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THE MEMPHIS DEPOT
TENNESSEE

ADMINISTRATIVE RECORD
COVER SHEET

AR File Number 895

Final

Memphis Depot

BRAC Cleanup Team

Meeting Minutes

May 10, 2007

BRAC Cleanup Team	Organization	Phone/email
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Turpin Ballard	Environmental Protection Agency, Region IV (EPA)	404.562.8553
Evan Spann	Tennessee Department of Environment and Conservation, Division of Remediation (TDEC-DoR)	901.368.7916
Project Team	**Organization**	**Phone**
Chris Hobbins	Air Force Center for Environmental Excellence	210.536.5261
Tom Holmes	e^2M	404.237.3982
Denise Cooper	e^2M	901.774.3681
Bruce Railey	Corps of Engineers - Huntsville	256.895.1874
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David Nelson	CH2M Hill	678.530.4250
John Miller	Noblis Systems	703.610.2560

Previous Meeting Minutes and Action Items

The BRAC Cleanup Team (BCT) approved and signed the minutes from the April 19, 2007 meeting.

Source Areas Remedial Design (SARD)

Final SARD (100%)

Mr. Ballard mailed the concurrence letter on May 4. Mr. Spann indicated the concurrence letter from TDEC is forthcoming. The team had no further issues with the Final SARD.

Source Areas Remedial Action (RA)

Fluvial Soil Vapor Extraction (SVE) System

Mr. Holmes conducted the pre-construction conference on April 18; the meeting summary was provided to attendees on April 30. e^2M submitted the Rev.1 Fluvial SVE Remedial Action Work Plan incorporating EPA and TDEC comments on May 4.

Mr. Holmes reported that e^2M completed removing the soil pile as part of the site preparation activities. e^2M and their contractors installed the monitoring wells the week of April 30. e^2M

will sample the wells the week of May 7. e^2M and their contractors will begin installing the SVE and vapor monitoring points (VMPs) the week of May 14.

e^2M has discussed the electricity connection for the Source Areas RA with the Memphis Light Gas and Water (MLGW) point of contact, Mr. Patrick Harris. MLGW surveyed the work site, but they have not yet set the pole upon which the transformer will be placed. Mr. Spann will notify MLGW's environmental person that there should be no environmental hazards to employees installing the transformer pole.

Referring to the SVE treatment compound, Mr. Holmes indicated that the blowers for the treatment compound are expected to arrive in Indiana, where the treatment compound is being constructed, on May 15 after clearing customs. Mr. Holmes anticipates delivery of the treatment compound to Dunn Field by June 11.

e^2M will submit the Notice of Remedial Action (RA) Implementation for the Dunn Field Source Areas to EPA and TDEC on Monday, May 15. Mr. Ballard indicated that upon receipt of the Notice of RA Implementation, the schedule for the remaining construction work is considered an internal schedule and that the next date from the master schedule of interest is the construction completion date and the Final Construction Inspection. Mr. Holmes said that the construction completion date is on schedule for mid-July.

AI: Mr. Spann will notify MLGW's environmental person that there should be no environmental hazards to employees installing the transformer pole.

Dunn Field Off-Depot Groundwater Remedial Design (RD)

In response to a request from CH2M Hill, Mr. Spann contacted Mr. Fred Van Hoff at MLGW to facilitate the transfer of pumping well and groundwater data to CH2M Hill. Mr. Spann will also contact Dr. Gerry Anderson of the Groundwater Institute to facilitate the transfer of additional groundwater information for the Memphis Depot area. Mr. Nelson specifically requested the pumping rates and well screen depths of the Allen Well Field from MLGW. Mr. Nelson requested the information for use in the groundwater model being prepared as part of the Off-Depot Groundwater RD.

AI: Mr. Spann to facilitate transfer of data from MLGW and the Groundwater Institute to CH2M Hill.

Enhanced Reductive Dechlorination (ERD) Microcosm Study

Mr. Nelson updated the team on the study being conducted by SiREM (Ontario).

Anaerobic sterile control: Trichloroethene (TCE) levels increased.

Anaerobic active control: Although no additional food source for the microbes has been introduced, the microbes continue to consume the PCA, decreasing concentrations.

Lactate only: The microbes have reduced TCE levels to non-detect. PCA levels are equalizing. And as expected, the cis-1,2-Dichloroethene (cDCE) levels are increasing as part of the normal chemical breakdown process.

EOS only: All contaminant levels remained constant.

Lactate with WBC-2 microbe, post re-spiking: The microbes have reduced TCE levels to non-detect and continue to reduce PCA levels. The Vinyl Chloride levels increased, but are now decreasing. The microbes have also reduced cDCE levels. And, as expected, Ethene levels

increased as part of the normal chemical breakdown process. SiRem added more Lactate to augment the food source for WBC-2.

