

September 6, 2005

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

Mr. Ronald M. Levy  
BRAC Environmental Coordinator  
U.S. Army Transition Force  
P.O. Box 5022  
Anniston, AL 36205

**RE: ADEM Comments: Draft Engineering Evaluation/Cost Analysis, Bravo Area of the Redevelopment Area, dated December 3, 2004**

Fort McClellan, Alabama  
Facility ID No.: AL4 210 020 562  
DSMOA Site No.: 2535-223-0445

Dear Mr. Levy:

The Alabama Department of Environmental Management (ADEM or the Department) has completed review of the *Draft – Engineering Evaluation/Cost Analysis (EE/CA) for the Bravo Area of the Redevelopment Area of Fort McClellan, Alabama*, document dated December 3, 2004.

The Department has reviewed the Draft EE/CA Report for the Bravo Area in two parts. On March 28, 2005, ADEM submitted comments to the Army regarding the No Further Action (NFA) portion of the document (M3-Remainder Area-PR), and the Department has received the Army's August 3, 2005 response to those comments. The Army's response includes the clarification of many aspects of the Bravo EE/CA document, as well as a rewritten portion of the document. The Department understands that the Army intends to further revise the Draft EE/CA for the Bravo Area and resubmit it to the Department at a later date. The revision of the document is meant to include information that was omitted and to correct errors.

The Department believes that certain aspects of the investigation will be clarified with the Army's pending revision of the report. The Department, upon learning of the pending revision, elected to suspend review of the Draft EE/CA for the Bravo Area and submit to the Army the attached comments "as is". ADEM will perform a complete review after the document has been revised.

It should be understood that the attached comments cover a major portion of the document, but may not be all inclusive for the report. ADEM intends these comments to

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be used to help the Army with the revision of the Draft EE/CA for the Bravo Area report.

For any questions or concerns regarding this matter, please contact Ms. Shana Decker at 334-270-5646 or via email at [sdecker@adem.state.al.us](mailto:sdecker@adem.state.al.us).

Sincerely,

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

cc: Mr. Dan Copeland/CEHNC-OE-DC  
Ms. Tracy Peace/ADEM  
Ms. Miki Schneider/Joint Powers Authority  
Mr. Dan Cleckler/Joint Powers Authority  
Mr. Buddy Cox/Alabama Department of Transportation

File: Land Div/Hazardous Waste/Fort McClellan/AL4210020562/Correspondence/2005

**ADEM Review Comments**  
***Draft – Bravo Area EE/CA***  
**Fort McClellan, Alabama**

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*General Comments*

1. The Department has not made a determination if the M3-Remainder Area-PR is appropriate for the remedial alternative “No Further Action” at this time. A review of the August 3, 2005 Army’s response to ADEM Comments on the NFA portion of the Draft Bravo EE/CA is underway, and will be handled in a separate correspondence.

**Response:** Noted.

2. The response actions chosen for all sectors besides the M3-Remainder Area-PR seem to be entirely driven by the future land use. Specifically, if the parcel was identified as having a commercial, industrial, or residential future use, it was categorized as “development” (D). All “D” parcels ended up with a “clearance to depth” as the selected response action regardless of whether or not the investigation was adequate. Since this is the most thorough and protective MEC response possible, the Department sees little to question in this determination.

All parcels identified as “passive recreation” (PR), with the exception of M3-Remainder Area-PR, were assigned the response action of “clearance to one foot”. The issue of whether or not clearance to one foot is adequately protective will be discussed below in General Comments 3 and 4. But again, the default decision making scenario seems to be:

- a. Is the property contaminated with UXO? If yes, then:
- b. Is it identified as a “D” parcel? If yes, then select clearance to depth. If no, then:
- c. Is it identified as a “PR” parcel? If yes, then select clearance to one foot (with the exception of M3-Remainder Area-PR (NFA) only).

**Response:** Noted. All parcels identified by the same usage designation do have the same recommended alternative. The indicated depth of any potentially hazardous OE items in the area, and in some cases the indicated depth of OE scrap and debris, also were considered in the risk assessments and the comparative evaluation of response

alternatives. The option of construction support was considered separately for either future land use scenario.

3. The issue of whether or not clearance to one foot is adequately protective in “PR” parcels is problematic because all of the Conceptual Site Model (CSM) descriptions of these parcels identify “construction workers” as potential receptors (see Page 4-11 line 20 for an example). Additionally, the graphic CSMs for the “PR” parcels indicate that “commercial/industrial worker” and “construction worker” are potential receptors (see Page 4-35 Figure 4-4 as an example). If this is the case, then the Department questions whether the selected clearance to one foot is adequate. This may be an error in the CSM, because if construction or industrial and residential use is planned for a parcel, it should have been categorized as “D”, not “PR”.

If the CSM for any parcel changes from “PR” to “D”, then the selected remedy will automatically be directed to become clearance to depth. The Army should resolve this discrepancy.

**Response:** The comment is well taken. The development and revision history of the CSMs was reviewed. The original CSMs for all areas of Ft. McClellan (i.e., Alpha, Bravo and Charlie Areas) were developed early in the project for the “Characterization Sectors”. At that time, all “Characterization Sectors” in the Redevelopment Areas of Ft. McClellan were conservatively assigned a relatively full range of potential receptors associated with common redevelopment activity. As such, all these sectors within the redevelopment Area had commercial/industrial and construction workers indicated. When the “OE Risk Assessment Sectors” were established, their CSMs were initially derived from the CSM of the Characterization Sector” within which each was located. The receptors shown on the CSMs for the “OE Risk Assessment Sectors” were not changed at that time and still reflected the broad possibilities of redevelopment. When the 1997 reuse plan using the revised reuse map dated 2000 was incorporated into the project process, the projected land use area boundaries were explicitly considered, and the specific future uses were collectively considered either development (“D”) or passive recreation (“PR”). This information was used to define the boundaries and establish the names the “OE Risk Assessment Sectors”. However, the receptor sets shown on the CSMs were not refined or edited at this time and the original broad set of receptors (associated with redevelopment) remained. The CSMs will be modified to have the “PR” sectors indicate only the receptors reasonably anticipated to be associated with passive recreation (e.g., recreational user) and the “D” sectors indicate only the receptors reasonably anticipated to be associated with the redevelopment indicated by the 1997 reuse plan as revised in 2000 (e.g., commercial/industrial worker, construction worker). In the case of sector M3-Remainder Area-PR (in response to other comments), potential

receptors associated with future residential re-use also were considered and were reflected on that sector's CSM.

4. It would appear that for "PR" parcels where the selected remedy is clearance to one foot, clearance to depth may be able to be performed in these areas for minimal additional cost. The review of Table 3-1, "Ordnance and Explosives Items Found in the Bravo Area" (Page 3-30 through 3-47) shows that very little MEC was discovered below one foot. This is typical of ranges and not unexpected. Because of this, it is possible that a minor amount of extra work (excavating a small percentage of objects deeper than one foot) can achieve remediation of these sites to the clearance to depth standard, and will result in additional hazard reduction and increased flexibility with the future use of the property for minimal added expense.

