non-target areas.
3. Page 2-5, Table 2-1: Table 2-1 is incomplete and inconsistent with Section 3.8.1.1, Table 4-2, and the standard operating procedures (SOPs) in Appendix K for unexploded ordnance (UXO) personnel. Examples of requirements not shown in Table 2-1 are:
  - a. Required OSHA and USACE qualifications shown in Section 3.8.1.1 (40-hour hazardous waste operations and emergency response and annual 8-hour refresher).
  - b. The site safety and health officer must have 30-hour OSHA construction safety training in accordance with EM 385-1-1, Section 01.A.17.
  - c. OSHA and USACE require all supervisors to receive 8 additional hours of safety training. Section 3.8.1.1 says the UXO Team Leaders, Geo Team Leaders, UXO Safety Officer (UXOSO) and UXO Quality Control Specialist (UXOQCS) are also responsible for supervising personnel and require this training.
  - d. Section 3.8.1.2.1 requires all site personnel receive MEC awareness training.
  - e. OSHA (1910-120(a)3) and USACE (EM 385-1-1, 28.D.1b) mandatory 3-day training is not included in any table or section in the work plan. However the form is included in Appendix F.

Providing consolidated and consistent guidance to field personnel on the required training and certifications is important to ensure all training is conducted, verified,

and documented. Please provide one consolidated table of all education, training, and certifications required.

4. Pages 2-12, 3-55, and 4-38, Section 2.6.3.1, Table 3-7, Table 4-10: These sections identify information to be included in the RI report. However, this information does not meet ADEM's needs for documentation of a MEC investigation. All field records are considered official project records and should be included in the report. Additional documentation required to verify compliance with the work plan requirements are:
  - a. UXOQCS daily reports
  - b. UXOQCS three-phase inspection reports showing documented results of inspection
  - c. UXOQCS checklists
  - d. Daily site reports
  - e. Results of daily equipment function checks (analog, digital, and global positioning system)
  - f. Non-conformance reports
  - g. Field change requests
  - h. Internal and external audit results
  - i. Quality assurance (QA) inspections

Please address.

5. Page 2-13, Section 2.6.3.2: The risk assessment does not include conducting the munitions response site prioritization protocol (MRSPP) process at the completion of the RI. The MRSPP is required by the Memo on the Army Policy for Application of MRSPP (Feb 20, 2009). Please address.
6. Page 2-15, Section 2.8: ADEM requests a monthly project update as a part of the project delivery team while field work is ongoing. The updates will allow ADEM, the Army, and the contractor an opportunity to discover and resolve potential technical issues as soon as possible.
7. Page 2-22, Section 2.10.2.4: The last bullet says that site personnel will be briefed on changes to the work plan. However, no location for documenting this briefing is provided. Please identify where the site personnel field changes briefing will be documented.

8. Pages 3-1, 3-2, 3-11: The validation process used to assess data from previous MEC investigations is not provided in the work plan. During the February 2013 technical project planning (TPP) meeting (Appendix I), ADEM requested that the process used to validate previous MEC data be established and presented to the Department for review. The proposed plan to use the existing data showing increased UXO and munitions debris (MD) density as an indicator of target/impact areas and conducting supplemental transect investigations at these high density locations is a valid process and is accepted. However, the work plan says no additional investigation will be conducted in areas that previous investigations have shown to be non-target/impact areas. Instead, previously collected data that meets required quality criteria will be used to estimate the MEC density in these areas. Since the criteria to be used for determining the quality of the data is not included in the work plan, ADEM cannot concur that the existing data is adequate to determine that additional investigation of the non-target/impact areas is not needed. Please provide the data validation process used to ensure that the quality of the existing data is adequate to support the decision-making that is occurring in the RI.
9. Page 3-4, Table 3-1: The data quality objectives (DQOs) are not fully developed. The Environmental Protection Agency 7-step process is designed to produce qualitative or quantitative statements for the data needs. Please revise the DQO statements to clearly identify the quantity and quality of data necessary to support future decisions and data needs.
10. Page 3-21, Section 3.5: Please specify what personnel will certify in the geophysical prove-out (GPO) prior to conducting operations in the field. It is unclear from the description of the GPO if all geophysical and UXO team personnel will demonstrate proficiency for their assigned tasks in the GPO.
11. Page 3-41, Section 3.6.6.3: The anomaly resolution process does not require quality control (QC) verification of no finds. Section 3.6.6.3 states that “anomalies lacking an obvious source after data processing and field note re-inspections will not be pursued.” Verification of 100-percent of the no finds by the field QC geophysicist and UXOQCS, in addition to the data item description sampling acceptance table requirements, would provide ADEM with a higher level of confidence that the investigation did not miss an anomaly and would verify that the team did not misidentify the source of the false-positive. Please address.
12. Page 3-42, Figure 3-3: The step-out process shown in Figure 3-3 is inadequate to determine the horizontal extent of the MEC contamination along the entire