EOS with WBC-2 microbe: CH2M Hill has requested that SiRem remove Bottle 18, which has shown no activity, from the study results. In the other two study bottles, the microbes have reduced TCE levels to non-detect. PCA concentrations remained level. Mr. Nelson reported that CH2M Hill and SiRem do not have data to indicate why Bottle 18 has shown no activity, but it appears that the microbes died.

Chitin, post re-spike: Bioaugmentation accelerated the chemical breakdown process with cDCE levels increasing as TCE and PCA levels decreased. Once the samples were bioaugmented, TCE and PCA levels plummeted to non-detect. However, Chitin is unacceptable for use at Dunn Field due to the inability to inject Chitin to treat the affected groundwater.

Mr. Nelson then presented chemical degradation rates calculated from the study results to date. For TCE, degradation rates for the Lactate, EOS and Chitin substrate only, no WBC-2, are very similar. The EOS substrate degradation rate accelerates when bioaugmented with WBC-2. The PCA data presented similar results as TCE. However, after re-spiking the samples with TCE and PCA, the degradation rate levels off.

Mr. Nelson explained that CH2M Hill is using the degradation rates to calculate the reactive zone lengths based on groundwater velocity and the approximate saturated thickness. Mr. Ballard and Mr. Spann suggested that CH2M Hill use sample results from after the re-spike as it presents a more realistic picture of conditions at Dunn Field. Mr. Nelson agreed, but reminded them that the degradation rates indicate conditions in the microcosm and may not necessarily be indicative of how the substrates will work in actual field conditions.

CH2M Hill has calculated contact time based on the highest contaminant concentrations for each contaminant in the study. At higher groundwater velocities, the Lactate reactive zone is very large. This indicates the need to inject in areas with lower flow rates because the microbes must be sustained while the contamination is in that area. The reactive zone has to be a certain length for the microbes to have time to breakdown the concentrations.

Mr. Nelson continued that ERD treatment will be most effective at the distal end of the plume near the MLGW substation, where groundwater flow is slower instead of at the railroad tracks where groundwater flow is faster. Mr. Ballard voiced a concern that the further the treatment is from the Source Areas, the greater the potential for contaminant flow to move outside the known plume area due to the clay topography. He suggests one line of treatment between the Source Areas and the thicker saturated zone area.

CH2M Hill has estimated the costs and effectiveness of ERD at various locations across the plume including the Permeable Reactive Barrier (PRB) Implementation Study location, but they have not finalized a scenario for use in the Off-Depot Groundwater RD. Calculations showed that using ERD in the PRB Implementation Study location may be cost-prohibitive due to the excessive amount of carbon substrate necessary to achieve the desired results.

Mr. Spann and Mr. Ballard suggested that instead of using a universal flow rate in their modeling assumptions, CH2M Hill should use a flow rate based on potential injection locations. Mr. Nelson said that CH2M Hill was evaluating the situation in order to develop the necessary design elements based on contaminant concentrations. Mr. Nelson reiterated that using Lactate as the carbon source will meet the remedial action objectives, but it requires maintaining a very large reactive zone.

The team then discussed how the microcosm study results were evaluated and presented – contaminant vs. zones with similar groundwater flow. Mr. Ballard suggested separating the data for implementing ERD by flow zones. He suggested that CH2M Hill evaluate an ERD treatment area location between the PRB Implementation Study location and the Source Areas. He also suggested CH2M Hill evaluate how many treatment zones are necessary to prevent further contaminant flow outside of the plume.

Mr. Nelson reported that CH2M Hill is primarily evaluating ERD treatment in areas with lower groundwater flow rates because it is more cost effective. Mr. Ballard and Mr. Spann agreed that the treatment should not go in an area with high groundwater flow rates such as the PRB Implementation Study location. But they also suggested that potential ERD treatment locations should not include areas of low flow that also have low contaminant concentrations. Mr. Nelson indicated that CH2M Hill will evaluate ERD treatment locations by flow zones and contaminant concentrations.

The team discussed several different ERD treatment locations such as the area from MW77 to the western Dunn Field fence line, the MLGW substation area and then along Ragan Street to E. Person Avenue.

Mr. Nelson commented that CH2M Hill does not want to restrict the RA contractor to certain areas as the off-Depot groundwater concentrations may change due to the Source Areas RA. Mr. Spann agreed that while flexibility in the design is good, the RD must indicate the treatment locations. CH2M Hill will locate treatment areas based on flow rates and contaminant concentrations, and will then evaluate and consider BCT comments on the treatment location methodology to be presented in the Intermediate (60%) Off-Depot Groundwater RD.

