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THE MEMPHIS DEPOT
TENNESSEE

ADMINISTRATIVE RECORD
COVER SHEET

AR File Number 885

Final

Memphis Depot

BRAC Cleanup Team

Meeting Minutes

15 February 2007

BRAC Cleanup Team	Organization	Phone/email
Michael Dobbs	Defense Logistics Agency (DLA)/Defense Distribution Center (DDC) DES-DDC-EE	717.770.6950
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Evan Spann	Tennessee Department of Environment and Conservation, Division of Remediation (TDEC-DoR)	901.368.7916
Project Team	**Organization**	**Phone**
Tom Holmes	e^2M	404.237.3982
Angela Clark	e^2M	404.932.6222
Denise Cooper	e^2M	901.774.3681
Hugh Russell	AR Environmental Services	918.285.5180
Brett Frazer	Corps of Engineers - Huntsville	256.895.1874
David Nelson	CH2M Hill	770.604.9182 x394
Mike Perlmutter	CH2M Hill	770.604.9182 x645
John Miller	Mitretek Systems	703.610.2560

Previous Meeting Minutes

The BRAC Cleanup Team (BCT) approved and signed the minutes from the 16 November 2006 meeting.

Source Areas Remedial Design (SARD)

Rev. 0 SARD (100%) and Public Briefing

Mr. Perlmutter reported that CH2M Hill submitted the Rev. 0 Source Areas RD (100%) to the BCT on 12 January 2007, and he asked if there were any preliminary thoughts or comments. Mr. Ballard indicated that Ms. Eva Davis was still reviewing the response to comments.

Ms. Clark reported that according to EPA guidelines the RD public briefing should occur after EPA approval of RD, but before implementation of remedial action (RA) construction. She reported that the current schedule was for a Restoration Advisory Board (RAB) meeting on 19 April and the RD public briefing on 24 May.

Ms. Clark indicated that the RD was scheduled to be final on 30 April. e^2M anticipates receiving the notice to proceed (NTP) from the Air Force Center for Environmental Excellence (AFCEE)

on 2 April, with contract award on 1 May. e^2M planned to mobilize on 3 May and to begin installation of the SVE wells on 3 June. She suggested that the RD public briefing should be held earlier in May to allow for earlier mobilization. She requested BCT input on when to conduct the public briefing. Mr. Ballard suggested conducting both the public briefing and the RAB meeting in April. Mr. Dobbs interjected that he wanted the meetings on different nights so that the public and RAB members would gain confidence that DLA/DDC would continue to provide information.

The team discussed public briefing schedule issues and agreed to conduct the RAB meeting as scheduled in April and to conduct the RD briefing on 10 May. Ms. Clark would discuss the team's input with Frontline Corporate Communications and recommend to Mr. Dobbs the best course of action.

Dunn Field Remedial Design Investigation Technical Memorandum (RDI TM)

Mr. Nelson asked if the BCT had any preliminary comments on the Dunn Field RDI TM. Neither Mr. Spann nor Mr. Ballard had any preliminary comments.

Fluvial Soil Vapor Extraction (SVE) Early Implementation

Mr. Holmes reported that e^2M submitted the Fluvial SVE Remedial Action Work Plan (RAWP) to the BCT on 26 January with comments due by 28 March. Mr. Holmes asked if there were any preliminary comments. Mr. Ballard suggested using a pre-constructed structure to house the equipment rather than construct one on site. Mr. Holmes responded that the project team had discussed the use of, and e^2M would obtain bids for, a pre-constructed unit or perhaps a CONEX box. Mr. Spann had no preliminary comments.

Mr. Holmes reiterated that e^2M anticipated receiving NTP by 2 April. e^2M would then order the equipment and planned to be in the field the first part of May. Mr. Holmes indicated that e^2M would first install and sample the monitoring wells and would then remove the rubble pile. He reported that the trees on the rubble pile had been removed. e^2M plans to screen the soil and spread it out and that the concrete rubble would be removed off site. Work to remove the pile is scheduled to begin on 4 May. Mr. Holmes reported that if anything unforeseen was found while removing the rubble pile, then e^2M would stop work and reevaluate the situation. Mr. Holmes anticipates e^2M would begin installing the SVE wells on 4 June with operation of the Fluvial SVE system to begin by the end of July.