- transect line. Limiting the “additional step-outs conducted as needed” transects to 200-ft segments adjacent to and centered on a MEC find will reduce the effectiveness in establishing the horizontal boundary of the contamination area. The additional step-out transects should be extended 200-ft past the first and last MEC identified on the parallel transect as one complete transect, not a 200-ft segment parallel and centered on each individual MEC item. Please address.
13. Pages 3-45 and 4-15, Section 3.7.4.3 and Table 4-5: No process for documenting the data manager QC checks is specified in Section 3.7.4.3. The QC inspections conducted by the data manager should be recorded and reported on the daily quality control reports. Also, the requirement to conduct the QC checks should be listed in Table 4-5 for the data management definable feature of work (DFW). Please revise the document to include the requirement for these QC checks and to identify to whom the results will be provided.
  14. Page 3-50, Section 3.8.5.1.3: The plan does not provide procedures for securing MEC overnight in the event that same day disposal is not possible. Please provide a plan for securing MEC, in accordance with USACE EM 385-1-97, in the event that disposal is not possible on the day of discovery.
  15. Pages 3-49 and 3-52, Section 3.8.5.1.2 and 3.8.6.2.2: These sections contain conflicting information. Section 3.8.5.1.2 says the SUXOS and UXOSO will determine if MEC is safe to move (after discussing the process with the USACE Ordnance and Explosive Safety Specialist) while Section 3.8.6.2.2 says a UXO Tech II will set aside items containing dangerous fillers requiring demolition. Please revise to provide clear guidance for field personnel on who is authorized to move potential MEC and make risk decisions.
  16. Page 3-51, Section 3.8.6.1.1: The section states, “All MPPEH (materials potentially presenting an explosive hazard) to be disposed of will first be 100 percent visually inspected to ensure removal of live rounds, primers, or explosive material occurs”. This statement is misleading. All recovered material at an military munitions response program (MMRP) site is considered MPPEH until inspected by qualified personnel. MPPEH, once inspected, is reclassified as MEC, MD, non-munitions related debris, or range related debris. If inspection cannot verify the explosive safety status of the item venting or disposal is conducted to ensure explosives residues are not present. The removal or disassembly of explosive components from MPPEH or MEC is not in accordance with EM 385-1-97. Please revise the sentence to better define the process and ensure that disassembly of munitions is not attempted.

17. Page 4-4, Table 4-2: The table states that training will be documented on site project records with no documentation method specified. Sections 3.4.2, 3.8.1.2.2, and 4.3.1.1 also contain ambiguous information on documentation of required training. Please provide one specific location (form or logbook) for recording the completion of required training.
18. Page 4-7, Table 4-3: Several requirements identified in the quality control plan (QCP) are not included in the field investigation plan (FIP) and vice versa. Examples include:
  - a. Section 3.5 identifies the initial testing and certification of personnel and equipment in the GPO while Table 4-3 does not include the initial site calibration testing conducted to establish the millivolt threshold and select the analog sensor most suited for the work environment.
  - b. Table 4-3 includes specific requirements (warm-up, null/ground balancing, and personnel tests) for the daily testing of “Hand-held EMI (electromagnetic induction) Coil AGM (analog geophysical mapping) Sensor” while Section 3.6.4.2.2.2 does not include them.
  - c. Table 4-8 states that data and GIS managers will provide a report documenting the establishment of the on-site project database and off-site data storage/file transfer site as part of the verification process. These requirements are not identified in the FIP.

Please review the FIP and QCP to ensure the QCP accurately reflects the requirements of the FIP.

19. Page 4-7, Table 4-3: The daily tests shown in Table 4-3 for the analog geophysical sensors (AGS) are the same as the digital geophysical sensors (DGS) daily testing requirements. This is inconsistent with the equipment operation.
  - a. Warm-up periods for the AGS are not required whereas DGS requires the warm-up period.
  - b. The recording of battery voltage is not possible on most AGSs as it is with DGS.
  - c. Nulling or ground balancing is only effective in the work area for an AGS. Once there is a change in location or the instrument is turned off, the process must be performed again.

Please address.

20. Page 4-10, Table 4-4: Section 4.3.3.2.1 says that the three phase inspection (TPI) process will be performed for each DFW. Tables 4-4 and 4-5 have a combined 36 DFWs. It seems unreasonable for one person to implement the TPI process on 36 DFWs. The intent of the TPI process is to check processes such as those shown in the “Task” column of Table 4-4 rather than the DFW column. Please address.
21. Page 4-26, Table 4-6: The frequency of QC testing for digital geophysical mapping (DGM) and AGM is given as a minimum of once per day. However, Table 4-3 requires testing at the start and end of the day. Please determine the proper frequency and revise the document accordingly.
22. Page 4-38, Table 4-10: Table 4-10 requires QC checklists for project documentation. Sections 4.3.3.2.3, 4.3.3.3.2, and 4.3.3.4.2 state that internal QC checklists may be utilized to document compliance with the requirements in the work plan. These checklists are not included in the work plan. Because checklists used during the project are considered official project records, they should be included in the work plan. Please add the checklists to the document.
23. Pages A-22 and B-20, Attachment B to Appendix A and Figure 6: These maps are inconsistent. Examples include:
  - a. Figure 6 shows a large parcel southwest of Sector 1 as a removal action area. Attachment B does not show this area as a removal action area.
  - b. Figure 6 shows the sectors that are identified in Attachment B as part of the Interim Removal Action as part of the RI.
  - c. Figure 6 shows an area south of Sector 3 as part of the removal action while Attachment B shows that this area is not planned part of the current removal action.

Please provide an updated map showing the current (Kemron contract) Interim Removal Action (IRA) sectors and clearly identifying sectors not associated with the Kemron contract where removal actions have previously been conducted. Also, please review the figures for consistency.

24. Page 6-1, Appendix E: Appendix E, Section 6 requires daily quality control reports (DQCRs) for all field activities. However, this requirement is not included in the main body of the work plan. Please include the requirement to prepare the DQCRs in Section 4.1.3 as a responsibility of the UXOQCS or Geo QC.