AI: CH2M Hill to provide e^{2}M with potential ERD treatment transects for use in the Revised Proposed Plan by May 18.

Off-Depot Intermediate Aquifer Groundwater Study

Mr. Nelson reported that CH2M Hill will submit the Off-Depot Intermediate Aquifer Groundwater Study Work Plan to the internal team on Friday, May 11. The BCT will conduct an on-board review of the Work Plan at the June 14 meeting. CH2M Hill still awaits Notice to Proceed for the field effort; therefore, the field work schedule has not yet been established.

Revised Dunn Field Proposed Plan

Mr. Holmes reported that e^{2}M is on schedule to submit the Rev. 0 Revised Proposed Plan to the internal team on May 21 with a 7-day review period. e^{2}M will submit the Rev. 0 to the BCT on June 5.

Mr. Holmes asked if Mr. Ballard or Mr. Spann have provided Mr. Dobbs with written approval of the Request for Extension of the Revised Dunn Field Proposed Plan. Both indicated letters will be forthcoming. Mr. Ballard commented that according to the Federal Facilities Agreement if Mr. Dobbs did not receive written approval within 10 days of submitting the request, then the request is considered approved. Mr. Ballard and Mr. Spann then provided verbal approval of the Request for Extension.

AI: EPA and TDEC to provide written approval of the Request for Extension of the Revised Dunn Field Proposed Plan.

Dunn Field Land Use Control Implementation Plan (LUCIP)

Mr. Nelson received an e-mail on Tuesday, May 8 from Mr. Rick Wirsing indicating that Ms. Martha Brock had agreed to revise the LUCIP with the protocol. But Ms. Brock is uncertain how to proceed and wants to discuss the issue with Mr. Ballard. Mr. Nelson also reported that Mr. John DeBack, as well as the BCT, agreed to the LUCIP text and protocol.

Mr. Ballard will contact Ms. Brock to confirm the LUCIP protocol requirements as well as the next steps in the review and approval process and will forward the information to Mr. Nelson. Mr. Nelson said that CH2M Hill is prepared to revise the document, but wants to make sure of the appropriate verbiage before proceeding.

A1: EPA to confirm LUCIP protocol requirements and provide the information to CH2M Hill.

Main Installation Remedial Action (MIRA)

MI Long Term Monitoring (LTM) Report

Mr. Holmes reported that e^2M and their contractors installed 27 new wells around the Main Installation and sampled them in April as part of the semi-annual LTM sampling event. The data are due to e^2M in about one week.

LTM and Enhanced Bioremediation Treatment (EBT) Quarterly Report

Mr. Holmes reported e^2M submitted to the internal team the 2nd Quarter EBT report that includes injection information from December 2006 through March 2007 and the quarterly sampling conducted in March. e^2M installed replacements for wells in Target Treatment Area (TTA) 2 that were screened in the perched water zone. The replacement wells are screened appropriately.

Mr. Holmes presented the March sampling results and pointed out treatment areas where PCE and TCE concentrations decreased with the associated increase in cDCE, as expected and as seen in the "Lactate only" microcosm study. He also indicated areas with concentration changes more than 10 percent. Mr. Holmes confirmed for Mr. Ballard that the cDCE increases correlate with decreases in PCE.

As discussed at the April BCT meeting, e^2M increased the injection volume from 167 to 250 gallons per well in the MW-21 area to distribute the lactate further from the injection point. Mr. Holmes reported that he did not expect the March sampling results to reflect an impact from the increased injection volume. Field monitoring parameters have not indicated an impact from the increased volume.

In the TTA-1 MW-21 Area, nine of the 10 injection wells have negative ORP/depleted DO. PCE decreased in seven wells and increased in two wells. TCE decreased in eight wells and increased in one well. cDCE increased in five wells and decreased in one well.

In the seven monitoring wells in this area, there is little change in ORP or DO. PCE decreased in three wells and increased in two wells. TCE decreased in five wells and increased in one well. There were low baseline concentrations of cDCE and the sampling results indicate small increases and decreases.

In the TTA-1 MW-101 Area, 24 of the 27 injection wells have negative ORP/depleted DO with anaerobic conditions more pronounced in the shallow wells. PCE decreased in 18 wells (more pronounced in shallower wells) and increased in two wells. TCE decreased in six wells and increased in 10 wells. cDCE increased in 21 wells and decreased in one well.

Of the 19 monitoring wells in the TTA-1 MW-101 area , 12 have negative ORP/depleted DO. PCE decreased in 12 wells and increased in three wells. TCE decreased in five wells and increased in five wells. cDCE increased in 13 wells and decreased in two wells.