**Response:** It is not possible to know the cost differential between a one foot clearance and a clearance to depth for the passive recreation areas. This cost differential would vary significantly depending on terrain and type of ordnance. Even ignoring those factors, because of the total amount of acreage (1,475 acres) for the passive recreational areas the cost differential could be significant.

5. The Department has not completed the review of the Army's August 3, 2005 responses to ADEM's comments on the NFA portion of the Draft Bravo EE/CA report. However, a brief overview of the response to comments document has raised an important issue. In several cases, the Army's response to comments points out that certain data can be found on the 81 CDs provided to ADEM on January 24, 2003. The Bravo EE/CA report does not reference the 81 CDs or the locations of relevant data on the CDs. Furthermore, it is inappropriate to refer to this data as part of this report unless every recipient of the report has the same 81 CDs. The data relevant to the Bravo EE/CA investigation effort, whether provided to ADEM in these 81 CDs or not, should be included as a part of this report in the appendices and referenced as such. Please include as a part of this report the geophysical maps, QC/QA forms, field logs, photos, and any other appropriate data.

All correspondence related to this project is part of the record available to the public. It should not be up to the reader to determine that certain information is contained somewhere on 81 CDs and, without a reference, be expected to go find that data. The Bravo EE/CA Report should be revised to be a stand-alone document containing all pertinent information, accurately incorporated into the report so that it is a viable, well presented matter of public record.

**Response:** The Army did not intend for the 81 CDs to be a part of the EE/CA report. ADEM had requested certain information such as documentation of instrument testing, field logs, and photos. Much of this documentation and information was on the CDs, but the Data Item Descriptions (DID) for the contract did not require this information to be included in the EE/CA report. In order to satisfy the ADEM request for the information, the Army provided the CDs in January 2003. Subsequently, at a meeting with ADEM in February 2004, Mr. Cobb stated there was sufficient characterization for areas where removal actions were proposed, and the historical EE/CA work was not subject to closer scrutiny. He further stated that additional characterization was required in the NFA areas. This led to the agreement to perform additional characterization in the NFA sector. To support the NFA recommendation for the M3-Remainder Area-PR sector, the revised EE/CA report includes information concerning the scope of the field work for the supplemental transects including the quality control data in the supplemental transects.

The remaining sectors that have been identified for clearance will be mapped during MEC clearance actions; and the documentation, including QC/QA and maps, will be provided in the MEC removal reports. ADEM will have the opportunity to review those reports.

### *Specific Comments*

1. The Department understands that the Army continues to use the Joint Powers Authority (JPA) approved land reuse plan as amended through November 2000 (Department of the Army letter dated October 24, 2003). It is the Department's understanding that the current land use plan differs from the land use plan used to design this investigation. Please provide a comparison of the land use (i.e. development, passive recreation, etc) in all risk sectors to the most recent proposed land use, if available. Include corrections regarding the risk analysis and other considerations if the property's land usage is different than the stated land use in the report.

**Response:** A risk assessment for residential reuse of the M3 Remainder Area-PR has been added to the EE/CA report. The level of reuse and cleanup for the remaining risk sectors will be negotiated with the JPA in the next phase of the Environmental Services Cooperative Agreement.

2. "Practice Ammunition" is defined on page xv line 12 of the Definitions section. Please also include the definition of "training ammunition", and explain the difference between the two terms.

**Response:** Definition added to that section

3. Page 1-1 line 6, and Page 2-1 line 19 state that the Bravo area of Ft. McClellan is approximately 3327 acres. However, in the Executive Summary, the acreage given for the Bravo Area is 1475 acres (Clearance to one-foot), 807 acres (Clearance to depth), and 1043 acres (No Further Action). This acreage adds up to 3325 acres. Please determine which figure is more accurate, and correct the report accordingly.

**Response:** Acreages reviewed, checked, and corrected where necessary. The correct acreage is 3,325 acres.

4. Page 1-2, line 15 states that a 200 foot buffer zone, which is clear of UXO, will be included around cleanup areas to ensure that the target and firing miss zones have been properly identified and cleared. Please include in the text what actions will be taken if an OE item or MEC scrap is found in the buffer zone.

**Response:** The following sentence added to end of paragraph: "If a UXO item is identified within the buffer area, the boundary will be extended and the area investigated to ensure a 200 foot buffer that is clear of UXO." This discussion is now located in Paragraph 3.5.1.1.

5. Page 1-3, paragraph 1.3.1: This paragraph describes grids, data collection transects, delineation transects, and mountain transects. There is no description of the supplemental mountain transects that were investigated in the summer of 2004, as per the June 2004 *Final Addendum to the Final Site-Specific Work Plan Bravo EE/CA*. Please provide a clear description of these supplemental mountain transects in the text.

**Response:** The following sentence added to end of paragraph: "Supplemental mountain transects (mountain transects T25 – T65) were 5 feet wide and each segment was 290 feet long." This information is now located in Paragraph 3.5.4.3 .

6. Page 1-3, lines 36-37: This sentence states that a public meeting and review period were included as part of the overall EE/CA process. The report contains no evidence of a public meeting and review process. It is not clear if this statement is correct. Please review and clarify the text.

**Response:** Sentence clarified to read "The EE/CA report is prepared and processed through a series of draft iterations. Prior to finalizing the EE/CA report, a public comment period and public meeting will be scheduled."

7. Page 2-1, lines 16-17: The text refers to Figure 1-1 at the end of this chapter (Chapter 2). Figure 1-1 is at the end of Chapter 1. Please revise the text.

**Response:** Text revised.

8. Page 2-6, section 2.4.5: Please update the text to reflect the current status of local industry (e.g. line 5-6 “Honda recently chose Lincoln, Alabama... as the site for their new automotive facility scheduled to open in 2002).

**Response:** Paragraph changed.

9. Page 2-11, line 5: Define the “Washington Range Area” in the text. Include this area on the maps as appropriate.

**Response:** The text was revised.

10. Page 2-6, section 2.6: This section is unclear whether the M3 and M4 sectors defined in the Bravo area were developed with the use of Archive Search Report (ASR) historical records included only, or the ASR and field reconnaissance activities combined. Please clarify the text.

**Response:** Information will be added to Section 8.0 of the Executive Summary and Section 2.2 on page 2-1 explaining that the Army and JPA divided Fort McClellan into parcels of property, designated by the letter “M” and a number, to facilitate discussions of transfer. The parcels were not developed for use in determination of where response actions would occur. The Bravo Area includes Parcels M3 and M4.

11. Page 2-11 lines 8-9, first bullet, states “The range was in continuous use as a rifle range and there is no indication of explosive ordnance being used on this range.” It is unclear what range is referred to by this statement. Please clarify and revise the text.

**Response:** The first bullet described the “Washington Rifle Range area” and this will be added.

12. Page 2-13, section 2.7.4: Please provide a brief description of what the “Environmental Photographic Interpretation Center aerial photograph investigation” entailed. Were historical photographs examined, or did this study utilize new photographs?

