BRAC: Jay Foster CALIBRE: Joan Hutton, Bill Millar USEPA: Diedre Lloyd TDEC Division of Remediation: Jamie Woods (absent) USACE, Mobile: Melissa Shirley Koman Government Solutions: Larry Pannell HDR EOC: Tom Holmes, Clayton Mokri, Denise Cooper, Nancy Jepsen

Mr. Foster began the meeting by stating that he applauds this team for its successes and each team member played an important role in those successes. He said the team has been very fortunate in funding, as the BRAC budget is tied to the Five-Year Defense Plan and the National Defense Authorization Act (NDAA), which makes cash flow a challenge. He noted that all of the DDMT actions have been funded and that DDMT will continue to be a priority.

Mr. Foster said his focus is on transferring the Dunn Field West parcel and the most important thing to his leadership is to return the property to the community. Mr. Foster stated that the Army has spent an extraordinarily large amount of money on the site to do what is best for the community and for the federal government. He said the cost to complete for DDMT is estimated at \$8-10 million, showing that the Army is not walking away from DDMT.

Ms. Hutton stated that Mr. Woods had let her know that he would not be able to attend due to an illness in his family.

Mr. Holmes gave a quick overview of the agenda and began the Monthly SMT Meeting discussion.

March SMT Meeting

Main Installation (MI)

Mr. Holmes stated that responses to EPA comments for the Human Health and Ecological Risk Assessment (HHERA) Sampling and Analysis Plan (SAP) are in internal review and are expected to be submitted to EPA for review soon.

Dunn Field

Mr. Pannell said that February was a full-on month with all air sparge (AS) wells operating. He noted there were several recent condensate transfers and that power was lost from 3 February to 8 February due to a series of snowstorms that moved through the Memphis area. He noted the bi-monthly monitoring event was conducted on 17 February and that the air water separator condensate transfer line, which is the line from the interior tank to the exterior tank, was replaced during the monitoring event. Mr. Pannell said that March is an "off month," and only AS wells 91 through 95 will operate during March.

Mr. Pannell stated that the system has been generating condensate water at a higher volume than usual, partly due to wet weather and partly due to operating AS wells 91 through 95 during off months. He noted that in previous years, condensate water was transferred every three to

six weeks during cold weather, but this year it transfers were required approximately once every week. Mr. Pannell said that the storage tank at Dunn Field had reached capacity, so the AS and soil vapor extraction (AS/SVE) system was shut down for a few days until the condensate could be tested, characterized, and disposed.

Mr. Pannell said EPA comments on the Year 10 Semiannual Report had been received and addressed; the comments were on the August 2021 version of that report, but a revised version of the report was submitted in January 2022 to correct calculation errors. He noted there were only three comments on the semiannual report: one regarding the calculation error that had been corrected; a second regarding when AS wells were installed versus when they were brought online; and the third a minor comment. Mr. Pannell offered that he could respond to the comments on the Year 10 Semiannual Report, but suggested a simpler approach was to incorporate the responses into the Year 10 Annual Report. Ms. Lloyd answered that it was acceptable to wrap the responses into the Year 10 Annual Report.

Mr. Pannell stated that the Year 11 Semiannual Report has been drafted and will soon be submitted to Army for internal review.

Ms. Shirley said that the current contract for AS/SVE operations will end in July 2023. Ms. Hutton said that ideally the work will be completed by then. Mr. Holmes said that operating the five AS wells during off months had reduced individual chlorinated volatile organic compound (CVOC) concentrations below 50 parts per billion (ppb) in a recent sample, and that sample frequency has been increased to monitor the concentration level. Mr. Pannell said that the trichloroethene (TCE) concentration in the December sample was 48.7 ppb.

Long Term (LTM) Monitoring

Mr. Holmes stated that the Annual LTM Report - 2020 received conditional approval from EPA based on future discussion of three general comments: 1) influence of Allen Well Field on groundwater flow direction, 2) gradient and flow direction, 3) low-flow versus passive diffusion bag (PDB) sample results. Mr. Holmes noted he thought comments 1 and 2 had been addressed during the SMT Issues call on 8 February. Ms. Lloyd answered that those were not necessarily addressed and she would like to talk about them later. Ms. Lloyd said that she was less concerned about the third comment for that was more of a big picture issue that she would like the team to keep in mind as work proceeds. Mr. Holmes asked if these comments should be discussed in April's team meeting. Ms. Lloyd agreed but said that she would like to talk about comments 1 and 2 today when discussing a conceptual site model.