Mr. Holmes indicated that there were approximately 50 investigation derived waste (IDW) drums remaining on the Dunn Field lay down pad from TDEC and EPA's Wabash Avenue investigation. He requested EPA and TDEC assistance in having the drums removed by 1 April. Mr. Nelson agreed to contact ProSonic to remove the remaining IDW water tank.

Mr. Ballard interjected that he did not foresee any problems if e^2M received the NTP and wanted to install the monitoring wells before the RD public briefing. Mr. Holmes opined that he wanted to conduct the RD public briefing before removing the rubble pile and wanted to remove the pile before installing the SVE wells.

Mr. Holmes also indicated that if e^2M received funding in early April and if the BCT wanted to move forward, then e^2M would need BCT comments on the Fluvial SVE RAWP. Ms. Clark asked if e^2M also needed BCT concurrence on the Source Areas RD prior to mobilization. Mr. Ballard responded that he concurred with starting construction on the RA once EPA approved the RAWP without approval of the Source Areas RD as the BCT wanted to move forward with

the RA. Mr. Ballard also concurred with removing the rubble pile prior to the public briefing because he considered that site preparation and not start of RA construction.

Mr. Perlmutter reported that upon review of the Fluvial SVE RAWP, CH2M Hill recommended minor changes to the well screen design currently in the Rev. 0 Source Areas RD (100%). Mr. Perlmutter said that Dr. George Losonsky, a horizontal well expert, had reviewed the current design. Dr. Losonsky suggested a modification to the size of the well screen. CH2M Hill recommends a slight modification to the well screens, but no change to flow rates, pressures, or the treatment system. CH2M Hill recommended changing from a 10-slot to 20-slot screen size with a custom-slotted screen type rather than a continuous wire-wrap, which has too much open area. The change would reduce the open area from 10-14% to <2%.

Mr. Perlmutter indicated he had discussed the situation with Mr. Holmes, and that CH2M Hill would prepare a very brief (2-page) technical memorandum (TM) listing the specifications and providing the vendor information. CH2M Hill anticipates submitting the TM to the team within the next two weeks. The TM would also be included in the Final SARD. Mr. Perlmutter reported that the TM will include a description of the modeling effort and assumptions, the revised well screen specifications, revised conveyance piping specifications (if changed) and vendor information for the custom slotted screen.

Mr. Spann asked about the well screen open area. Mr. Perlmutter said that the larger open area was great for drawing water, but that smaller slots would produce a better vacuum. Mr. Ballard asked if this impacted EPA's comment regarding having the well screen at the bottom of the formation. Mr. Perlmutter said that the screen at the bottom of the formation and the preferential horizontal conductivity would not provide sufficient draw from the top of the formation. He said that the recommended change and the information in the TM would become the response to EPA's comment.

Mr. Ballard and Mr. Spann provided conditional approval of the Fluvial SVE component of the SARD based upon the inclusion of the conveyance piping and well screen modifications. The BCT would also provide written approval following their review of the CH2M Hill SVE Modification TM.

AI: CH2M Hill to submit SVE Modifications TM.

AI: Mr. Spann and Mr. Ballard to aid removal of IDW drums for the Wabash Avenue investigation from Dunn Field.

AI: Mr. Nelson to have ProSonic remove the IDW water tank from Dunn Field.

Dunn Field Land Use Control Implementation Plan (LUCIP)

Mr. Nelson said he had talked with Mr. John DeBack several times about the Dunn Field LUCIP. Mr. DeBack said that Mr. Rick Worsing had reviewed the LUCIP and was trying to reach Ms. Martha Brock at EPA to discuss it. Mr. Nelson said that the Rev. 0 SARD (100%) contained the latest version that was being reviewed by EPA and the Army. He hoped that the next revision to the SARD would include the final version of the LUCIP.