**Response:** Information will be added that historical photographs were reviewed.

**13.** Page 2-14, Section 2.9: Please update the status and results of all Interim **Removal Actions which have taken place in the Bravo Area to date.**

**Response:** Section updated to include current information.

**14.** Figure 2-1: Please include inset maps of Calhoun County and Fort McClellan, as in Figure 2-2.

**Response:** Inset maps will be added.

**15.** Page 3-1, Section 3.2, Deviations from Approved Work Plans: Please include in this section any and all addendums to the original work plans, including the June 2004 *Final Addendum to the Final Site-Specific Work Plan Bravo EE/CA*.

**Response:** This section was about the Site Wide Work Plan so did not include addendum information here. Information on the addendum is located in Paragraph 3.4.2.

**16.** Page 3-1, Section 3.2.1: Please specify all site-specific work plan addendums or revisions in this section.

**Response:** The 2004 is the only addendum.

**17.** Page 3-2, lines 16-17 states that information such as locations of firing ranges, firing points, etc. were gathered during the document review portion of the investigation, and compiled onto a current topographic map. Please include this map in the report.

**Response:** A reference to the Ranges and Impact Areas map in Appendix B will be added to the sentence.

**18.** Page 3-2, line 26: Metal detectors were used during reconnaissance activities. Please include the type of metal detectors used.

**Response:** "Schondstedt" will be added to section 3.5.1.5.

**19.** Page 3-3, lines 19-21: The following sentence needs further explanation: "One goal of the EE/CA sampling is to blend these medium density sectors into either high or low density area, or to confirm that no "high" density areas are located via EE/CA sampling."

- a. The Army should give reason in the text why the medium density sectors could or should be changed to either high or low density areas.

- b. The Army should explain what is meant by saying that one goal of the EE/CA sampling could be to confirm that no “high” density areas are located via EE/CA sampling. This sentence could be misconstrued to mean it was predetermined by the historical records search and reconnaissance that there were no high density areas in the Bravo area. The Department believes this was not the intent.

**Response:** This section (now located in 3.3.2.1) was updated to more clearly explain the approach.

20. Page 3-3, line 30-31: Please quantify the “miles of ground reconnaissance” performed by the Army. Also, please explain what is meant by “per comments”. Please identify the comments and who wrote them. Revise the text as appropriate.

**Response:** “Per comments” is a reference to conversations between the Project Manager, Risk Assessor and UXO personnel who performed the reconnaissance.” The miles of ground reconnaissance were not recorded because it was not the intent to walk a certain number of miles. The intent was to use the findings of the reconnaissance as the basis for the scope of work for the Alpha, Bravo, and Charlie EE/CAs. This entire section (3.3.2.2) was revised by the Risk Assessor and is now section 3.5.2.2.

21. The section 3.3.2.3 (Page 3-3, lines 36 on) requires expansion and revision. The entire section is difficult to read due to run-on sentences and inadequate or omitted explanations of technical methods used for determining site characterization. Please include better explanations of processes used to characterize the different sectors. Please address the following:
  - a. Page 3-3, line 42 through Page 3-4, line 4: These sentences describe some of the criteria used to determine the sector boundaries. These sentences should fall under paragraph 3.3.2.2.
    - i. Page 3-4, line 1: Please reference where the Conceptual Site Model (CSM) used for the site characterization can be found in the report.
  - b. Page 3-3, lines 38-42: Please reference the origin of the “UXO Calculator tool”. Please explain the limitations of the UXO Calculator tool in determining the amount of sampling that should be performed in an investigation.

- c. Page 3-4, lines 4-7: Please provide a better explanation of what the “Minimum Discrimination Sub Module” is, and how and why it was used.
- d. Page 3-4, line 9: The Department understands that the homogeneity requirement includes such factors as UXO density, terrain, soil type, etc. Please explain the “homogeneity requirement” necessary for the valid application of the UXO Calculator. Please explain what site-specific factors were taken into account to meet the requirement of homogeneity.
- e. Page 3-4, lines 10-11: This sentence states that a maximum target OE density value of 0.1 OE/acre was used in the Minimum Discrimination Sub Module calculations. On page 3-4 lines 14-15, the text states that 0.1 is used for industrial, 0.5 is used for Active Recreation, and 1.0 for Passive Recreation. The target OE density value of 0.1 OE/acre is defined at the end of the paragraph (lines 13-16) after the term is used repeatedly in the explanations of how the minimum acreage was calculated. Please include definitions before explaining how the maximum target OE density value is used, then discuss the calculations.
  - i. Please clarify which target density was used for each sector.
  - ii. Revise the paragraph to clarify the use of the specific maximum target OE density value for each sector.
- f. Page 3-4, line 16: The text states “Using these assumptions, a minimum of 143.5 acres of sampling (intrusive activities) would be necessary for the ten sampling sectors listed above”.
  - i. Please include discussion of general assumptions, and assumptions specific to each sampling sector.
  - ii. Please include a breakdown of how much sampling was required per sector.
  - iii. Please include a discussion of the amount of sampling that actually took place during intrusive activities.
  - iv. Please include a discussion, per sector, of the difference between the calculated amount of sampling and the actual amount of sampling, and give reasons for the changes if applicable.
  - v. Explain the criteria used to determine when an increase in the minimum number of acres to be sampled. For instance, if an OE item

is found in the middle of an area where no other OE items were found, then the assumption of homogeneity is invalid and the OE density value calculation would also be invalid. As a result, the minimum acreage which needs to be sampled would be increased to get to the desired target OE density value of 0.1 OE/acre.

- vi. Explain if and by how much the Army increased the minimum acreage to be investigated in each sector as is required by this protocol.

**Response:** The Section is being revised and reorganized based on these and other comments.

22. Page 3-5, paragraph 3.3.2.7: The field teams were given “some discretion” to depart slightly from the pre-determined path while investigating the delineation transects. Please define “some discretion” in the text. Please include in the text how the field teams’ position was recorded.

**Response:** The text will be revised to explain that “some discretion” means if the path of the transect is in line with a large tree, the team could go around the tree” or if the path would require the team members to have their left foot on a rock wall and their right foot on the ground; they could move the location of the transect slightly to the left or right to avoid the obstacle.

23. Page 3-5, paragraph 3.3.2.9:

- a. Transects are better used for searching out impact areas, range safety fans, and maneuver areas, while grids are generally better for determining density of UXO, or characterization at firing points, bivouac/encampment areas. Please give an explanation in the text for the change from performing data collection transects in Sector M3-1L to performing half acre grids. Also comment on the effects these changes had on the overall quality of the data for the purposes of this investigation.
- b. Line 15 states that grids would replace transects in the middle portion of Sector M3-1L. On the Bravo Area maps, Sector M3-1L is separated into five separate parts: M3-1L Rocket Area-D, M3-1L 37 mm Projectile Area-D, M3-1L Suspect Area 1-PR, M3-1L Mixed Projectile Area-PR, and M3-1L Suspect Area 2-PR. Please specify in the text in which area grids replaced transects.
- c. This paragraph begins by describing Data Collection Transects, but only describes grids done in the middle portion of Sector M3-1L. Please add

another paragraph which includes the description of Data Collection Transects in the text.