The sample results indicate a correlation that wells with changes in ORP also have decreases in PCE and increases in cDCE. Concentrations have decreased significantly in wells in the MW101 area with negative ORP and depleted DO.

In the TTA-2 area, 11 of the 12 injection wells have negative ORP/depleted DO (only 10 wells have baseline data). PCE decreased in six wells and increased in two wells. TCE decreased in four wells and increased in four wells. cDCE increased in five wells and decreased in one well.

Of the 13 monitoring wells in the area, five have negative ORP/depleted DO (only 11 with baseline data). PCE decreased in seven wells and increased in three wells. TCE decreased in six wells and increased in two wells. cDCE increased in five wells and decreased in three wells.

In summary, Mr. Holmes reported that in the TTA-1 MW-101 area conditions are responding better to the EBT treatment than in the TTA-1 MW-21 area. Conditions have a good response in TTA-2. Mr. Holmes confirmed for Mr. Ballard that the slower response in the MW-21 area is because the ORP and DO conditions are not being established. Although there is no change in ORP levels in the TTA-1 MW-21 monitoring wells, there is a decrease in PCE and TCE. e^2M believes the Lactate may be used up before reaching the monitoring wells.

Mr. Holmes also reported that sample results have not indicated major changes due to the addition of the sugar in the injection wells. Mr. Holmes and Dr. Hugh Russell discussed whether to continue adding the sugar and have agreed to continue. They also discussed increasing the injection volume again in the MW-21 area to distribute the Lactate farther from the injection point.

The team discussed whether e^2M should decrease the concentration of Lactate in the TTA-1 MW-21 area wells where they will increase the injection volume. The team determined that e^2M will continue injecting 2% Lactate per 500 gallons of water in the MW-21 wells. If the ORP and DO conditions are achieved, then e^2M can reduce Lactate concentration to 1% and see if there is any reaction. Sugar will continue to be added to the injection solution.

Mr. Holmes reported that for the TTA-1 MW-21 e^2M is evaluating the cost effectiveness of pumping water out of monitoring wells into a water tank and then re-injecting the water to better distribute the Lactate. Mr. Ballard commented that pumping may pull the groundwater containing the Lactate through areas of preferential flow and may reduce the Lactate dispersion throughout the aquifer as the groundwater will move toward the well being pumped. Mr. Holmes responded that if e^2M's evaluation indicates the time and effort will not provide significant results, then they will not implement it. Mr. Miller stated that the volumes to be pumped would not be sufficient to influence lactate distribution.

Upon receipt of the sampling results from the LTM wells and newly installed wells around May 18, e^2M will begin developing the next LTM Report.

PCP Dip Vat

Mr. Spann indicated that there are internal concerns at TDEC about groundwater monitoring associated with the former PCP dip vat. TDEC will investigate the issue internally and will bring any resulting recommendations back to the team.

Miscellaneous

Dunn Field FOST 4 Property

Mr. Holmes reported that the property transfer schedule indicates that the deed is scheduled to be signed by the end of August. Upon confirmation from Mr. Dobbs regarding survey boundaries and location of the fence, e^2M will construct the fence, the new gate and the new road that will connect with the existing road after it crosses the railroad tracks.

Community Relations

Mr. Dobbs reported that Ms. Doris Bradshaw, a Memphis Depot RAB member, contacted the Defense Logistics Agency regarding the cleanup project, and the community relations team is preparing a response to her inquiries.

Mr. Holmes reported that on Wednesday, May 2, a story about the Memphis Depot cleanup project appeared on the local ABC affiliate evening news broadcast. Mr. Ballard indicated that the EPA spokesperson quoted felt the broadcast did not accurately reflect the information she provided. The BCT concurred that the information provided in the broadcast did not accurately portray the current status of the project or environmental conditions at the Memphis Depot.

CERCLA 5-Year review

Mr. Holmes reported that e^2M will initiate work on the 5-Year Review in June with the Rev. 0 due to the BCT by the end of July. Mr. Ballard asked if e^2M has completed the community involvement review, and Mr. Holmes responded that Frontline completed a community survey last year.

Deliverables matrix

The team reviewed the deliverables matrix and determined that there are no schedule delays anticipated.

Next Meeting

The next BCT meeting is scheduled for June 14 at CH2M Hill's office in Atlanta, GA. The Project Team meeting is scheduled for the afternoon of June 13. The team also tentatively scheduled meetings for July 19 in Memphis, TN, August 16 in Atlanta, GA, and September 20 in Memphis, TN.

6/14/07

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

6/14/07

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

Evan Spann 06/14/07

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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