25. Appendix F: The quality control form shown is a log of the TPI phases and the weekly QC report shown is a log of the non-conformance reports (NCRs). These reports are inadequate. Examples of data commonly included on DQCRs include:

- a. Weather data
- b. Progress of work, including that by subcontractors
- c. Delays, potential change orders or claims
- d. Safety inspections and meetings
- e. Verbal instructions given by USACE
- f. Preparatory or initial inspections held
- g. Follow-up inspections for on-going work
- h. Activities started or finished
- i. Any QC testing performed
- j. Deficiencies found or corrected

Please include a copy of the complete DQCR in Appendix F.

26. Appendix K: There are inconsistencies between the work plan and the SOPs.

The SOPs also contain technically incorrect guidance. For example:

- a. Section 4.3.1, MRP-01, "Anomaly Avoidance", say an anomaly avoidance team will consist of a minimum of two personnel and MRP-03 says anomaly avoidance support for civil survey will be in accordance with MRP-01. However, Section 3.3.2 of the work plan says one UXO Tech II will perform UXO anomaly avoidance for civil survey operations.
- b. Section 5.1.3, MRP-01 requires the UXO Team Leader to record the equipment checks in the team logbook, while Section 4.3.2.2.1 of the work plan requires the checks to be documented in the UXO Team and UXOQCS logbooks and the maintenance and test equipment calibration log.
- c. Section 5.1.3, MRP-01 says the UXO Techs will check the instrument daily, while Table 4-3 of the work plan requires the instruments to be checked at the beginning and end of the day.
- d. Section 3.7.2, MRP-02 says trees 3 inches or less in diameter at chest height will be removed while in Section 3.4.2.2 of the work plan the diameter given for removal is 4 inches.
- e. Section 6.2.1, MRP-03 says the survey instruments will be inspected and calibrated no more than six months prior to the start of the survey work. Table 4-5, however, does not require this QC check as part of the preparatory TPI.

- f. Section 4.6.3, MRP-10 says the UXO Team composition for Technology-Aided Surface Clearances (TASC) includes UXO Sweep Personnel. In accordance with Department of Defense Explosives Safety Board (DDESB) TP-18, UXO Sweep Personnel are not allowed to conduct intrusive investigation, which is the subject of the SOP. MRP-05 describes TASC procedures.

The above list is not exhaustive. Please review the work plan and SOPs and revise appropriately to ensure consistent and technically correct guidance is provided to field personnel.

**Response to Alabama Department of Environmental Management (ADEM) Comments on  
Draft Work Plan for the Charlie Area Remedial Investigation/Feasibility Study (dated  
January 2014)  
Fort McClellan, Alabama**

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*Comments from Stephen A. Cobb, Chief, Governmental Hazardous Waste Branch, Land Division, provided in a letter dated May 28, 2014 and Julie Ange, Senior Environmental Engineering Specialist, provided in an email dated July 16, 2014.*

**Comment 1: Page 1-13, Figure 1-3: The conceptual site model (CSM) identifies the subsurface munitions and explosives of concern (MEC) pathway for recreational users as incomplete. The potential exists for recreational users to disturb the ground surface and unearth MEC. Additionally, erosion of the ground surface may expose receptors to MEC. Therefore, a potentially complete pathway for MEC in the subsurface is present. Please revise the CSM.**

Response 1: Figure 1-3 was revised to specify a potentially complete pathway for subsurface MEC exposure to a Recreational User receptor.

**Comment 2: Page 2-2, Sections 2.2.6.1 and 2.2.6.2: Please identify the statistical method to be used to determine the 95% confidence level of detecting MEC for target/impact areas and the residual MEC density for non-target areas.**

Response 2: Sections 2.2.6.1 and 2.2.6.2 were revised to specify that VSP is the statistical method that will be used to determine the 95% confidence level of detecting MEC for target/impact areas and UXO Estimator is the software that will be used to determine the residual MEC density for non-target areas.

**Comment 3: Page 2-5, Table 2-1: Table 2-1 is incomplete and inconsistent with Section 3.8.1.1, Table 4-2, and the standard operating procedures (SOPs) in Appendix K for unexploded ordnance (UXO) personnel. Examples of requirements not shown in Table 2-1 are:**

- a. Required OSHA and USACE qualifications shown in Section 3.8.1.1 (40-hour hazardous waste operations and emergency response and annual 8-hour refresher).
- b. The site safety and health officer must have 30-hour OSHA construction safety training in accordance with EM 385-1-1, Section 01.A.17.
- c. OSHA and USACE require all supervisors to receive 8 additional hours of safety training. Section 3.8.1.1 says the UXO Team Leaders, Geo Team Leaders, UXO Safety Officer (UXOSO) and UXO Quality Control Specialist (UXOQCS) are also responsible for supervising personnel and require this training.
- d. Section 3.8.1.2.1 requires all site personnel receive MEC awareness training.

- e. **OSHA (1910-120(a)3) and USACE (EM 385-1-1, 28.D.1b) mandatory 3-day training is not included in any table or section in the work plan. However the form is included in Appendix F.**

**Providing consolidated and consistent guidance to field personnel on the required training and certifications is important to ensure all training is conducted, verified, and documented. Please provide one consolidated table of all education, training, and certifications required.**

Response 3: While we agree that a consolidated table of required training and certification is important to ensure all training is conducted, verified, and documented, we recommend these revisions be incorporated into Table 4-2 instead of Table 2-1. This is consistent with the content of the UFP-QAPP Worksheets #7 and #8, respectively, since Table 2-1 focuses on the programmatic/contractual personnel 'qualifications' and Table 4-2 focusses on required 'training and certifications.' Specifically, the project personnel qualifications requirements included in Table 2-1 will be verified and documented in the Personnel Qualification Certification Letter (see paragraph 2.4.0.3 and Appendix H), while the field personnel training/certification documentation will be maintained on-site and continually updated as needed.