According to Mr. DeBack, as of 6 February the Army was still awaiting a response from EPA Region 4. Mr. Ballard said that Ms. Brock was reviewing the LUCIP, but that she was waiting for him to answer a question in order to speak with EPA Headquarters about their comments. The team discussed the implications of this situation on the SARD and public meeting schedule

as the SARD could not be finalized or approved without the LUCIP. And the public briefing should not be conducted until EPA approved the RD.

Mr. Nelson asked if the LUCIP was delayed, would EPA penalize DLA/DDC for any delay in submitting the final SARD. Mr. Ballard said DLA/DDC would not be penalized because EPA had caused the delay.

AI: Mr. Ballard to contact Ms. Brock to answer question and facilitate EPA LUCIP review.

Overall Source Areas Remedial Action (SARA) Schedule

Mr. Holmes reported that overall the SARA was on schedule. He was currently working on the Loess RAWP, and it is due for submittal to the BCT on 28 March. He plans to begin the Loess RA work in August.

Main Installation Remedial Action (MIRA)

MIRA Construction Report

Mr. Holmes reported that e^2M submitted the MI RA Construction Report to the BCT on 21 December 2006. The document was designed to solicit preliminary BCT feedback on the construction portion that would be included in the Interim Remedial Action Completion Report (IRACR). He requested BCT comments by 30 March. Mr. Ballard was not sure he would be able to provide comments by that date but would provide them as soon as possible.

Mr. Holmes also reported that during e^2M's review of TDEC comments regarding cross section figures, they determined that two injection wells and two monitoring wells were installed above the target zone. The screens were installed 10 feet higher than planned due to mis-identification of a clay layer and perched water table as the fluvial aquifer. Replacement wells will be installed next week.

MI Long Term Monitoring (LTM) Report

Mr. Holmes reported that e^2M submitted the MI LTM Report to the BCT on 19 January. Nine new wells were installed based upon the recommendations included in MACTEC's last Annual LTM Report. In October 2006, e^2M sampled all 72 wells outside of the enhanced bioremediation treatment (EBT) areas. The MI LTM Report presented results from new and existing monitoring wells. Mr. Holmes indicated that old wells from the treatment areas or wells no longer in use were abandoned.

Mr. Holmes presented information contained in the MI LTM Report. He reported that data from construction of the new wells changed the top of clay elevations. Mr. Holmes reviewed the cross section that traverses the window in the clay. Mr. Ballard requested that the cross sections include the direction orientation at the top of the figures.

Mr. Holmes then reviewed information regarding the Tetrachloroethene (PCE) plume, specifically at MW39. He reported that there were areas with concentrations above 100 ppb that were not being treated and that required additional evaluation. A low level plume in the intermediate aquifer might be linked to the plume in the fluvial aquifer at MW39, but the team does not know for certain. Some wells in the golf course area have low concentrations, but they do not appear to be part of the larger plume. Mr. Holmes reported that the Trichloroethene (TCE) plume at MW62 also required additional evaluation.

Mr. Holmes said that the MI LTM Report identified the different plumes and noted that wells outside the treatment areas with concentrations above maximum contaminant levels (MCLs) are sampled on a semiannual basis in accordance with the LTM plan. Mr. Holmes presented a map that identified locations at which e^2M planned to install monitoring wells.

The team discussed the proposed well locations and interpretations of the groundwater level contours, with particular attention to the area at MW97. Three well locations were added to the locations presented in the LTM report and the location of well E was shifted in response to requests from Mr. Spann and Mr. Miller. Mr. Holmes said that new wells would be sampled during the planned semi-annual event in April.

Mr. Holmes said that the MI RD and the MI RAWP indicated that the compliance well network must be identified 18 months after the initial sodium lactate injections. He asked that the BCT include additional monitoring well locations in their comments to the MI LTM report, especially if additional wells were needed for the isolated plumelets.

