

RESPONSE TO COMMENTS

**Response to Alabama Department of Environmental Management Comments
Draft Site Investigation Report, Sinkholes at Pelham Range
Fort McClellan, Calhoun County, Alabama (dated January 2003)**

Comments from Stephen A. Cobb, Chief, Governmental Hazardous Waste Branch, ADEM Land Division, dated January 16, 2004.

General Comments

Comment 1: The text of Fort McClellan's report should clarify the definition of "sinkholes" for the purposes of the Army's investigation at Pelham Range. On November 6, 2001, Mr. Philip Stroud of ADEM, Steve Moran of IT Group, Mr. Doyle Brittain of the EPA, and Major Bernie Case of the Alabama National Guard conducted a field visit to Pelham Range to inspect the numerous sinkholes. At that time, ADEM visited all of the sinkhole areas to better understand the terrain, to inspect for contaminant source areas (relative to the sinkholes), and to inspect for potential conduit-sinkhole connections to groundwater-bearing formations. During the site visit, ADEM noted that the reported sinkholes did not in fact appear to be open crevices or open holes, nor were they noted to contain surface water features. They merely appeared to be relatively low topography areas of various sizes ranging from 30 x 60 ft to 550 x 650 ft. Some of the areas showed minor evidence that they may have been disturbed by some type of prior excavation activity. Because of this observation, ADEM and Fort McClellan apparently agreed that some of these areas warranted confirmatory soil sampling to assess the potential that the low lying areas may have been used for disposal purposes. It is for this reason, ADEM understands, that certain "sinkhole" areas were targeted for confirmatory sampling.

The Army should revise the report to clarify the scope of its sampling effort, clarify why certain sinkholes were selected, and clarify the definition of sinkholes applied to this study.

Response 1: Additional information was provided in the revised report to clarify the scope of the sampling effort, why certain sinkholes were selected, and the definition of sinkholes applied to this study.

Comment 2: The Army's investigation focused on four widely separated and completely independent locations at Pelham Range; however, the report treats the sites collectively and draws generalized conclusions for all of the sinkhole areas. Each sinkhole should be investigated and addressed in this report individually, and Fort McClellan should provide its basis for limiting the number of sinkhole areas to be evaluated (see also Comment No. 1).

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Response 2: Agree. The text was revised to discuss the sinkholes individually. The sinkholes selected for evaluation were investigated as part of a memorandum of agreement (MOA) between the Army and the Alabama Army National Guard. The sinkhole locations were identified in the U.S. Army Center for Health Promotion and Preventative Medicine (CHPPM) report entitled *Draft Preliminary Assessment No. 38-EH-1775-99, Fort McClellan Army National Guard Training Center, Fort McClellan, Alabama, 28-May - 17 June 1999*. The CHPPM report recommended conducting a geophysical survey of the sinkholes to determine if debris was present.

Comment 3: Two sampling locations indicated arsenic concentrations in the subsurface soil in excess of 0.426 mg/kg, the established SSSL for Fort McClellan, and in excess of the reported background concentration of 18.3 mg/kg. ADEM believes that the applicable screening criteria for arsenic should be increased to 20 mg/kg, based on EPA Region 4's revised 2002 policy. The EPA Region 4 Office of Technical Services has recommended that the regulation of arsenic in soil be based on its systemic toxicity rather than its carcinogenicity. Based on this recommendation, EPA conducted further review and revised its policy to establish a recommended arsenic preliminary remediation goal (PRG) for residential soil of 20 mg/kg. Based on ADEM's review of the limited confirmatory sampling completed by the Army, it appears that subsurface soil may contain locally elevated contamination areas with arsenic concentrations exceeding 20 mg/kg. Please inform ADEM if the Army intends to further identify and investigate areas with elevated arsenic levels present (e.g., Sinkholes 2D and 8C) or if the Army intends to propose future land use restrictions for the property.

ADEM understands that arsenic levels may be relatively high at various locations and that the contamination may, in some instances, result from non-DoD activity, perhaps as a result of historical agricultural practices. It is unclear to ADEM if the sporadic presence of arsenic-impacted areas represents native geologic anomalies. If the Army intends to pursue this matter further, the Army should present further information to ADEM to support the Army's conclusion that elevated arsenic levels are a naturally occurring variation in background levels. Alternatively, the Army may wish to consider addressing sporadic elevations in arsenic levels at Pelham Range in another manner (see Comment No. 3). Please revise the report accordingly.