Table 4-2 has been revised to include the missing information identified in items b, c, d, and e above, with the exception of the Geophysical Team Leaders identified in item c. Per 29 CFR 1910.120(e)(4), supervisor training is only required for employees engaged in hazardous waste operations. OSHA 8-hour supervisors training will be provided to only on-site management and supervisors of personnel involved in intrusive MEC investigation or MEC/MPPEH handling.

**Comment 4: Pages 2-12, 3-55, and 4-38, Section 2.6.3.1, Table 3-7, Table 4-10: These sections identify information to be included in the RI report. However, this information does not meet ADEM's needs for documentation of a MEC investigation. All field records are considered official project records and should be included in the report. Additional documentation required to verify compliance with the work plan requirements are:**

- a. **UXOQCS daily reports**
- b. **UXOQCS three-phase inspection reports showing documented results of inspection**
- c. **UXOQCS checklists**
- d. **Daily site reports**
- e. **Results of daily equipment function checks (analog, digital, and global positioning system)**
- f. **Non-conformance reports**
- g. **Field change requests**
- h. **Internal and external audit results**

i. **Quality assurance (QA) inspections**

**Please address.**

Response 4: Paragraph 2.6.3.1.1 was revised by adding an additional appendix, Appendix E – QA/QC Documentation, that specifically lists these nine items. To make these items comply with the specified Work Plan requirements, we have made the following administrative modifications to the items identified above:

- a. UXOQCS daily reports – Daily QC Reports
- c. UXOQCS checklists – Omitted from the list since these will be included as an element of item b.
- d. Daily site reports – SUXOS Daily Reports for MEC Operations
- e. Results of daily equipment function checks – Results of field equipment calibration, maintenance, testing and inspection  
Additionally, we recommend changing item h, “Internal and external audit results” to “External and third party audit results.” While the internal audits outlined in Table 4-1 of the Work Plan are an important QA function, documentation of these internal QA audits will add little value to the RI Report since any audit results affecting the RI activities will be addressed through subsequent required QA/QC documentation (e.g., Non-Conformance Reports, Field Change Requests, Corrective Action Requests, etc.).

Additionally, the Daily Reports of MEC Operations and the Daily QC Reports were added to Table 4-10 as QA/QC documents and records.

**Comment 5: Page 2-13, Section 2.6.3.2: The risk assessment does not include conducting the munitions response site prioritization protocol (MRSPP) process at the completion of the RI. The MRSPP is required by the Memo on the Army Policy for Application of MRSPP (Feb 20, 2009). Please address.**

Response 5: A new Section 2.6.3.2.3 was added to include the requirement to conduct the MRSPP.

**Comment 6: Page 2-15, Section 2.8: ADEM requests a monthly project update as a part of the project delivery team while field work is ongoing. The updates will allow ADEM, the Army, and the contractor an opportunity to discover and resolve potential technical issues as soon as possible.**

Response 6: A new paragraph 2.8.2.1.2 has been added to include a monthly project update meeting to foster effective collaboration among the PDT.

**Comment 7: Page 2-22, Section 2.10.2.4: The last bullet says that site personnel will be briefed on changes to the work plan. However, no location for documenting this briefing is provided. Please identify where the site personnel field changes briefing will be documented.**

Response 7: A sentence was added to the last bullet stating that all personnel will be required to re-sign the Work Plan/Site Safety and Health Plan Review Form documenting the approved revisions.

**Comment 8: Pages 3-1, 3-2, 3-11: The validation process used to assess data from previous MEC investigations is not provided in the work plan. During the February 2013 technical project planning (TPP) meeting (Appendix I), ADEM requested that the process used to validate previous MEC data be established and presented to the Department for review. The proposed plan to use the existing data showing increased UXO and munitions debris (MD) density as an indicator of target/impact areas and conducting supplemental transect investigations at these high density locations is a valid process and is accepted. However, the work plan says no additional investigation will be conducted in areas that previous investigations have shown to be non-target/impact areas. Instead, previously collected data that meets required quality criteria will be used to estimate the MEC density in these areas. Since the criteria to be used for determining the quality of the data is not included in the work plan, ADEM cannot concur that the existing data is adequate to determine that additional investigation of the non-target/impact areas is not needed. Please provide the data validation process used to ensure that the quality of the existing data is adequate to support the decision-making that is occurring in the RI.**

Response 8: New paragraphs 3.1.3.0.2 and 3.1.3.0.3 were added outlining the validation procedure used to evaluate the quality of previously collected data that will be used to meet the RI DQOs. For the 2004 EE/CA data that will be used to recommend no Further Investigation in the Choccolocco Corridor parcels and for the data that may be used to quantify MEC density in the non-target/impact areas, the data validation process involved the following elements:

- Precision and Accuracy – documentation of previous Government QA audit for fieldwork procedures
- Representativeness – spatial location of the data and comparison of results to munitions items expected to be encountered based on reported historical site use
- Comparability – results of QC inspections; it should be noted that this was a data gap that could not be validated based on available documentation.
- Completeness – verification that all identified anomalies were intrusively investigated

For the Roads, Firebreaks, and High Use Areas Removal Action data that will be used in lieu of conducting new RI transects, the data validation process involved the following elements:

- Precision and Accuracy – documentation of previous Government QA audit for fieldwork procedures
- Representativeness – all roads/firebreaks proposed to be used are located within the spatial variation specified for the RI transects
- Comparability – results of QC inspections; it should be noted that a minor data gap is associated with the AGM instruments not being tested during the GPO but we feel that the data is still usable despite this potential limitation.