Mr. Ballard indicated that EPA needed to see decreasing levels in the isolated wells. If the contaminant levels remained stable, then it indicated to him a source that continues to maintain the level. Mr. Ballard acknowledged, however, that active treatment may not be necessary and the well would require continued sampling and monitored natural attenuation (MNA). Mr. Holmes suggested that the team evaluate results from the next round of sampling and that e^2M include proposals for addressing these individual plumelets in the MI IRACR. He voiced concern about the impact of these individual plumelets on obtaining the Operating Properly and Successfully (OPS) determination at the MI.

Mr. Spann and Mr. Ballard questioned why some of the individual plumelets were not incorporated into the larger individual constituent plumes. Mr. Holmes responded that concentrations in some wells did not correspond with levels in the larger plume, so he did not include them in the contour. Mr. Spann asked if a larger compliance well network instead of several smaller ones to track the plumelets would provide a better basis for OPS and allow for an earlier OPS determination.

Mr. Ballard responded that the data must provide the basis for the determination of OPS and that it was not a document submittal date on a schedule. Mr. Holmes said that e^2M was trying to identify the questions that needed to be addressed in order to achieve OPS.

Mr. Ballard said that e^2M needed to show contamination reduction in the treatment areas that indicated EBT was working in order to achieve OPS. Mr. Holmes clarified that the key to the OPS determination was that RA construction was completed with all injection points installed and that sample results indicated contaminant levels were moving toward MCLs, even though wells outside the treatment area had levels above MCLs.

Mr. Holmes suggested that the report of semi-annual LTM sample results include figures identifying which wells were included in which plume/plumelet. The report will also include trend plots for all wells with CVOC concentrations above MCLs.

AI: e^2M to add three well locations to the locations presented in the LTM report and shift the location of well E.

Enhanced Bioremediation Treatment (EBT) Quarterly Report

Mr. Holmes reported that e^2M had completed the first post-injection quarterly sampling event with the next quarterly event planned for March. Mr. Russell presented information from the

EBT Quarterly Report and said the goal was to determine if the aquifer was anaerobic and if e^2M could show that reductive dechlorination was occurring. Mr. Hughes said he evaluated mass reduction to determine if there was true mass loss.

Mr. Russell reported that sample results provided evidence of reductive dechlorination as PCE levels decreased and cis-Dichloroethene (DCE) levels increased. Sample results also showed evidence of the breakdown of Carbon Tetrachloride to Chloroform.

Mr. Russell concluded that the aquifer was tending toward the anaerobic state; that reductive dechlorination was defined in some wells; that, as expected, the initial step of PCE to TCE was occurring rapidly; that there was some evidence of TCE production; that Carbon Tetrachloride was going to Chloroform; and that presence of total organic carbon was correlated with mass change in chloroethenes. Mr. Russell suggested the addition of a more favorable carbon source, such as sucrose, to remove oxygen. He calculated that approximately 8 grams of sucrose per 500 gallons of sodium lactate/water would be required.

Mr. Holmes pointed out IW85-04 and indicated that the well was screened in perched water, not in the fluvial aquifer as intended. e^2M planned to abandon and replace the well. Mr. Ballard suggested keeping the well as it may provide information on a contaminant source later on.

Mr. Holmes reported that the team was discussing the need for more carbon injection at the MW-21 wells. The distance between the monitoring wells and injection points were a little more than other areas. So, if e^2M increased the volume injected, then there should be greater influence. In the MW-21 area, monitoring well sample results did not indicate any of the fatty acids from the sodium lactate as seen in the other area.

Mr. Holmes said that e^2M would continue with the same injection program with some slight alterations such as adding sucrose to reduce oxygen and increasing the injection volume in TTA-2. He said that there was some change occurring in the TTAs even though it had only been one quarter since the initial injections.

Mr. Spann asked what oxidation reduction potential (ORP) value e^2M used to determine the aquifer had achieved the anaerobic state. Mr. Russell responded that he looked at mass reduction rather than ORP as it was a better evaluation of reductive dechlorination, and that he looked at trends rather than individual measurements. Mr. Ballard recalled some screening parameters that were indicators of RA success such as dissolved oxygen and ORP, but there must be a reduction of the parent product and an increase in the daughter product in order to determine the RA was working.