- d. Page 3-5, Section 3.3.2: Please add another paragraph describing the additional transects that were performed in July 2004, according to the June 2004 *Final Addendum to the Final Site-Specific Work Plan Bravo EE/CA*.

**Response:** a. The type of transects that are better used for searching out impact areas, range safety fans, etc. are delineation transects. The transects replaced in this area were data collection transects. Work in data collection transects had begun in the western portion of Bravo. However due to excessively dense vegetation in this sector, UXO personnel were experiencing great difficulty in clearing brush, collecting data, and completing of each cluster. The large amount of clearance work required just to begin work in each cluster caused many delays in the fieldwork schedule and the cumulative delays expected to complete the remaining clusters would have significantly delayed completion of the Bravo characterization. TtEC discussed these issues with USAESCH personnel, who visited the area to better understand the problems that the UXO teams were experiencing. TtEC, with agreement from USAESCH, proposed replacing the clusters with 75 grids. The proposed changes were presented to the BCT in August 2001 with assurance that the changes would provide for the same amount of sampling but with a different distribution and location. The BCT agreed that for the low-density areas, as long as the data quality objectives remain the same, the modification to grid sampling versus transects was approved.

b. M3-1L is referring to the *sampling* (characterization) sector. When the work in Bravo was initiated, Bravo was divided into 10 sampling or characterization sectors. Please refer to Figure 2-2, located at the end of Chapter 2.0, for the location sector M3-1L. The 75 replacement grids are the 500 series-numbered grids that are now located in sectors M3-Remainder Area-PR, M3-1L-Mixed Projectile Area-PR, M3-1L-Suspect Area-PR, M3-1L-37mm Projectile Area-PR, M3-1L rocket Area-D, and portions of M3-1H Mixed Use Area-D, M3-3H Rocket/Hand Grenade Area-D, and M3-2M Hand Grenade Area-PR.

c. The description of data collection transects is located in paragraph 3.3.4.2, second sentence.

d. Paragraph 3.3.5.8 has been added to describe sampling in the supplemental transects.

24. Page 3-5, Section 3.3.3: Please specify in this section the number and types of grids and transects established per sector.

**Response:** This section is being revised based on these and other comments. The number and type of grids and transects established per sector is now included within each sector-specific chapter (i.e. A-1 Reconnaissance Area – D is now described in Chapter 8).

25. Page 3-5, Section 3.3.3.1: This section is labeled “Site Preparation”. However, no site preparation activities are described. Please revise the text to include a description of the site preparation activities, per sector.

**Response:** This section is being revised based on these and other comments.

26. Page 3-6, Section 3.3.3.2: This section describes the surface clearance activities.

- a. This section does not clearly describe surface clearance activities. Please clarify what steps were taken (i.e. brush clearance, tree cutting, surface sweep, etc.) to perform the surface clearance in grids and in transects.
- b. Please break down the number and area of grids and transects cleared per sector.
- c. Please reference in the report the number and type of items recovered during surface clearance activities can be found. Break this information down per sector.
- d. Lines 17-20: This paragraph describes intrusive sampling activities and the resulting characterization of the Range 16 area (M3-3H and M3-2M). The circumstances of the Range 16 investigation and the characterization would be better located in another section of the report, such as section 3.4 “Source, Nature, and Extent of OE”, rather than in the surface clearance portion of the report.
- e. Line 31: It is not clear how “exclusion zone considerations” allowed surface clearance activities but did not allow geophysical data to be collected. Please include an explanation in the text.
- f. Please reference in the text, areas that had limited brush clearance or were not brush cleared before surface clearance.

**Response:** a. This section is being revised based on these and other comments.

b. Regarding the request to break the information down per sector, please note that when the work in Bravo was initiated, Bravo was divided into 10 sampling or characterization sectors. Acreages cleared were not tabulated and recorded per risk sector. However, a rule of thumb is that acreage that was

geophysically mapped was surface cleared. See Table 4-2 for acreages per sector that were geophysically mapped.

c. The items recovered during surface clearance activities were entered into the Bravo Database and have been included in each version of the EE/CA in Table 3-1 and in the Appendix. Surface clearance items are those items with a depth of 0 inches. These items are now included in each sector-specific table.

d. Concur, information moved to more appropriate section.

e. This sentence is referring to 2 different circumstances. It is not worded clearly and will be revised. The 1<sup>st</sup> circumstance is where geophysical data could not be collected in M3-3H Rocket and Hand Grenade Area-D and M3-2M Hand Grenade Area –PR because during surface clearance activities; 40mm items were identified and no one could re-enter those grids. Please note that when intrusive activities were ongoing; several teams were working at the same time in different grids (e.g on a given day the surface clearance team would be working in one grid, the geophysical team would be working in a grid that was cleared, and the intrusive team could be working in a grid that was cleared and mapped.) Therefore, some grids in these areas may have received mapping, and some intrusive, prior to the first 40mm's being discovered. The 2<sup>nd</sup> circumstance and second part of this sentence is referring to Sector M3-1L Rocket Area – D where intrusive activities could not be performed due their close proximity to the Fort McClellan Boundary and the requirement to close down a highway and evacuate the public. The intent of this paragraph is to discuss the grids and transects that were characterized; not to discuss either surface clearance or geophysical mapping. This paragraph will be moved to a more appropriate location.

- 27.** Pages 3-6 through 3-10, Section 3.3.3.3 Geophysical Data Acquisition, Section 3.3.3.4 Geophysical Data Processing, Section 3.3.3.5 Geophysical Data Interpretation, and Section 3.3.3.6: These sections have been revised by the Army and are contained in the Army's August 3, 2005 response to ADEM's March 28, 2005 comments on the NFA portion of the Bravo EE/CA. The Department defers complete review of this section until either the report is resubmitted, or until the Army's August 3, 2005 response to ADEM comments is reviewed. The following comments are based on the Department's review of the original document. If any of following comments are not addressed in the revision, please ensure that they are included into the report, as necessary.

**Response:** Noted.

**28.** Page 3-6, Section 3.3.3.3

- a. Please delineate in the text, per sector, the number of grids, data collection transects, and delineation transects where geophysical data was collected. Also include how many mountain transects there were, per sector, where digital geophysical data was not collected (geophysical data acquired using White's metal detector, audible signals only).
- b. Page 3-7, line 6: Please define the "oversized grid method" in the text.
- c. Page 3-7, line 11 refers to "the following figures", however, no figures follow. Please specify in the text the intended reference to the figures.
- d. Paragraph 3.3.3.3.1 describes the geophysical data acquisition in grids. On page 3-7 line 7, the text states that the oversized grid method was utilized for geophysical data collection in the grids with the exception of grids within Sector M3-1L.
  - i. Please clarify why grids were done differently in Sector M3-1L.
  - ii. Page 3-6, line 39 states that digital geophysical data was collected in 209 grids (135 original and the 74 replacement grids in M3-1L). In line 39, please clarify what is meant by "replacement grids" in M3-1L.
- e. Page 3-6, line 40 states that digital geophysical data was collected in the data collection transects. Section 3.3.3.3.1 (page 3-7, lines 4-21) describing the geophysical acquisition in the grids is not specific on whether the data was collected, recorded, and processed, or if only audible signals were used to flag anomalies. On page 3-7, line 34-36 states that the intrusive investigation in data collection transects was based on the flagged anomaly locations, rather than processed digital geophysical data. It is not clear if the digital geophysical data was collected, recorded, and processed. Please clarify in the text if the digital geophysical data was recorded for the grids, data collection transects, and delineation transects. If the grids, data collection transects, and delineation transects were investigated using the EM-61 in audible mode only, then the report should reflect this. If this is the case, then please explain the justification why the digital data was not recorded.
- f. Delineation transects are not clearly described in section 3.3.3.3.4 (page 3-7, lines 37+). On line 40, the text refers to "grid sampling activities", however, the paragraph is discussing delineation transects. Furthermore, the text states

that data was collected for anomaly distribution only, and no intrusive activities were conducted.