- Completeness – the removal action target selection criterion was the 37mm projectile, which is the same as the RI; furthermore, the removal action contractor dug 10% of the anomalies identified as no-digs

**Comment 9: Page 3-4, Table 3-1: The data quality objectives (DQOs) are not fully developed. The Environmental Protection Agency 7-step process is designed to produce qualitative or quantitative statements for the data needs. Please revise the DQO statements to clearly identify the quantity and quality of data necessary to support future decisions and data needs.**

Response 9: Table 3-1 was revised to clarify the quantity and quality of data required to support the various decision statements. For further clarification the following table summarizes the quantity and quality of data specified in each DQO.

DQO	Quantity Metrics	Quality Metrics
Define the investigation footprint	<ul style="list-style-type: none"> <li>• Clarification was provided that all data from the two EE/CAs and four Removal Actions, as well as available data from the ongoing Interim Removal Action and applicable data from the Alpha and Bravo Area Removal Actions were evaluated.</li> <li>• Clarification was provided that the data was cross-referenced with information provided in the EBS, ASR, and DoD Range Operations Reports to develop the methodology for defining the investigation footprint.</li> </ul>	<ul style="list-style-type: none"> <li>• Data validation procedure required per Comment #8 was referenced.</li> <li>• Qualitative nature of the analysis that accounts for issues such as terrain, data inconsistencies, etc. was explained.</li> <li>• Impact area aggregation distances is specified.</li> <li>• Tools used to perform geospatial calculations was clarified.</li> </ul>
Design a Statistically Valid Investigation Approach to Identify Target/Impact Areas Within the Investigation Footprint	<ul style="list-style-type: none"> <li>• Total investigation acreage was added.</li> <li>• Total required miles of transect coverage was added, including clarification on locations where transects will not be conducted over previous and on-going removal action areas.</li> <li>• A reference to Table 3-2 was added to clarify what removal action data will be used in lieu of new RI transects.</li> </ul>	<ul style="list-style-type: none"> <li>• Data validation procedure required per Comment #8 was referenced.</li> <li>• Input data required to perform VSP calculations is specified.</li> <li>• VSP-calculated spacing and transect widths is specified.</li> <li>• Allowable transect location deviation is specified.</li> </ul>
Determine the Location and Type of MEC/MD Present	<ul style="list-style-type: none"> <li>• All DGM anomalies meeting the ASC and all AGM anomalies identified through audible tone recognition will be investigated</li> </ul>	<ul style="list-style-type: none"> <li>• Anomaly investigation and resolution procedures and QC measures are referenced.</li> </ul>

DQO	Quantity Metrics	Quality Metrics
Determine the Spatial Extent of MEC Within the Identified Target/Impact Areas	<ul style="list-style-type: none"> <li>MEC located within 200 feet of the investigation boundary will be further investigated</li> </ul>	<ul style="list-style-type: none"> <li>Specifications for conducting step-out transects is provided.</li> </ul>
Quantify the MEC Density in the Residual Non-Target/Impact Area	<ul style="list-style-type: none"> <li>Clarification was provided on the use of previous data for these calculations.</li> <li>Procedures for the amount of additional data required to be collected (if necessary) is provided.</li> </ul>	<ul style="list-style-type: none"> <li>Data validation procedure required per Comment #8 was referenced.</li> <li>Method and specifications for UXO Estimator calculations is provided.</li> </ul>

**Comment 10: Page 3-21, Section 3.5: Please specify what personnel will certify in the geophysical prove-out (GPO) prior to conducting operations in the field. It is unclear from the description of the GPO if all geophysical and UXO team personnel will demonstrate proficiency for their assigned tasks in the GPO.**

Response 10: Paragraph 3.5.0.1 was revised to clarify that all UXO and Geophysics Teams responsible for conducting AGM and DGM surveys in the RI transects/grids will first demonstrate proficiency for their assigned tasks in the GPO prior to performing geophysical data collection activities. Paragraph 3.5.0.3 was also revised to clarify that the GSV process will be used to confirm the Geophysics and UXO Teams maintain the proficiency initially demonstrated in the GPO. To make sure this clarification also addresses Comment #22, a Preliminary Phase QC check for verification of successful GPO performance was added to the AGM and DGM DFW QC checklists.

**Comment 11: Page 3-41, Section 3.6.6.3: The anomaly resolution process does not require quality control (QC) verification of no finds. Section 3.6.6.3 states that “anomalies lacking an obvious source after data processing and field note re-inspections will not be pursued.” Verification of 100-percent of the no finds by the field QC geophysicist and UXOQCS, in addition to the data item description sampling acceptance table requirements, would provide ADEM with a higher level of confidence that the investigation did not miss an anomaly and would verify that the team did not misidentify the source of the false-positive. Please address.**

Response 11: 100-percent verification of no-finds will not significantly contribute to achieving the project DQOs. As specified in Paragraph 3.6.6.3, corrective measures are proposed if the no-finds are determined to be critical to meeting the RI DQOs (e.g., they are located in a transect or step-out transect required for MEC delineation) or if they occur in a pattern of 15% or more per lot, which would trigger a root cause analysis.