Mr. Holmes then reviewed the status of the OPS criteria established in the MI ROD. For the operating properly portion, he reported that they were generally meeting the three criteria - injection and monitoring well installation would be complete with the replacement wells in February 2007; the injections had achieved lactate distribution; and the injection volumes had achieved over 98% in each area.

For the operating successfully portion, Mr. Holmes reported that progress was being made. He said they had progressed toward creation of anaerobic conditions and that future monitoring would indicate if anaerobic conditions were being maintained and if concentrations were decreasing. The EBT Quarterly Report contained the OPS criteria information.

Mr. Dobbs asked if a source was ever identified in TTA-2. Mr. Ballard responded that a source was not really identified, but that actions had occurred to remove potential sources, such as

cleaning sumps and removing underground storage tanks. He continued that the team had assumed the source was in the vadose zone, not in the soil. If sample results indicated contaminant rebound, then the team could make determination of future actions. That was why the MI RD included a decision tree regarding any future necessary actions to find/remove the source. Mr. Dobbs requested that the team keep close track of this as he did not want to reach the end and then determine that additional action was necessary.

Mr. Nelson provided information from the TN ANG Sodium Lactate Injection Pilot Study. Essentially, the study contractors injected increased volume of solution followed by injection of water; injections were made less frequently (quarterly). The increased volume tended to push the lactate farther into system. The study showed significant reduction of TCE. However, there was a problem reducing cis-DCE. The TN ANG feasibility study indicated the need to introduce Dehalococcoides (KB1) to provide complete reduction of cis-DCE and vinyl chloride. The use of Dehalococcoides was useful when it was time critical for complete dechlorination; however, eventual reduction would occur without the addition of the bacteria. Mr. Nelson said that the TN ANG study provided good evidence for bioaugmentation to MI RA system. The team discussed different methods for enhancing the injection system.

Mr. Holmes said that, for now, e^2M would add sucrose to enhance the MI RA system. After the next round of sampling, e^2M would determine the need for additional enhancements and provide recommendations to the team.

Mr. Ballard voiced concern that increasing the injection volume would result in a mounding effect in the injection pipe instead of pushing the sodium lactate farther away from the injection point. Mr. Holmes responded that there was no problem with the current injection rate and that the aquifer was accepting all that was pumped in with no mounding. So, e^2M believed increasing the injection volume would push it out and not mound up in the injection pipe. Mr. Holmes reiterated that e^2M would not make any other changes now as the RA system was successful, but the TN ANG study provided good information for future enhancements.

Dunn Field Off-Depot Groundwater Remedial Design (RD)

Permeable Reactive Barrier (PRB) Technical Memorandum

Mr. Nelson reported that the PRB TM was on schedule for submittal to the BCT on 23 February. Mr. Nelson requested that subsequent versions be incorporated into the RD. The BCT concurred.

Off-Depot Groundwater RD

Mr. Nelson reported that the RD was on schedule. CH2M Hill anticipates submitting the RD to the internal team in June and to the BCT in July.

Off-Depot (Intermediate Aquifer) Groundwater Study

Mr. Nelson reported that the Corps of Engineers was working with DLA/DDC to obtain the funding, and that CH2M Hill was awaiting receipt of the NTP. In preparing their proposal to the Corps, proposed activities identified by CH2M Hill included installation of intermediate aquifer monitoring well and aquifer testing. The main points of the proposal included performance of two 72-hour aquifer tests and installation of six monitoring wells in the intermediate aquifer.

Mr. Nelson presented figures showing the proposed monitoring well locations, and the team briefly discussed them. The team will have an opportunity to review and comment on the work

plan. Mr. Nelson expects to receive funding soon, and CH2M Hill will distribute the work plan shortly thereafter. Mr. Spann was happy to see the team gather this information about the intermediate aquifer. He asked that the new wells not be installed in a line so they could be triangulated.