Mr. Holmes noted that internal comments have been received on the Annual LTM Report – 2021, responses are being prepared and the report will be submitted for regulatory review in March.

Mr. Holmes stated that the April 2022 LTM sampling event will begin 7 April.

Other Issues

Mr. Holmes stated that the Fifth Five-Year Review (FYR) is beginning. He said a public notice will be published on 16 March and notification letters to community officials and agency representatives will be sent on 14 March. Ms. Hutton asked for the date required for completion

of the FYR report including agency signatures. Mr. Holmes answered 23 January 2023. Mr. Holmes said the Revision 0 version of the FYR report is due to the regulators in August 2022.

Mr. Holmes noted that responses to EPA comments on the 2022 Site Management Plan were submitted on 28 February.

Ms. Hutton said she would soon send invitations for the SMT monthly meeting at the new time of 10 am ET.

Mr. Holmes reported there were no calls on the Community Information Line in January or February. He noted that there are usually calls in January following publication of the annual newsletter, EnviroNews, but the calls did not come this year.

Mr. Holmes stated that HDR is keeping up to date on the Administrative Record (AR) / Information Repository (IR). He noted that the draft AR and IR indexes are being prepared and the new IR compilation will be prepared following approval of indexes.

Mr. Holmes said the next fieldwork would be the semiannual LTM fieldwork and the AS/SVE quarterly monitoring in April.

Upcoming Fieldwork

Contractor	Activity	Dates
HDR	Semiannual LTM	6-15 April 2022
KGS	AS/SVE Quarterly Monitoring	5 April 2022

Document Status – Prioritized List

Agency Reply on Responses to Comments

1. Responses to EPA Comments on 2022 Site Management Plan (November 2021) (submitted 28 February 2022)

Agency Review of Reports

- 1. Offsite Groundwater Investigation (submitted 5 January 2022) (EPA, TDEC)
- Dunn Field West Post-ROD Supplemental Investigation (submitted 4 March 2022) (EPA, TDEC)

Army Revision or Responses to Agency Comments

1. Comments from EPA (2/14/22) on HHERA Review SAP (July 2021)

Dunn Field West Transfer

Offsite Groundwater Investigation (OSI)

Mr. Holmes stated the offsite plume is along the northern boundary of Dunn Field. He said that when the plume was first identified it was considered to have been from both onsite and offsite sources because of elevated concentrations in the upgradient (northeast) corner of Dunn Field and higher concentrations in the downgradient (northwest) corner. Mr. Holmes said there were no onsite sources identified in either the 2002 Remedial Investigation (RI) or the 2017 membrane interface probe (MIP) survey by KGS/Trinity. The MIP and soil sample locations were shown (Figure 1) and he stated the sample locations were selected at higher MIP readings, but only one sample had a CVOC detected and the concentration was below the reporting limit.

Mr. Holmes said the source areas in the northwest section of Dunn Field were remediated as described in the Source Areas Interim Remedial Action Completion Report (IRACR) and met the remediation goals and remedial action objectives (RAOs). He said the groundwater CVOC concentrations at the northwest corner of Dunn Field were greatly reduced during the remedial action. The total CVOC concentrations in groundwater for 2007 and 2008 (Figure 2) was shown. Mr. Holmes noted the maximum concentration in April 2007 was 12,000 ppb in the central plume and 500 to 1000 ppb on and downgradient from the northwest corner of Dunn Field. The SVE system began operating in July 2007 and by April 2008, CVOC concentrations in the northwest corner were below 50 ppb; upgradient concentrations along the northern boundary remained at the previous levels above 100 ppb.

Mr. Holmes stated that the CVOCs commonly detected along the northern border are 1,1dichloroethene (DCE), tetrachloroethene (PCE), and TCE. Mr. Holmes noted that TCE and PCE have been detected throughout Dunn Field, but DCE has been detected only along the northern boundary and was used as a marker for the offsite plume.

Mr. Holmes showed trend plots for individual concentration at MW-130 (Figure 3), installed in 2003 just upgradient of the northeast boundary, and MW-220 (Figure 4), installed in May 2007 at the northwest corner. Concentrations at MW-130 were near 100 ppb and had little change through 2014; the recent decrease may be due to naturally occurring attenuation. Concentrations at MW-220 in May 2007 were near 1,000 ppb but quickly decreased below 100 ppb and are now around 10 ppb, which is consistent with concentrations elsewhere onsite.