- i. Please clearly describe the delineation transects.
- ii. It is not clear if the EM-61 data was recorded and processed.
- iii. It is stated (page 3-7, line 41) that 13 new delineation transects were added to further characterize a new high OE density area. In the next sentence, the text states that there are 70 transects. It is not clear if the data collected in the first set of delineation transects (before 13 were added) were intrusively investigated. The text states on page 3-8 line 3-4, that “these data were collected for anomaly distribution only” and that “intrusive activities were not performed along delineation transects”. Please clarify this paragraph.

**Response:** This section is being revised based on these and other comments.

- a. Please refer to Table 4-2 for acreages geophysically mapped per sector.
- b. The oversized grid method is simply that if a planned one-acre grid contained obstructions within its boundaries that reduced the acreage that could be geophysically mapped; then the overall boundary of the grid was extended until the planned acreage could be mapped.
- c. This reference is to the figures in the entire document that graphically display grids (e.g. ES-1 and the overview map).
- d. The grids in sector M3-1L were replacement grids. These grids replaced data collection transects. This is described in paragraph 3.3.2.10.
- e. Geophysical data was collected, processed, and interpreted in 209 grids. Geophysical data was also mapped and processed in 145 data collection transects. Of the 145, 103 were processed, but the intrusive investigation of anomalies was based on flagging audible anomalies and digging the flags as described in section 6.6.3.2.4 of the Bravo work plan. This section has been revised to more accurately reflect the field work.
- f. The following will be added to the section: Delineation Transects are basically straight segments approximately 3.5 feet wide with varying lengths. Several Delineation Transects would be established in a particular area in a north-south and east-west grid-like pattern and walked for data collection.

No intrusive activities occurred in Delineation Transects they were only for anomaly distribution.

A description of the transect method is now included. EM-61 data was recorded; but not processed.

29. Page 3-7, lines 34-36: The text states “Per the work plan for this EE/CA, the intrusive investigation within the data collection transects was determined based on flagged locations rather than processed digital geophysical data.” The Department understands that in the data collection transects (also know as “clusters” or “ribbon transects”), the EM-61 was used in the audible mode to identify anomalies to be investigated later. Since the EM-61 data was not processed, it seems that the use of the EM-61 provides the same detection capability as using Whites or Schondstedt for “mag and flag” or “mag and dig” type of operations. The Department has recently expressed concern for “mag and dig” methodology in several cases. One concern is the repeatability or reliability of the data collected in the data collection transects using . The Department does not understand why the Army did not process the EM-61 geophysical data to verify the validity of the anomalies chosen for investigation. It seems this would be very helpful to the investigation from a QA/QC standpoint. Please clarify why the EM-61 data was only collected in the audible mode, rather than recording and processing the data.

- a. In the past year, the Army has demonstrated to ADEM the difficulties that are encountered when attempting to find ordnance items using only audible signals during recent investigations. The EM-61 was used in the Data Collection Transects around Yahoo Lake, however, only audible signals were used to mark anomalies. Please explain the rationale behind using the EM-61 only in audible mode to characterize an area, especially when the EM-61 has the capability to provide a digital record of data, as opposed to other methods (White’s, Schondstedt’s) that do not have this capability.

**Response:** a. The use of an EM-61 in an audible mode provides improved detection capability over a Whites or a Schondstedt because the EM-61 allows for better detection of anomalies at greater depths and reduces false positives as a result of surface scrap and geology. Tetra Tech has found that with proper setting of the audible signal, the selection of the anomalies could match those selected post-processing. The method selected for data collection in the transects was described in Paragraph 6.6.3.2.4 of the approved Work Plan that was approved by ADEM.

- b. Explain the criteria the operators used to discriminate between EM61 signals considered strong enough to flag a location, and signals that were passed over for no further investigation. Is there a digital readout showing the strength of signal, or is it, as the report states, just an audible signal? When using the

EM-61, there is a threshold that is based on the GPO to determine the minimum millivolt criteria for digs. What threshold was used for this investigation? Was the audible sound based on an equivalent millivolt for dig criteria? Was there an audible part of the GPO, and are there procedures for using an EM-61 in audible mode?

**Response:** b. During the training for the 1D transects at the commencement of the Bravo effort, TtEC geophysicists performed a test at the Eastern Bypass test grid with the 1/2m coil EM61 MKI in audible mode. They traversed over the known locations of the 37mm projectiles (at least two) and adjusted the "zero" knob on the EM61 backpack to produce an audible signal over this target, as it was the smallest for the investigation. In general, what they trained the operators to do was to adjust the volume (headphones were recommended) so they could not hear the instrument "hum", and then slowly turn the compensation knob up until they heard a slight "hum". This represents the sensitivity necessary to find the 37mm. The instrument can "drift", and when this occurs (i.e., the "hum" disappears, or becomes louder) it is necessary to re-null the unit for optimum sensitivity.

**30.** Page 3-8, lines 18-19: The report did not include the documentation sheets which were completed for each processed grid. Please include this documentation in the appendices.

**Response:** The contract did not require this information to be included in the EE/CA report. As stated in the response to General Comment 5, ADEM agreed that for areas where removal actions were proposed, there was sufficient characterization and the historical EE/CA work was not subject to closer scrutiny. In the area recommended for NFA, the Army performed additional characterization and the revised EE/CA report includes documents for the supplemental transects in the M3-Remainder Area-PR sector to support the NFA recommendation.

**31.** Page 3-8, line 22-23: Only one example of the processed geophysical data is included in the report (Figure 3-1). No other color coded image maps were included in this report.

- a. Please include in the report all the geophysical maps (dig sheets) for the Bravo Area.
- b. Figure 3-1 (page 3-26):
  - i. Please include a legend showing the millivolt scale and color codes.

- ii. Please discuss in the text the minimum millivolt threshold used to locate anomalies to be investigated.

**Response:**

- a. Please see the response to Comment 30.
- b. A legend showing the millivolt and color code has been added to Figure 3-1. Anomalies were selected NOT by mV threshold only but by the process outlined in the Bravo EECA report. The following will be added to the report: The interpreter selected the anomalies using the criteria specified in the Site-Wide Work Plan. In general, these criteria include amplitude, shape, and relationship between Ch1 and Ch2 of the EM61 signal; repeatability (standard deviation) and shape characteristics of the data points surrounding the potential target; assessment of cultural features (e.g., roads, buildings) within or adjacent to the survey area; and other pertinent information gathered from the acquisition team on the terrain, vegetation, and geology.