Response 3: Comments noted. The Army does not plan further investigation of the areas with the elevated arsenic results. However, site metals data were further evaluated

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using statistical and geochemical methods in accordance with the approach discussed in the Shaw technical memorandum "Selecting Site-Related Chemicals for Human Health and Ecological Risk Assessments for FTMC: Revision 2," dated June 24, 2003. The report was revised accordingly based on the results of the evaluation. The statistical and geochemical evaluation concluded that all metals detected in site media are naturally occurring.

Comment 4: Sinkhole at Area 8C. See Comment 3 regarding arsenic. No other concerns remain for this sinkhole.

Response 4: See previous response.

Comment 5: Sinkhole at Area 22C. A surface drainage/creek is indicated on Figure 3-2, yet no water sampling occurred. Please clarify if there water in this sinkhole. The Army noted that No Chemicals of Concern were found in the soil sample collected at this site. However, before a "No Further Action" proposal can be approved at this sinkhole, the Army should provide an explanation of the water feature, and its basis for not collecting surface water samples as part of the SI field effort.

Response 5: No, water was not present in the sinkhole at the time of sample collection. As indicated in the response to Comment No. 2 above, the sinkholes and low areas were investigated as part of a MOA between the Army and National Guard based on information presented in the CHPPM report. The CHPPM report recommended only a geophysical survey of the areas – not sampling and analysis. Although the geophysical survey results did not indicate any anomalies of concern, ADEM and EPA nonetheless requested at the May 2001 BCT meeting that soil sampling be performed as follows:

- Collect 3 samples per location. One sample each collected at the 0-2' interval, the 2-4' interval, and at hand auger refusal.
- Site 8C – collect samples from 4 locations (one at each of three sinkholes, plus one at the rock mound. Full suite chemical analysis).
- Site 22C – collect samples from 1 location. Full suite chemical analysis.
- Site 24C – collect samples from 1 location. Full suite chemical analysis, plus radiological scan.

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Water sampling was neither recommended in the CHPPM report nor discussed by the BCT.

Comment 6: Sinkhole at Area 24C. No further concerns remain for this sinkhole.

Response 6: Comment noted.

Comment 7: Sinkhole at Area 2D. Arsenic was found to be present at concentrations slightly higher than the established ESV, SSSL, BKG, and UBG level in the subsurface soil, and well above the acceptable arsenic level of 20 mg/kg for a residential scenario. See Comment 3 regarding arsenic. No other concerns remain for this sinkhole.

Response 7: See response to Comment No. 3.

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Comments from Doyle T. Brittain, U.S. Environmental Protection Agency, Senior Remedial Project Manager, dated March 10, 2003.

General Comments

Comment 1: The way this SI Report discusses data and compares it to screening values (all depths at all locations for a given site) makes it very difficult for the reader to determine if the majority of the exceedences occurred at one sampling location or one sampling depth. While it is true that these determinations can be made from the data tables, this information should be clearly stated in the text.

Response 1: Agree. The text was revised to discuss each sinkhole or surface depression separately.

Comment 2: Related to the above problem, the combining of data for all sinkholes also led to difficulties in reviewing the document for ecological risk assessment because the combining of data is misleading and confusing. For example, it is stated in Section 5 that seven surface soil samples were collected. If the reviewer had not read earlier sections, it would not be apparent that only one soil sample was taken from each of 3 individual sinkholes. As shown on Figure 1-1, the sinkholes are not contiguous and are in fact, located thousands of feet apart. The correct way to analyze this data would be to evaluate the data collected from each sinkhole separately. If this had been done, the correct determination for all of the sinkholes would be that additional data would need to be collected.

Based on review of the data, the following constituents should be considered COPECs for the listed sinkhole:

- PR-22C-SB01 - mercury, zinc, and endrin
- PR-24C-SB01 - lead, 4,4'-DDT, and gamma-BHC
- PR-2D-SB01 - aluminum and zinc
- PR-8C-SB01 - 2,6-dinitrotoluene and 4,4'-DDT
- PR-8C-SB02 - selenium and 2,6-dinitrotoluene
- PR-8C-SB04 - lead, 1,3,5-trinitrobenzene, 2,6-dinitrotoluene, endrin, beta-BHC, and gamma-BHC.