**Comment 12: Page 3-42, Figure 3-3: The step-out process shown in Figure 3-3 is inadequate to determine the horizontal extent of the MEC contamination along the entire transect line. Limiting the “additional step-outs conducted**

**as needed” transects to 200-ft segments adjacent to and centered on a MEC find will reduce the effectiveness in establishing the horizontal boundary of the contamination area. The additional step-out transects should be extended 200-ft past the first and last MEC identified on the parallel transect as one complete transect, not a 200-ft segment parallel and centered on each individual MEC item. Please address.**

- Response 12: Figure 3-3 was revised and the Step-Out Case 2 description in Section 3.6.7.1 was revised to: “If a MEC item is encountered anywhere along a transect that laterally abuts the RI boundary, an additional transect will be conducted 200 feet from and parallel to the original transect; the additional transect will extend 200 feet from the first and last MEC item encountered on the parallel transect.”
- Comment 13: Pages 3-45 and 4-15, Section 3.7.4.3 and Table 4-5: No process for documenting the data manager QC checks is specified in Section 3.7.4.3. The QC inspections conducted by the data manager should be recorded and reported on the daily quality control reports. Also, the requirement to conduct the QC checks should be listed in Table 4-5 for the data management definable feature of work (DFW). Please revise the document to include the requirement for these QC checks and to identify to whom the results will be provided.**
- Response 13: A new Initial Phase QC Testing/Inspection procedure of “Check data collected during fieldwork” was added to Table 4-5. Section 3.7.4.3 was revised to specify that the data collection QC check results will be provided to the UXOQCS. Because data collection will occur at the end of the day, the results of the daily data QC check will be provided to the UXOQCS during the subsequent workday.
- Comment 14: Page 3-50, Section 3.8.5.1.3: The plan does not provide procedures for securing MEC overnight in the event that same day disposal is not possible. Please provide a plan for securing MEC, in accordance with USACE EM 385-1-97, in the event that disposal is not possible on the day of discovery.**
- Response 14: Paragraph 3.8.5.1.3 was revised to include the requirement that any MEC that can’t be detonated on the day of discovery will be left in place and maintained in the physical custody of AECOM UXO Technicians or subcontracted security guards.
- Comment 15: Pages 3-49 and 3-52, Section 3.8.5.1.2 and 3.8.6.2.2: These sections contain conflicting information. Section 3.8.5.1.2 says the SUXOS and UXOSO will determine if MEC is safe to move (after discussing the process with the USACE Ordnance and Explosive Safety Specialist) while Section 3.8.6.2.2 says a UXO Tech II will set aside items containing dangerous fillers requiring demolition. Please revise to provide clear guidance for field personnel on who is authorized to move potential MEC and make risk decisions.**
- Response 15: These two sections were revised to clarify that the determination of items as safe-to-move will be initially developed by the UXO Team Leader and confirmed by the SUXOS or the UXOSO when delegated by the SUXOS.

**Comment 16: Page 3-51, Section 3.8.6.1.1: The section states, “All MPPEH (materials potentially presenting an explosive hazard) to be disposed of will first be 100 percent visually inspected to ensure removal of live rounds, primers, or explosive material occurs”. This statement is misleading. All recovered material at an military munitions response program (MMRP) site is considered MPPEH until inspected by qualified personnel. MPPEH, once inspected, is reclassified as MEC, MD, non-munitions related debris, or range related debris. If inspection cannot verify the explosive safety status of the item venting or disposal is conducted to ensure explosives residues are not present. The removal or disassembly of explosive components from MPPEH or MEC is not in accordance with EM 385-1-97. Please revise the sentence to better define the process and ensure that disassembly of munitions is not attempted.**

Response 16: The first sentence of Paragraph 3.8.6.1.1 was revised to, “All recovered material is considered MPPEH and will first be 100 percent visually inspected.”

**Comment 17: Page 4-4, Table 4-2: The table states that training will be documented on site project records with no documentation method specified. Sections 3.4.2, 3.8.1.2.2, and 4.3.1.1 also contain ambiguous information on documentation of required training. Please provide one specific location (form or logbook) for recording the completion of required training.**

Response 17: Sections 3.4.2, 3.8.1.2.2, and 4.3.1.1 have been updated to specify documentation methods. Because the “Location of Training Records/Certificates” is common to all required training, this information was moved from Table 4-2 to Paragraph 4.3.1.0. The last column of Table 4-2 was changed to “Documentation Method” to provide further clarification on how each training requirement will be documented.

**Comment 18: Page 4-7, Table 4-3: Several requirements identified in the quality control plan (QCP) are not included in the field investigation plan (FIP) and vice versa. Examples include:**

- a. Section 3.5 identifies the initial testing and certification of personnel and equipment in the GPO while Table 4-3 does not include the initial site calibration testing conducted to establish the millivolt threshold and select the analog sensor most suited for the work environment.
- b. Table 4-3 includes specific requirements (warm-up, null/ground balancing, and personnel tests) for the daily testing of “Hand-held EMI (electromagnetic induction) Coil AGM (analog geophysical mapping) Sensor” while Section 3.6.4.2.2.2 does not include them.
- c. Table 4-8 states that data and GIS managers will provide a report documenting the establishment of the on-site project database and off-site data storage/file transfer site as part of the verification process. These requirements are not identified in the FIP.

**Please review the FIP and QCP to ensure the QCP accurately reflects the requirements of the FIP.**

Response 18: Table 4-3 was revised to include the GPO testing of the DGM and AGM sensors. Paragraph 3.6.4.2.2.2 was revised to include the AGM testing and inspection requirements outlined in Table 4-3. Paragraph 3.7.4.5.1 was updated to specify that the GIS Manager will provide the PDT with the FTP address once the website is established. This change was also incorporated into Table 4-8 since a formal report is not required to verify the process. Additionally, the requirement for the Data Manager to submit a report documenting the establishment of the on-site project database was revised in Paragraph 3.7.4.1.1 and Table 4-8.

**Comment 19: Page 4-7, Table 4-3: The daily tests shown in Table 4-3 for the analog geophysical sensors (AGS) are the same as the digital geophysical sensors (DGS) daily testing requirements. This is inconsistent with the equipment operation.**

- a. **Warm-up periods for the AGS are not required whereas DGS requires the warm-up period.**
- b. **The recording of battery voltage is not possible on most AGSs as it is with DGS.**
- c. **Nulling or ground balancing is only effective in the work area for an AGS. Once there is a change in location or the instrument is turned off, the process must be performed again.**

**Please address.**

Response 19: The warm-up and inspection activity for AGS instruments was deleted from Table 4-3. Additionally, the inspection and null/ground balancing activity was revised to be AGS-specific.