For the Bravo 2D grids, if an anomaly was on two adjacent acquisition paths, > ~ 2-3 mV, and had an in-line width of ~ 1 meter, it was selected and transferred to the geophysical digsheet.

32. Page 3-7, lines 7-9: “Within each 1 acre grid, one-half acre of geophysical data was then collected, and within each half acre grid, one-quarter acre of geophysical data was collected.”
  - a. Several grids (numbers 191, 139, 123, 006, and 004 for example) appear to be smaller than the rest of the grids. Please explain in the text if these grids are smaller, and if so, why?
  - b. This method is not clearly described in the text. Please provide a better description of the Oversized Grid Method in the text. Clarify the overall acreage, in grids, geophysically mapped per sector.

**Response:** a. The following will be clarified in the text. The area of the grids depicted on the overview map is the area that was geophysically mapped. The grid numbers specifically mentioned in part a. (191, 139, 123, 006, and 004) were half-acre grids. Therefore, one-quarter acre was mapped in each grid and is so depicted on the overview map. Grids that appear larger are grids such as Grids 501 through 590 that were one-acre grids. In these grids, one-half acre was geophysically mapped and so they are twice the size of the one-half acre grids. There is also a third circumstance regarding the size of the grids as depicted on the overview map. The grids that were “characterized” due to ordnance safety issues are not sized according to what was geophysically mapped. This is because these grids were not

mapped. The depiction of these grids on the overview map is not tied to a correct acreage but is simply an arbitrary square to show the planned location of these grids (for example look at Grid 143 (one of the 33 characterized grids)). The oversized grid method is simply that if a planned one-acre grid contained obstructions within its boundaries that reduced the acreage that could be geophysically mapped; then the overall boundary of the grid was extended until the planned acreage could be mapped.

b. Table 4-2 in Chapter 4, Risk Assessment provides a breakdown by sector of areas mapped and intrusive. For the revised version of Bravo, this information will also be included in each sector-specific chapter.

**33.** Page 3-9, Paragraph 3.3.3.5.2:

- a. Please include the signal magnitudes (in mV) used to generate the color coded EM61 data (shown in Figure 3-1) for grids.
- b. In addition to the explanation provided, also include a discussion of what signal magnitude (mV) was used to help determine the targets to be intrusively investigated, and what level was considered background noise.

**Response:** A color scale has been added to Figure 3-1. Anomalies were selected NOT by mV threshold only but by the process outlined in the Bravo EECA report. The following will be added to the report: The interpreter selected the anomalies using the criteria specified in the Site-Wide Work Plan. In general, these criteria include amplitude, shape, and relationship between Ch1 and Ch2 of the EM61 signal; repeatability (standard deviation) and shape characteristics of the data points surrounding the potential target; assessment of cultural features (e.g., roads, buildings) within or adjacent to the survey area; and other pertinent information gathered from the acquisition team on the terrain, vegetation, and geology.

For the Bravo 2D grids, if an anomaly was on two adjacent acquisition paths, > ~ 2-3 mV, and had an in-line width of ~ 1 meter, it was selected and transferred to the geophysical digsheet.

- 34.** Page 3-9, lines 41-44: Primary targets are defined in lines 41-42, but secondary targets are not defined. Please add a definition and explanation of secondary targets. Line 42-44 states: the primary and secondary classification was used to assist in the sampling program for grids where only a percentage of the targets were excavated.” Please explain this sentence further in the text. Clarify per sector, which grids had only a percentage of the targets intrusively investigated, and which grids had 100% of targets excavated. It is the Department’s

understanding that to get “credit” for investigated acreage in UXO Calculator, that 100% of identified targets must be excavated.

**Response:** A definition for secondary targets has been provided. It has been our approach that credit can be taken for sampling some quantity of area if it is both surveyed and intrusively investigated. Information will be added to the report to explain that the convention at Ft. McClellan, and at most other UXO sites, is that you can take sampling credit for the acreage surveyed in direct proportion to the fraction of primary targets or anomalies that were intrusively investigated. For example, take the case where 10 acres is surveyed within a particular area and 100 primary targets are identified. If all 100 primary targets are dug and positively identified, the sampling credit would be  $10 \times (100/100) = 10$  acres. If, however, only 40 of the primary anomalies are dug and positively identified, the sampling credit would be  $10 \times (40/100) = 4$  acres. Credit is directly tied to the fraction of the primary targets intrusively investigated.

35. Page 3-10, line 12: Include a brief description of the “tape and line method” in the text.

**Response:** Description included.

36. Page 3-10, Paragraph 3.3.3.6: The paragraph describes geophysical target reacquisition in the 2D grids, delineation transects, and data collection transects. Please add a description of the geophysical target reacquisition method used for mountain transects and the additional mountain transects (described in paragraph 3.3.3.8).

**Response:** The following will be added: No targets were reacquired in the mountain transects or supplemental transects because they were acquired real-time. These transects were flagged using audibles.

37. Page 3-11, Paragraph 3.3.3.8: This paragraph is about the “additional sampling” performed in the M3-Remainder Area-PR sector in July 2004. Please revise the text to refer to these transects as “supplemental transects” to be consistent with the Departments March 28, 2005 comments on this document.

- a. Please include more information in the text on the “additional sampling”. How many transects were added? What are the transect numbers? The additional transects are not differentiated from the original mountain transects done during the first sampling activities. The additional transects were done differently than the original mountain transects. Please add an explanation of

how these transects were done, and how they differ from the other types of transects in the Bravo EE/CA sampling activities.

- b. The text states that only four supplemental transects (T30, T31, T44, and T63) contained a total of 6 OE Scrap items. Please include data such as the number of digs performed, the number of non-OE scrap items found, etc.
- c. The Department notes that no data on these transects is presented in the report. Please include all data collected in these transects (i.e. dig sheets, QA/QC information, etc.).
- d. See also the Comments on the Bravo Area EE/CA provided by the Department on March 28, 2005 regarding the definitions of OE scrap and the additional sampling effort.

**Response:** The section will be revised. The data on these transects will be included in the report.

- 38.** Page 3-11, Section 3.3.3.7.4: This section describes the use of the Minimum Discrimination Sub Module to of the UXO Calculator tool to determine the amount of sampling to perform in “low likelihood” areas. The tool was used in the M3-Remainder Area-PR, and based on the results, 32 more grids were added (page 3-11, line 25-26). Furthermore, on line 27-28, the text states that “additional sampling was conducted to further delineate the boundaries of suspected OE contamination and low areas”.
  - a. It is unclear if the additional sampling (from line 27-28) is referring to sampling additional to the 32 added grids, or if it is referring to the additional mountain transects which are described in Section 3.3.3.8 (Additional Sampling). Please clarify.
  - b. In the M3-Remainder Area-PR, the UXO calculator tool was used to determine the minimum amount of sampling to be done if no UXO was found. The sampling was found to be deficient, therefore the contractor added more grids and transects. Apparently this was determined to be sufficient. However, there was a 37-mm shrapnel projectile found right in the middle of M3-Remainder Area-PR, and the Army drew boundaries around this item to delineate boundaries for either future investigation or remediation. The apparent usefulness of this action was to not have to do further investigation in the M3-Remainder Area-PR. It appears that the finding of this UXO item would have caused the Army to have to increase the amount of sampling necessary to get this area to a “No Further Action” classification. Please

explain why this property was eliminated from the M3-Remainder Area-PR, and the implications the UXO item found in the area would have on the investigation of this sector if the boundaries were not delineated around the item.