In accordance with the EPA Process Document Step2 SMDP, three options are available:

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- 1) **There is adequate information to conclude that ecological risks are negligible and, therefore, no need for remediation on the basis of ecological risk;**
- 2) **The information is not adequate to make a decision at this point, and the ecological risk assessment process will continue to Step 3; or**
- 3) **The information indicates a potential for adverse ecological effects, and a more thorough assessment is warranted.**

Based on the fact that 1) constituents were detected at the sinkholes above their respective ESVs and 2) only one sample was taken at several of the sinkholes, the SMDP for this site should be #3 - a more thorough assessment is warranted.

Response 2: Comments noted. Additional investigation of these areas is not planned. Any future sampling will be discussed and agreed upon by the BCT.

Comment 3: The chapter on Site Investigation included in the Installation-Wide Work Plan for FTMC (Work Plan) has not been followed. This Work Plan states that conceptual site exposure models for human and ecological health should be included in the SI. They were not included in this document. This Work Plan also clearly states that the screening evaluation process involves comparing site-specific data to SSSLs, ESVs, and background values for FTMC. The background values stated are two-times the background screening value. The Work Plan does not include using the upper background range (UBR) as a screening method as was done in this SI Report.

Response 3: Disagree. The Installation-Wide Work Plan does not state that conceptual site exposure models for human and ecological health should be included in the SI report. The IWWP states that “The CSM [conceptual site exposure model] provides the basis for identifying and evaluating potential risks to human health and the environment in the baseline risk assessment”. Because this was a site investigation report, and not a remedial investigation report, baseline risk assessments were not performed and, thus, conceptual site exposure models were not included. The IWWP further indicates that “Site-specific work plans or addenda will be issued to customize the generic model to the potential contamination sources, transport mechanisms, and exposure scenarios...”

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Regarding the use of upper background range (UBR): comment noted.
References and comparisons to UBRs were removed from the report.

Specific Comments

Comment 1: Page ES-2, Line 12. The text states that the sinkholes are small areas that do not provide substantial ecological habitat. The issue that should be addressed is: are ecological receptors potentially at risk from constituents associated with the sinkholes; not whether the habitat associated with the sinkholes is substantial. The determination about habitat quality/quantity is a risk management decision and should not be included in this discussion.

Response 1: Agree. The text was modified per comment.

Comment 2: Page 1-1, Line 18. This section provides a description of the project for the Sinkholes. However, no text is included providing a description of each sinkhole. Text should be added to this section describing the size/area of each sinkhole, its location, habitat, and any other appropriate site-specific information.

Response 2: Available information regarding locations, habitat, and other appropriate site-specific information was included in Section 1.3 of the report. Information regarding the approximate dimensions of each sinkhole or depression was added to the text.

Comment 3: Page 5-2, Line 19. The text states that the majority of pesticide results were flagged with a "J" data qualifier indicating that these compounds were detected at estimated concentrations below method reporting limits. This definition of "J" flagged data is not correct. According to RAGS (1989), "use J-qualified concentrations the same way as positive data that do not have this qualifier". The definition presented in the text does not agree with this definition and the confusion should be resolved. This same issue is present on Page 5-3, Line 2 and Page 5-4, Line 17.

Response 3: Comment noted. In each instance referenced above, the pesticide results were both estimated (i.e., "J" flagged) and below method reporting limits. The text was revised for clarification. For the reviewer's information, Shaw always uses "J"-flagged data the same way as non-qualified data in the subject SI report and in other risk assessment documents.

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Comment 4: Page 6-1, Lines 28 and 29. This paragraph states “The elevated aluminum and arsenic results are attributed to variations in naturally occurring background levels.” Supporting information for making this assumption must be provided.

Response 4: Agree. Site metals data were evaluated using statistical and geochemical methods in accordance with the approach discussed in the Shaw technical memorandum “Selecting Site-Related Chemicals for Human Health and Ecological Risk Assessments for FTMC: Revision 2,” dated June 24, 2003. The text was revised accordingly based on the results of the evaluation.

Comment 5: Page 6-1, Line 34. The text states that some metals results exceeded ESVs but were below their respective background concentration and/or upper background range (UBR). It is inappropriate to screen out a constituent as a COPEC based on comparison to upper background range. If a constituent was screened out based solely on comparison to the UBR, then that constituent should be re-included as a COPEC.

Response 5: Comment noted. References and comparisons to upper background range were removed from the document.

Comment 6: Appendix B. Comparisons of the Sample Collection Logs with the Chain of Custody Records indicated some inconsistencies. In all cases, the name of the person relinquishing custody on the Chain of Custody form does not appear on the sample collection log as one of the samplers. In addition, on the second Chain of Custody form, the name of the person receiving the samples is printed, not signed, and it is different from the name on the other forms. Unless these inconsistencies can be satisfactorily explained, chain of custody was not maintained on these samples.