Mr. Holmes said the OSI included installation of nine wells, as well as quarterly sampling of those nine wells and of ten existing TDEC wells and showed the locations (Figure 5). Mr. Holmes briefly reviewed the DCE, TCE and PCE concentrations for July 2021 (Figures 6, 7 and 8) and stated the CVOC concentrations in the TDEC and OSI wells were consistent throughout the investigation.

Mr. Holmes stated the downgradient edge of the groundwater plumes for DCE, TCE and PCE plume is at Ragan Street approximately 1,200 ft west of Dunn Field (Figure 9). The combined plumes underlie undeveloped and commercial/industrial properties except for residential properties along Hayes Road and Glory Circle near E. Person Avenue. The relatively low concentrations and land use indicate active remediation is not necessary.

Ms. Lloyd said that she and Ben Bentkowski believe an offsite source is likely and thinks the team has done a good job of documenting the data. She said the federal government could issue a notice of federal interest letter and TDEC could take point on identification of a responsible party; she noted a plan to discuss the issue with Region 4's Site Assessment Chief.

Ms. Lloyd said that in the interest of land conveyance, the site has reached Operating Properly and Successfully (OPS). She had included review of the OPS determination in one of her comments as something to think about and not as a directive. She does not think that needs to be re-negotiated, as the remedial action is operating properly. Ms. Lloyd noted all remedial action' must be complete in order to convey land, but "complete" covers a broad spectrum. She asked what the team planned to do with the hot spot, and if it would be more AS/SVE. Ms. Lloyd also asked what the land use would be. She stated that if the land would be paved over, that would be a different path forward than a public park.

Ms. Hutton answered that it would be industrial use and that the property would not be appropriate for conveyance as a park or for recreational or residential use. Mr. Foster said that residential or recreation use has not been an option since the beginning. Ms. Hutton said the Dunn Field East property was initially offered to the city as a park. Mr. Holmes indicated the northwest section of Dunn Field that had been used only minimally by the Depot. Mr. Holmes said that area is listed as unlimited use/unrestricted exposure (UU/UE), but the city has it zoned as Industrial. Mr. Holmes said that according to Mr. Woods, the surficial aquifers in the area have widespread TCE contamination but not at a level that requires remedial action unless there is potential for the contamination to reach the Memphis Aquifer. Mr. Holmes said there are no sinks in the area and that future land use would also be limited by the Shelby County zoning restrictions and Shelby County Health Departments requirement for well permits. Mr. Foster said the use restrictions and controls would ensure there was no pathway and that the Army has a very high test for legal approval.

Ms. Lloyd asked if there would be ongoing remedial action at Dunn Field West. Mr. Holmes answered no but suggested the Dunn Field West report be discussed before discussing next steps.

Mr. Foster said that the Environmental Law Department would review the Finding of Suitability to Transfer (FOST) amendment, then it would be reviewed by the EPA. He said after EPA's review, the amendment would go through another legal review after which it would then be reviewed by the Office of General Counsel. Mr. Foster stated the amendment would then be reviewed by the USACE real estate legal department, and then reviewed by the Army Secretariat. Mr. Foster said that the amendment would then be reviewed by General Services Administration (GSA) counsel because it is for a public sale.

Ms. Lloyd asked if AS/SVE would be continued. Mr. Holmes answered that it would continue until the site meets the 50-ppb target. Mr. Holmes stated that the goal is to get CVOC concentrations well below the 50-ppb criterion, after which there would be a year of compliance monitoring. He said that after a year of compliance monitoring, the AS/SVE system would be turned off, the wells would be abandoned, and the equipment moved.

Ms. Lloyd said that EPA guidance requires eight monitoring events below the maximum contaminant level (MCL) before abandoning the system. She said that the eight events did not

need to be quarterly. Mr. Holmes replied that MCL was not necessarily the target of the active remediation. He noted that although the system might be shut down, LTM would continue until the MCL is met.

Ms. Lloyd asked if monitored natural attenuation (MNA) was being recommended. Mr. Holmes said it would be dilution but there was no indication of naturally occurring biodegradation.

Ms. Lloyd said that her only concern was to have eight consecutive groundwater events. She said she was fine with the land conveyance. She said she has less concern about the industrial use but she does have concern about the ongoing remedial action. Ms. Lloyd said she doubts that 50 ppb will be met eight consecutive times. Mr. Holmes said he was confident the standard would be met. He stated that once it is met consistently over a year and there is no continuing source, he does not know how the contamination level would increase again.