Enhanced Reductive Dechlorination (ERD) Microcosm Study

Mr. Nelson reported that CH2M Hill had collected the information for the Microcosm Study and the tests had been initiated by SiREM (Ontario). The study is being conducted to evaluate degradation rates for 1,1,2,2-PCA and TCE as well as the optimal carbon substrate. In December 2006, CH2M Hill collected soil and groundwater samples for analysis by SiREM. Mr. Nelson said that the three carbon substrates used and bioaugmented with WBC-2 included sodium lactate, emulsified oil substrate (EOS) and chitin.

Mr. Nelson presented information from the study. The tests were initiated on 8 January and will be incubated for 4 to 6 months. SiREM added WBC-2 to selected samples the week of 5 February. So far, the sodium lactate and EOS substrates indicated some reduction in TCE with the associated increase of DCE; however, 1,1,2,2-PCA was unaffected. The chitin showed a decrease in both 1,1,2,2-PCA and TCE. Chitin, however, would not be used for Off-Depot Groundwater since it must be delivered in slurry requiring a trench application and could not be injected.

Mr. Nelson said that the Off-Depot Groundwater RD schedule allowed for most of the study data to be analyzed in order for the team to determine the most effective bioaugmentation and for the information to be incorporated into the Off-Depot Groundwater RD.

Proposed Plan and ROD Amendment

Mr. Holmes reported that e^2M would begin work on the Proposed Plan in March 2006 with the draft to be submitted to the BCT on 21 May, although they would not have the Off-Depot Groundwater RD until June. The ROD Amendment would follow the Proposed Plan and would be submitted after submittal of the Rev. 0 Off-Depot Groundwater RD (90%). Ms. Clark indicated that the public comment period was currently scheduled for November 2007. Mr. Ballard said that the most of the information needed to support the Proposed Plan and ROD Amendment would come from the PRB TM and ERD Microcosm Study.

BRAC Cleanup Plan (BCP) Version 10

Mr. Holmes reported that e^2M submitted the Rev. 1 BCP Version 10 to the BCT on 19 January. He requested confirmation from the BCT that their comments had been addressed appropriately and that they concurred with the plan. Ms. Clark reminded the BCT that without comments or a concurrence letter, the document would be considered final within 30 days of submittal. Mr. Ballard said he would provide concurrence via letter.

Dunn Field Property Sale

Ms. Clark reported that GSA had received seven bids on the property with a high bid of $225,000. GSA planned to close bidding at 2 pm EST on 15 March.

April Restoration Advisory Board (RAB) Meeting

Ms. Clark said that the RAB meeting is currently scheduled for 19 April. A change of venue for the meeting was discussed; however, it was decided that keeping the same location would

minimize confusion. The RAB presentations will include an update of the overall program and of the Dunn Field sale.

Administrative Record Update

Ms. Cooper reported that Labat Environmental had received the documents for the update. They would complete the update, post the documents to the website, and submit the updated CDs to e^2M within 60 days. Mr. Dobbs said that the Department of Defense was concerned that any public information for the military must be hosted on a military server, and that this may affect the Memphis Depot AR site hosted on Labat's server.

Next Meeting

The next BCT meeting was tentatively scheduled for 15 March 2007 in Atlanta, GA. Mr. Spann has a conflict with the date and will be unable to attend. Within the next few weeks, Ms. Clark and Mr. Dobbs will evaluate the need for a meeting, and Ms. Clark will notify the team accordingly.

3-15-07

MICHAEL DOBBS — DATE
Defense Distribution Center
BRAC Environmental Coordinator
BRAC Cleanup Team Member

3/15/07

TURPIN BALLARD — DATE
Environmental Protection Agency
Federal Facilities Branch
Remedial Project Manager
BRAC Cleanup Team Member

for (by Proxy) 3/15/07

EVAN SPANN — DATE
Tennessee Department of Environment and Conservation
Memphis Field Office
Division of Remediation
Environmental Project Manager
BRAC Cleanup Team Member

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