Response 6: Disagree. Shaw followed the procedures outlined in Section 6.1.7.1 Field Custody Procedures presented in the Draft Installation-Wide Sampling and Analysis Plan, Revision 3, February 2002 (SAP). This sections states, "The sampling team, sample coordinator, and site manager will maintain overall responsibility for the care and custody of the samples until they are transferred or properly dispatched to the on-site screening facility and/or fixed-based laboratory." In addition, SAP Section 6.1.7.2 Transfer of Custody and Shipment states, "General custody of the sample will be maintained by the sample collection team members from the time of collection in the field through preparation and shipment to the laboratory. The main custody transfer will occur when the sample

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shipment is received into the laboratory from the field and is documented." Similar language is also provided in the QAP.

Using these two sections as guidance, all Shaw field personnel who are responsible for the collection of field samples (which includes the sample coordinator and the site manager) were considered part of the "sample team." No custody transfer record was considered to be necessary among members of the same sample collection team. If another contractor, a subcontractor to Shaw, the Army, or other personnel had collected samples and transferred them to Shaw for processing or analysis, then the transfer of custody of those samples would have been formally recorded using a COC form.

Multiple sample technicians were responsible for collecting samples and completing the sample collection logs. The samples and logs were funneled to the Shaw sample coordinator, who then reviewed the documentation, inventoried all of the samples collected, and compiled a single COC record to list all the samples collected (daily) for transfer to the receiving analytical laboratories. Therefore, the sample coordinator's signature on the form represents the transfer of custody from the Shaw sample team in the field to the analytical laboratory personnel (per Section 6.1.7.2 of the SAP). Shaw believes that this is satisfactory custody transfer documentation and, therefore, does not agree this indicates that sample custody was not maintained as stated in the comment. Shaw personnel followed the same chain-of-custody procedures that have been in effect since the beginning of the FTMC project in 1998. It is perplexing that until now these issues have never been called into question.

However, in light of recent comments received by EPA, Shaw has changed its COC procedures to include a separate COC for each sample collection team. Each sample collection team will submit samples, COCs, and SCLs to the sample coordinator. The SCLs and COCs will be reviewed by the sample coordinator prior to taking possession of the samples and signing the COC. This process will be repeated for each sample collection team in the field. The COCs will then be copied for the field records and maintained onsite. The original forms will be transmitted to the office for filing in the project central files. In future reports, this appendix will include all "supplementary" sample team COCs to document intra-team custody transfers and all SCLs.

Regarding the second part of the comment: Is EPA implying that someone's "signature" can only be made through cursive writing? If an individual willingly marks a document and affirms that the mark is indeed his own, then the manner in which that mark is made and the form that mark takes are irrelevant. Concerning

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the remark that the name of the person receiving the samples on one of the COCs is different from the name on the other forms, Shaw agrees and notes that the analytical laboratory (i.e., EMAX laboratories) probably employs more than one person capable of receiving samples.

**Response to National Guard Bureau Comments
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Comments from Larry Lumeh, ETA Project Manager, dated February 6, 2003.

Comment 1: The SI was complete, and the results fairly conclusive. The sites have some contamination, but the fact that the continued use is going to be for training, it is probably all right to release the site. It would, however, be prudent to conduct a preliminary risk assessment (PRA) for lead and arsenic in the surface soils to ensure the use of the sites for training do not pose unacceptable risks of exposure to these elements.

Response 1: Comment noted. However, a preliminary risk assessment (PRA) would not yield new information regarding lead and arsenic in surface soil. The arsenic results, although above the residential SSSL, were all below the background value. Similarly, lead exceeded background in two samples but all results were well below the SSSL. Thus, neither of these metals would be selected as a chemical of potential concern (COPC) in a PRA.

Nonetheless, site metals data were re-evaluated in accordance with the background screening protocol agreed to by the BCT in March 2003. The three-tiered process consists of statistical testing and geochemical evaluation to select site-related metals. The background screening methodology is described in the technical memorandum "Selecting Site-Related Chemicals for Human Health and Ecological Risk Assessments for FTMC: Revision 2," (Shaw Environmental, Inc., 2003). The report was revised accordingly based on the results of the evaluation. The statistical and geochemical evaluation concluded that all levels of site metals are naturally occurring.