Ms. Hutton asked where to find the requirement for eight consecutive monitoring events. Ms. Lloyd answered that it was in EPA groundwater guidance and she would send it to Ms. Hutton. Mr. Holmes said the record of decision (ROD) requires four events.

Ms. Lloyd said she is hesitant to abandon the system, though she is fine with turning it off. She said that every time systems are turned off, contamination levels bounce back. Mr. Holmes stated that the SVE system has remained available on Dunn Field on the premise that it might need to be turned on, but the only area that has had increased groundwater concentrations is the MW-87 area, which was outside of the treatment boundary. Mr. Holmes said that Dunn Field had concentrations below the MCL except for the offsite plume on the northern boundary and without rebound except for two wells in the Dunn Field West area.

Dunn Field West

Mr. Holmes proceeded with discussion of the Dunn Field West (DFW) Post-ROD Supplemental Investigation. He noted that the only DDMT property that had not been transferred was the western and northern section of Dunn Field (DF West) (Figure 10).

Mr. Holmes stated that remedial actions on Dunn Field were completed in 2012 and CVOC concentrations in all LTM wells on Dunn Field were reduced below MCLs and target concentrations (TCs) from the Dunn Field ROD, except in the offsite plume area. He noted that a couple of DFW wells had slightly exceeded MCLs or TCs sporadically, but the only area with repeated exceedances were wells near MW-87. He said CVOC concentrations in MW-87 began to increase in 2013, a year after the SVE system was turned off; concentrations exceeded a TC in 2014 and exceeded an MCL in 2016. Mr. Holmes said the supplemental investigation was conducted to identify the source of the increased CVOC and to evaluate human health risk and the need for additional remedial action.

Ms. Lloyd asked about the land use controls (LUCs). Mr. Holmes replied that LUCs are established for the DF West section still held by the Army but not for the eastern section of Dunn Field, which has been transferred with UU/UE exposure based on the ROD. All of Dunn Field is subject to the city zoning classification, which is industrial.

Ms. Lloyd asked if the LUCs included groundwater and potable wells. Mr. Holmes replied that only the DF West section has drilling and well restrictions from the LUCs, but all of Dunn Field

and the surrounding area are included in the SCHD restriction on wells within a half mile of a National Priorities List (NPL) site.

Mr. Holmes stated there were no soil samples collected in the DFW investigation area during the Dunn Field Remedial Investigation (Figure 11) and that the area was outside the Dunn Field Remedial Design Investigation using MIP and soil sampling (Figure 12).

Mr. Holmes said that the conceptual model for the supplemental investigation was that CVOC contaminants were retained in the shallow fine-grained soils, the contaminants leach into the deeper coarse-grained soils and then impact the groundwater. SVE in the coarse-grained soils, which started operation in July 2007, stopped the migration of the contamination and the groundwater concentrations decreased. In-Situ Thermal Desorption (ISTD) was implemented to remove CVOCs from the shallow fine-grained soils but the MW-87 area was not within an ISTD treatment area (Figure 13). When the SVE system was shut down in 2012, contaminant migration resumed in the area near MW-87.

Mr. Holmes said the DFW investigation included soil samples from borings, vapor samples from monitoring points, and groundwater samples from existing LTM wells and two additional monitoring wells. The purpose was to evaluate the extent of CVOC contamination and the potential human health risk.

Mr. Holmes stated the analytical results indicated that the MW-87 increase was most likely due to residual concentrations of chloroform and TCE in the remedial action area to the southeast; however, CVOC concentrations in MW-87 decreased below MCLs while the investigation was conducted. Groundwater concentrations increased above MCLs at MW-06 and were confirmed at new well MW-328 located near the Dunn Field boundary (Figure 14). Both MW-06 and MW-328 exceeded the TC for 1,1,2,2-tetrachloroethane (TeCA), and the MCL for chloroform and TCE. He noted that a couple of offsite wells also exceeded the TC for TeCA. An area of soil contamination with CVOCs (Figure 15) and other petroleum-related VOCs (Figure 16) was also identified. Soil vapor concentrations also exceeded screening levels for CVOCs (Figure 17 and 18)

Mr. Holmes stated the risk assessment found that there is potential for unacceptable hazards from exposure to constituents of potential concern (COPCs) in soil, groundwater, and soil vapor to future onsite workers and to future offsite residents. However, there are no complete pathways of exposure at this time. He noted that the DFW investigation area is limited to industrial activity and is not developed. MLGW provides drinking water for the surrounding area and there are no identified water wells in the Fluvial Deposits Aquifer in the surrounding area.