**Response:** a. The additional sampling refers to the “32 grids”. Section will be reviewed and clarified.

Response: b. The finding of this one UXO was believed to be an anomalous find. There were no other findings in the surrounding area, either in grids or transects. To be conservative, the Army delineated the area as an area to be cleared. As the area is cleared, the boundaries will be extended by a minimum of 200 feet that is clear of UXO.

- 39.** Page 3-12 & 3-13, Section 3.4.1: This section needs to be revised to more succinctly reflect the number of grids and transects investigated in the EE/CA sampling effort. Page 3-12, line 37 states that 242 grids were investigated.
- a. It is unclear whether the 242 grids (page 3-12, line 37) includes the 32 additional grids mentioned on Page 3-13, line 15.
  - b. It is unclear whether the numbers of anomalies identified in the investigation (paragraph 3.4.1.1) include the information collected from the 32 additional grids (paragraph 3.4.1.2), the July 2004 additional transects (paragraph 3.4.1.3) the Parsons ES (paragraph 3.4.1.4), and the 34 OE/UXO items found by IT Corporation (paragraph 3.4.1.5). Please revise the text to clarify this issue.
  - c. The overall number of grids and transects and the total number of anomalies/OE/UXO found in the entire Bravo area does not seem to be relevant or helpful to the purpose of the document. The investigation was intended to narrow down the Bravo Area into sectors where UXO contamination is or is not present, and provide data to help determine an appropriate remedial alternative for each sector. The “Investigation Results and Findings for the Sampling Sectors” section of the report (page 3-12, line 32) should present data for each sampling sector individually, list the number of grids and transects performed in each sector separately, and the number of OE/UXO related items, etc. found in each sector. Please revise Section 3.4.1 to present the data in an effective way to present the data in a more useful way.

**Response:** Section will be revised. The additional sampling in 32 grids was in existing grids that had been surveyed, surface cleared, brush cleared, and geophysically mapped. All

primary and secondary anomalies in these existing grids were investigated. Report has been reorganized to present the requested information on each sector as an individual chapter.

**40.** Appendix C: The “Quality Assurance Audit Evaluation” contains four major Quality Control Elements were evaluated in this audit to verify acceptable contractor performance.

- a. Section 3.1 Geophysical Prove-out Results. There are no results of geophysical mapping activities included in the report. The Department requests that the GPO results, or at least a summary of the results, to be included in the section entitled “Geophysical Prove-out Results”.

Response: No additional Geophysical Prove Out was conducted as part of this Task Order. The Geophysical Prove Out was part of the procurement effort in the selection process for the contract. Although details of the Procurement action are still procurement sensitive, a summary of this contractors result was that 33 of the 40 seeded items were detected by this contractor. The location accuracy was 28 of these items were within 0.5 meters, with the final 5 items being within 1 meter. The depth accuracy of this contractor was 20 items determined within 10 cm of the actual depth. Similar results were achieved for the non-seeded “real ordnance items” located within the evaluation grid. This evaluation was performed before the 11X depth rule was determined and most (if not all) of the non-detected items were buried below this 11X depth. The results of this performance evaluation is what led USAESCH to investigate further these results to see if this relationship of depth of detection was consistent across the sites located in the contiguous United States. Analysis of the additional sites revealed that this is indeed a technological limitation with the currently available commercial detectors and was used to develop the current minimum required depth of detection standard for the contract Geophysical DID. Note - Equipment testing was performed by TtEC on a local TtEC installed test grid that was used to evaluate equipment and train personnel and was used during the Bravo EECA. No report was required under the terms of the Task Order. Information will be added to the QA report.

However, a synopsis of the internal training conducted by TtEC is being formulated into a “GPO” like report and will be included as an appendix to the EE/CA.

- b. Section 3.2 Government Field Oversight of Data Acquisition and Data Processing Operations:
  - i. This section of the report contains a partial listing of what items were checked for and optimized during this pre-operation check. There is no further information provided regarding the Government Field

Oversight activities which reportedly took place. Please provide this information in the text.

**Response:** An updated section, which is a summary of the results, recommendations and actions taken by the contractor (if any), has been inserted into Section 3.2.

- ii. The first sentence states that the “Huntsville Corps of Engineers Chief Geophysicist performed three separate field oversight operations during the Bravo EE/CA geophysical mapping project”. Please give details regarding these three separate field oversight operations. Please give information regarding the results of the Government field oversight activities.

**Response:** Same as above.

- c. Section 3.3 Government Review of Digital Geophysical Data (page C-8 – C-13):
  - i. “Appendix A” of the “Quality Assurance Audit Evaluation”, reportedly containing examples of grids the CEHNC reviewed, is not included in the report. Without “Appendix A”, no examples of grids digital geophysical data are available. Please include the “Appendix A” in the report.

**Response:** The grid maps are now included on CD as Attachment 1 to the Quality Assurance Audit Evaluation.

- ii. The text states that “a random selection of numerous grids was processed and dig lists made and compared to FWENC dig lists”. How many grids were checked in the government’s QA?

**Response:** A total of 47 grids, randomly selected from data submittals from July-December 2001 were reviewed by the USAESCH Geophysicists. These data were gridded and plotted in Surfer, and target selections were made for comparison to FWENC picks. If FWENC geophysicists did not have at least all of the same dig selections as the USAESCH geophysicists, the additional dig selections were passed along to the USAESCH Site Safety and dug as QA picks. If any ordnance items are uncovered in the QA digs, this would initiate a root cause analysis and the results and

recommendations would be listed in the QA report. Any problematic data were brought to the attention of the Chief Geophysicist and then discussed with the contractors Geophysicists until resolution. The issues previously detailed under field oversight, (interference from navigation equipment, cones used for sight guides in middle of grid, cracked coil, etc.) are examples of this. Information will be added to the QA report.

- iii. There is no comprehensive data regarding the U. S. Army Corps of Engineers (USACE) review of Digital Geophysical Data included in this report. Please provide QA data and summary report, on disc if possible.

**Response:** QA grid maps (jpegs & surfer) are on CD. See above.

- iv. Figures 1 through 5 on pages C-9 through C-13 include no units on the *x*- and *y*- coordinates. Please include units on the example maps.