**Comment 20: Page 4-10, Table 4-4: Section 4.3.3.2.1 says that the three phase inspection (TPI) process will be performed for each DFW. Tables 4-4 and 4-5 have a combined 36 DFWs. It seems unreasonable for one person to implement the TPI process on 36 DFWs. The intent of the TPI process is to check processes such as those shown in the “Task” column of Table 4-4 rather than the DFW column. Please address.**

Response 20: The “Task” column title in Table 4-4 was revised to “Definable Features of Work,” and the “Definable Features of Work” column title was revised to “Applicable Fieldwork Task.” Furthermore, the DFWs and applicable fieldwork tasks included in this table were revised to exclude non-fieldwork tasks that are not appropriate for the TPI process. As an example, the “Investigation Data Analysis/Evaluation” and “Prepare RI Report” DFWs were removed from Table 4-4 and included in Table 4-1, Planned Project Audits since these activities will occur after fieldwork is completed.

For consistency, Table 4-5 was also revised to reflect these changes.

**Comment 21: Page 4-26, Table 4-6: The frequency of QC testing for digital geophysical mapping (DGM) and AGM is given as a minimum of once per day. However, Table 4-3 requires testing at the start and end of the day. Please determine the proper frequency and revise the document accordingly.**

Response 21: Table 4-6 was revised from a “minimum of once per day” to a “minimum at the start and end of each day.”

**Comment 22: Page 4-38, Table 4-10: Table 4-10 requires QC checklists for project documentation. Sections 4.3.3.2.3, 4.3.3.3.2, and 4.3.3.4.2 state that internal QC checklists may be utilized to document compliance with the requirements in the work plan. These checklists are not included in the work plan. Because checklists used during the project are considered official project records, they should be included in the work plan. Please add the checklists to the document.**

Response 22: These checklists have been provided in Appendix F.

**Comment 23: Pages A-22 and B-20, Attachment B to Appendix A and Figure 6: These maps are inconsistent. Examples include:**

- a. **Figure 6 shows a large parcel southwest of Sector 1 as a removal action area. Attachment B does not show this area as a removal action area.**
- b. **Figure 6 shows the sectors that are identified in Attachment B as part of the Interim Removal Action as part of the RI.**
- c. **Figure 6 shows an area south of Sector 3 as part of the removal action while Attachment B shows that this area is not planned part of the current removal action.**

**Please provide an updated map showing the current (Kemron contract) Interim Removal Action (IRA) sectors and clearly identifying sectors not associated with the Kemron contract where removal actions have previously been conducted. Also, please review the figures for consistency.**

Response 23: The legend of Figure 6 in Appendix B was revised to provide further clarification between the previously conducted removal action areas and the on-going interim removal actions. Clarifications include using different colors for the two different areas and changing the legend entry to “Previous Removal Action Areas.” Because not all of the Interim Removal Action sectors included in the Kemron contract were funded, Figure 6 identifies only the seven of 19 sectors that are currently on-going (i.e., funded). The unfunded 12 Interim Removal Action sectors will be investigated as part of the RI to better substantiate their boundaries, and recommendations for further actions will be developed and presented to ADEM through subsequent phases of the CERCLA process.

**Comment 24: Page 6-1, Appendix E: Appendix E, Section 6 requires daily quality control reports (DQCRs) for all field activities. However, this requirement is not included in the main body of the work plan. Please include the requirement**

**to prepare the DQCRs in Section 4.1.3 as a responsibility of the UXOQCS or Geo QC.**

Response 24: The first bullet in Section 4.1.3 was revised to state that the UXOQCS is responsible for “[e]nsuring the site QCP is being properly implemented and documenting such in Daily QC Reports.” Additionally, the frequency of these QC Reports previously identified in Paragraphs 4.3.3.2.3, 4.3.3.3.2, 4.3.3.4.2, Table 4-7, and Table 4-10 were changed from weekly to daily.

**Comment 25: Appendix F: The quality control form shown is a log of the TPI phases and the weekly QC report shown is a log of the non-conformance reports (NCRs). These reports are inadequate. Examples of data commonly included on DQCRs include:**

- a. Weather data
- b. Progress of work, including that by subcontractors
- c. Delays, potential change orders or claims
- d. Safety inspections and meetings
- e. Verbal instructions given by USACE
- f. Preparatory or initial inspections held
- g. Follow-up inspections for on-going work
- h. Activities started or finished
- i. Any QC testing performed
- j. Deficiencies found or corrected

**Please include a copy of the complete DQCR in Appendix F.**

Response 25: Applicable information from the Quality Control Report and Weekly QC Report and the above list of items has been consolidated into a revised Daily QC Report. However, to prevent duplication of data from the Daily Report of MEC Operations items a, b, and d will remain documented in the Daily Report of MEC Operations instead of the Daily QC Report.

**Comment 26: Appendix K: There are inconsistencies between the work plan and the SOPs. The SOPs also contain technically incorrect guidance. For example:**

- a. Section 4.3.1, MRP-01, “Anomaly Avoidance”, say an anomaly avoidance team will consist of a minimum of two personnel and MRP-03 says anomaly avoidance support for civil survey will be in accordance with MRP-01. However, Section 3.3.2 of the work plan says one UXO Tech II will perform UXO anomaly avoidance for civil survey operations.
- b. Section 5.1.3, MRP-01 requires the UXO Team Leader to record the equipment checks in the team logbook, while Section 4.3.2.2.1 of the work plan requires the checks to be documented in the UXO Team and UXOQCS logbooks and the maintenance and test equipment calibration log.