Mr. Holmes stated the existing LUCs do not clearly address the potential risk from the vapor intrusion (VI) pathway and that the Army recommends an Explanation of Significant Differences (ESD) to add VI mitigation or testing to the LUCs. Mr. Foster added that the institutional controls and LUCs would be in the deed to ensure there is not a complete pathway for VI exposure.

Ms. Lloyd asked about the incomplete exposure pathway. Mr. Holmes answered that it was incomplete because the property is not developed. Ms. Lloyd stated that when the land is sold, there might be exposure and the VI pathway complete. Mr. Holmes noted that FOST

Environmental Category 4 would be met when the ESD was final and the VI LUC added. Ms. Hutton said that all of this is disclosed to potential buyers in the marketing packet.

Ms. Lloyd asked if the soil contamination is surface contamination or if it is deeper. Mr. Holmes said the contamination was deeper than 5 feet and was delineated laterally and vertically.

Ms. Lloyd stated that a removal action could be performed, which might alleviate concerns. She acknowledged that removal action could be expensive but may save money on monitoring and other long-term concerns. Ms. Lloyd also noted that an ESD does not require a public meeting but does require a public notice and an opportunity for community input and engagement. She suggested creating a fact sheet that would be sent to the mailing list.

Focused Feasibility Study (FFS)

Mr. Holmes said the FFS report is undergoing internal review and so the materials being reviewed are not final. He said that following resolution of internal comments, the FFS will go through legal review and afterward be submitted for regulatory review.

Ms. Lloyd said she would like to discuss the conceptual site model (CSM). She said that so far there are four different documents for the CSM which made it difficult to review. She added that one of her comments for the FFS will be to ask for a comprehensive CSM including the whole site. She said the format was not a concern, but all the sources, routes of exposure and media should be discussed in one model. She noted it did not need to be more than a few pages with references to the documents containing the complete data. Ms. Lloyd said an overall view of the site was needed as the team proceeds with an ESD or ROD amendment.

Mr. Holmes said activities at Dunn Field were different than at the MI. Ms. Lloyd agreed that was a fair point and said that perhaps separate models for the two areas would be better. Mr. Holmes noted the FFS is focused on groundwater on the MI and that he would need direction from the Army on how to proceed regarding the CSM. Ms. Lloyd said it did not need to be complicated, but there are some things that need to be presented from an overall perspective. Ms. Lloyd stated there is a project lifecycle CSM that might work well for DDMT and that she would forward the guidance to the project team.

Mr. Holmes returned to the FFS review and noted that enhanced bioremediation (EBT) was the groundwater remedial action selected in the MI ROD. The remedy was implemented in 2006 to 2009 and in 2012 to 2014 but did not meet the RAOs; a supplemental remedial investigation was completed and the FFS was performed to identify, develop, screen, and evaluate remedial alternatives for contaminated groundwater at the MI and to provide sufficient data to select a feasible and cost-effective remedy.

Mr. Holmes said the primary groundwater contaminants on the MI are PCE and TCE throughout the MI and that carbon tetrachloride (CT) was found in treatment area TTA-2. He stated that cis1,2-dichloroethene (cDCE) and vinyl chloride were detected in the treatment areas because they were created by the EBT.

Mr. Holmes stated that the different plumes result from small-volume releases and contaminant migration onto the MI. Specific soil source areas were not found in the MI Remedial Investigation or in the 2009 Source Area Investigation but that a source area in the TTA-2 area

is suspected because of the mass CVOC (200 pounds) removed by the SVE pilot test. Mr. Holmes noted that neither dense non-aqueous phase liquid (DNAPL) nor CVOC concentrations in groundwater indicative of DNAPL have been observed.

Mr. Holmes pointed out the nine plumes identified on the MI (Figure 19).

Mr. Holmes said the RAOs established for the MI are still considered to be appropriate. He said the groundwater RAOs were designed to:

- Prevent human ingestion of contaminated water,
- Reduce contaminant concentrations to MCLs or lower, and
- Prevent horizontal and vertical offsite migration of groundwater contaminants in excess of MCLs.

Mr. Holmes reviewed the identification and screening of technologies for remedial alternatives. A no action alternative was included as required by the FS guidance. Institutional controls and LTM will be included with the active remedies and the physical components of natural attenuation are expected to have some part in achieving RAOs which require reducing concentrations below MCLs.