**Response:** All units are U.S. Survey Feet, the same as that used for the project by the contractor. QA maps and reprocessing are done to detect systematic errors or omissions. They were never meant for publication (which would multiply the time required to complete each map by a factor of 6). To keep costs minimized while maximizing the number of data sets that can be reviewed under budget constraints, coordinates and legends are not normally included for QA checks.

- v. Figures 1 through 5 on pages C-9 through C-13 have no reference millivolt legend or color scale. Please include the millivolt scale legend on each figure.

**Response:** An example contour level image will be added, and a statement will be added saying that all maps were made using contour intervals of 5mV, with blue for -10:-5 and pink-to-red for 5:80. To keep costs minimized while maximizing the number of data sets that can be reviewed under budget constraints, coordinates and legends are not normally included for QA checks

- vi. The Department notes that there could be confusion between “Appendix A” of the Bravo EE/CA Report and “Appendix A” of the Quality Assurance Audit Evaluation (Appendix C of the Bravo EE/CA). Please consider some way to distinguish the two sections of the report.

**Response:** The grid maps are now referenced as Attachment 1.

- d. Section 3.4 Comparison of Excavation Results with Geophysical Data Results (Page C-13): The report states nothing more than the results were “favorable”. Without any data available in the report, there can be no determination of the thoroughness or quality of the Quality Assurance work performed by the USACE, and therefore the quality of work performed by FWENC. Please include data to support the “favorable” comparison of excavation results and geophysical data.

**Response:** Dig results were reviewed, but there would be no documentation unless something was wrong and we made the contractor redo or re-evaluate digs, which would have been documented in the QA report if it had occurred. Additional columns were subsequently added to the digsheet in later DID requirements to include documentation of this feedback loop being performed but that was after this project was completed.

41. Page C-9: “In several grids, CEHNC discovered bad data from the bottom coil of an EM61. This problem was caused by a crack in the bottom coil. The solution was to process the top coil data rather than redo the affected grids.”
  - a. Explain how many grids were affected by this cracked EM61 coil. Please provide the grid numbers and what sectors were affected.
  - b. Explain how the processing of the top coil alone affects the digital data product, as compared to processing the top and bottom coil.
  - c. Include the information regarding data affected by the EM61 bottom coil being cracked in the variance section of the report.

**Response:** Information will be added to the QA report. Two of the QA-processed grids were affected, both submitted on July 24, 2001: 053y02 & 052y02r. Four additional grids were processed from this submittal and did not exhibit the problem.

Slightly more noise is evident due to the increased gain of the top coil which would account for more false positives being dug and a slight decrease in maximum depth of detection due to the increased distance from the target item to the upper coil.

42. Only “five minor data quality control concerns” (page C-13 section 4.0) are highlighted as problems caught by the USACE review of geophysical data. Considering the time span of this project (2000 to 2004), and all the different types of grids and transects sampled in this effort, it is hard to understand that the USACE only came up with five problems with the geophysical data.

Furthermore, there is no QA data for the data collection transects, delineation transects, mountain transects, or supplemental transects, either using EM-61 or other magnetometer instruments. There is also no data regarding the QA of the work done while the EM-61 in audible mode. Please provide a more comprehensive report of the USACE findings.

**Response:** No QA seeding or remapping was done for the transects since this is extremely hard to know where the contractor will walk his transect. USAESCH only reviewed transects to ID obvious equipment problems. The USACE Geophysicist did not perform any QA on the work done in audible mode. We review digital data, which was not requested or collected.

43. Appendix D: Areas 247Q, A1, A2, and A3 are small portions of land either outside or adjacent to the Bravo Area. Please explain why the Army chose to present field reconnaissance reports for those areas, but chose to exclude the field reconnaissance report for the Bravo Area.

**Response:** The findings of the reconnaissance were the basis for the scope of work for the Alpha, Bravo, and Charlie EE/CAs. It is included as Appendix C in the site specific work plan for the Bravo Area but was not intended for use as stand-alone report. The information presented on the Bravo Area in the EE/CA is far more detailed and a continuation of the information collected during the reconnaissance. The field reconnaissance information for Areas A1, A2, and A3 was presented as a Fact Sheet in Appendix D to provide a basis and rationale for why these areas were excluded from the Bravo EE/CA. Field reconnaissance results for Bravo were not excluded; rather they were used to design the Bravo EE/CA sampling plan.

#### *Other Specific Comments*

1. Page ES-2, line 38 – page ES-3 line 12: Please give the definition of the designation letters “D” and “PR” in the Bravo risk sector titles. **Definition added.**
2. Page ES-4, line 1: When an acronym is used, please spell out the words and place the acronym in parenthesis when it appears for the first time. This comment applies to all acronyms the first time they are used in the text, in addition to their inclusion in the list of acronyms and abbreviations. Other instances include but may not be limited to: page 1-3 line 43, “NPL”. **Text reviewed and items added.**

3. Page xiv, line 13: Change “bum” to “burn”. **Corrected.**
4. Page xv, line 17: Bold “Surface Clearance”. **Bolded.**
5. Page 1-2, line 24: Capitalize “Figure 1-2”. **Capitalized.**
6. There seems to be a numbering problem in Chapter 1. As written, there are two sections numbered 1.3.1. Please fix the numbering in this chapter. **Renumbered.**
7. Add “(HE)” after High Explosive on page 1-2, line 44. **Added.**
8. Page 1-3, line 35: Change “Abbreviations” to “Definitions”. Also, the title page for “Acronyms and Definitions” section is different from the title on page xi, which is “Acronyms and Abbreviations”. **Changed.**
9. Page 2-1, line 16: Figure 1-1 is not at the end of this chapter. Is the intent to refer to Figure 1-1 in Chapter 1 or to Figure 2-1 in Chapter 2? Please correct the text. **Corrected.**
10. Page 2-12, line 12: The text as written is unclear if the phrase “the site” is referring to Fort McClellan in its entirety or the Bravo Area. Please revise this phrase to say “site wide” instead of “the site”. Likewise, in line 13 of the same page, the phrase “at the site” should be revised to say “at Fort McClellan” for clarity. **Sentence is referring to Fort McClellan as entire base. Sentenced changed to reflect this.**
11. Add Figure numbers to the two maps in Appendix B (“Bravo Area EE/CA Overview” and “Bravo Area Ranges and Impact Areas”). **Figure numbers added.**
12. Page 3-3, line 31: Add a reference the comments referred to in this sentence. **Reference added.**
13. Page 3-7, line 28-29: Please reference Figure 3-2 for a diagram of “data collection transects” and elsewhere as appropriate. **Section rewritten.**
14. Page 3-8, line 34-35: This paragraph discussed the data collection transects and the delineation transects. Change “grid” to “transect” in line 34. **Corrected.**
15. Page 3-8, line 6 and line 24: Please explain the difference between the two-dimensional (2D) grids and one-dimensional (1D) grids the first time they are used in the text. **Explanation added.**
16. Page 3-10, line 4: Spell out SR’s. **“Stationary Receiver” added.**

- 17.** Page 3-12, line 22: What areas are meant by “those areas”? Please revise the text.  
[Text revised.](#)
- 18.** Page 3-12, line 38: Add the number of additional sampling transects to the list.  
[Information added.](#)