- c. **Section 5.1.3, MRP-01 says the UXO Techs will check the instrument daily, while Table 4-3 of the work plan requires the instruments to be checked at the beginning and end of the day.**
- d. **Section 3.7.2, MRP-02 says trees 3 inches or less in diameter at chest height will be removed while in Section 3.4.2.2 of the work plan the diameter given for removal is 4 inches.**
- e. **Section 6.2.1, MRP-03 says the survey instruments will be inspected and calibrated no more than six months prior to the start of the survey work. Table 4-5, however, does not require this QC check as part of the preparatory TPI.**
- f. **Section 4.6.3, MRP-10 says the UXO Team composition for Technology-Aided Surface Clearances (TASC) includes UXO Sweep Personnel. In accordance with Department of Defense Explosives Safety Board (DDESB) TP-18, UXO Sweep Personnel are not allowed to conduct intrusive investigation, which is the subject of the SOP. MRP-05 describes TASC procedures.**

**The above list is not exhaustive. Please review the work plan and SOPs and revise appropriately to ensure consistent and technically correct guidance is provided to field personnel.**

Response 26: SOP MRP-01 was revised to conform with the Work Plan Section 3.3.2 requirement for the UXO escort to consist of a UXO Technician II, and the Work Plan Section 4.3.2.2.1 requirement for the equipment functions check to be recorded in the UXOQCS logbook. Because anomaly avoidance does not involve data collection activities that will support the project DQOs, Section 5.1.3 of the SOP was revised to specify that equipment checks during anomaly avoidance are excluded from the requirements of Table 4-3 of the Work Plan.

Paragraph 3.7.2 of SOP MRP-02 was revised to conform to the four-inch tree diameter specified in Paragraph 3.4.2.2 of the Work Plan. Paragraph 3.6.4 of the SOP was also revised to conform to the vegetation removal height specified in the same Work Plan paragraph.

Table 4-3 was revised to include the requirement for survey instrument calibration per SOP MRP-03.

SOP MRP-10 was revised to eliminate the reference to TASC activities.

Additional revisions beyond those identified in Comment #26 were made to the following SOPs: MRP-03, MRP-05, MRP-06, MRP-07, MRP-08, MRP-09, MRP-10, MRP-11, MRP-12, and MRP-13; MRP-04 was eliminated from the appendix because it does not pertain to the scope of the RI/FS.

**Additional**

**Comment 9: Further discussion regarding the qualitative and quantitative aspects of the data quality objectives (DQOs) is necessary to clearly define ADEM's data needs. The DQOs do not identify the quantity and quality of data required to support future decisions. Examples are:**

- **Step 6 of the “Define the Investigation Footprint” DQO does not identify how the technical approach will limit the decision errors. Examples of ways to limit the decision errors are by performing system verifications prior to beginning field activities, certification of all geophysical sensor operators in the GPO prior to beginning operations, daily testing and documentation of sensors functionality, or implementation of the three-phase inspection process to ensure continued performance.**
- **Step 4 of the “Determine the Location and Type of MEC/MD Present” DQO says the depth of investigation is limited to the capabilities of the analog or digital geophysical sensor being used. An established depth of detection capability for hand-held sensors is not identified in the DQOs for the project. Establishing a depth of detection capability requirement for the hand-held analog sensors based on the most probable munition in the text and DQOs is necessary.**
- **Step 6 of the “Determine the Location and Type of MEC/MD Present” DQO does not identify the target flag clearance radius by UXO personnel. The UXO technician is allowed to disregard secondary anomalies if it is believed the anomaly is not the target and this leaves this important decision up to each technician and is not verifiable. Excavating and identifying all anomalies within a 2.5-ft. radius of the reacquired location is standard practice at Fort McClellan and other MEC RI projects.**

Additional  
Response 9:

Step 6 of the “Define the Investigation Footprint” DQO was revised to: “While the methods for determining the investigation footprint were performed using a series of calculations based on the spatial data, there is no procedure for quantitatively delineating these areas given the existing data. Therefore, the overall analysis is qualitative in nature and has also relied on the professional judgment of the engineers/scientists conducting the analysis to account for issues such as terrain, data inconsistencies, etc. These data inconsistencies were identified by benchmarking the data from previous investigations and removal actions against the QC requirements specified in this Work Plan. This benchmarking process was used to validate the data’s appropriateness for use in these spatial analyses. Details of this validation process are outlined in Section 3.1.3. Limitations in previous investigations, identified through the validation process, have resulted in an incomplete data set. Therefore, to limit the potential error associated with the qualitative use of the previous site data, procedures for expanding the investigation footprint are proposed if RI results indicate it is appropriate. These procedures for expanding the investigation footprint are described in Section 3.6.7 and depicted in Figure 3-3.”

The vertical study boundary identified in Step 4 of the “Determine the Location and Type of MEC/MD Present” DQO was revised to state that the depth of detection will be established during the GPO, and all geophysical sensor

operators will demonstrate a satisfactory ability to achieve this performance requirement prior to conducting RI data collection activities. This information was also clarified in Sections 3.5.7 and 3.5.11 of the Work Plan.

The decision error limits identified in Step 6 of the “Determine the Location and Type of MEC/MD Present” DQO was revised to state that all anomalies within a 2.5-foot radius of the reacquired location will be excavated and identified before attempting to determine a plausible cause for why the source peak was not identified. This was also clarified in Section 3.6.6.