Mr. Holmes noted the screening summary (Figure 20) listed remedial technologies for general responses actions: containment, treatment and discharge/disposal. The summary showed the technologies eliminated in the initial screening and those selected in the second screening. Treatment with AS/SVE and adsorption prior to discharge to the atmosphere were selected as the preferred remedy. The previous selected remedy, EBT, was eliminated based on results of the five years of EBT already performed.

Ms. Lloyd asked if the team had evaluated reactive barriers. Mr. Holmes replied that reactive barriers were eliminated due to the depth of groundwater and the underlying clay (>60 feet). He noted permeable reactive barrier (PRB) was the original remedy for the offsite plume on Dunn Field, but a field test showed it was not feasible.

Mr. Holmes stated that the concentrations at the MI are at the lower limit for remedial action. He said that there are 188 wells on the MI and only 5 to 11 of those wells exceeded 50 micrograms per liter (μ g/L) for PCE, TCE and CT in each of the last few years. He said locations above 40 μ g/L were targeted for active remediation.

Ms. Lloyd asked why 40 μ g/L was chosen. Mr. Holmes answered that level was considered high enough to be practical and allows for a variability at individual wells; it also includes the North Central (N-C) plume migration onto the MI. Mr. Holmes said that with clean-up to 40 μ g/L, the 'clean' water would migrate downgradient and reduce plume concentrations through dilution along with other physical components of natural attenuation.

Mr. Holmes stated there are three alternatives, with the first being the no action alternative. Alternative 2 has treatment locations for the two plumes that are coming onto the MI and for the plume in the Window (Figure 21). He stated the three treatment locations would each have an AS/SVE transect to extend across the core of the plumes with end at the 20-ppb contour with the goal of reducing concentrations below the MCL. He noted a pre-design investigation (PDI)

would be necessary to confirm the target area width and depth and added that a pilot test(s) would be conducted to verify that the blower and compressor requirements for the AS and SVE well depths. In addition to the three transects, SVE would be implemented in TTA-2 using the existing equipment.

Mr. Holmes said that Alternative 3 included the Alternative 2 components with the addition of one portable SVE system and one portable AS/SVE system to be shifted between eight potential treatment areas (Figure 22). He stated the PDI would include vapor sampling to identify which areas had sufficient vapor concentration in the vadose zone such that SVE alone could be effective. He said the portable AS/SVE system would include one SVE well and three to four vapor monitoring points (VMPs).

Mr. Holmes stated there is potential for onsite sources as well as the offsite contaminant migration for the TTA-1 North (TTA-1N) and N-C plumes and that the portable systems would be employed in each of those areas.

Mr. Holmes stated that Alternative 2 transects for the N-C and TTA-1N plumes were estimated to require operation for ten years. In each area, groundwater flow to the downgradient extent of the plume would take two and one-half years. Reduction of CVOC concentrations to the 20 µg/L target was estimated to require four cycles. Operation of the window transect was estimated to require five years based on a one and one-quarter years for the groundwater flow path based on the length, steeper gradient and faster travel time. He stated the estimated time period for operation of the Alternative 3 is five years based on use of the portable systems within the plumes which would shorten the required flow paths.

Ms. Hutton said there is no control on contaminant migration onto the MI at the TTA-1N and N-C plumes. She asked what the long-term provision for those areas. Mr. Holmes answered that if TDEC investigation identified the upgradient sources, contaminant migration could be stopped. Mr. Holmes noted that after the TTA-1N and N-C transects are installed and run for a period, the impact from the contaminant migration and the potential onsite sources could be evaluated. If the portable systems were installed, their operations would provide information of the extent of onsite and offsite sources. Mr. Holmes said at that point the Army would need to look at what is needed to protect human health onsite.

Mr. Holmes noted that current CVOC concentrations in the TTA-1N and N-C plumes are higher offsite than onsite.

Ms. Lloyd asked which alternative is favored. Mr. Holmes answered that a decision hasn't been made and the costs are still being evaluated. Ms. Lloyd stated that off the top of her head, not having seen the full report, she prefers Alternative 3 for it might yield more information about migration onsite and offsite.

Ms. Lloyd said that the Allen Well Field is a mile and a half from DDMT as the crow flies. She would like the Allen Well Field to be considered in the CSM. She stated there are three cones of depression on DDMT. Mr. Holmes agreed that there are three hydraulic connections on the MI: two sinks centered at around MW-259 and MW-39, and the window.

Ms. Lloyd said the height of operations at DDMT was approximately 1943. She said the Allen Well Field didn't begin until 1950s. She stated that she would like the CSM to consider the contribution of the Allen Well Field to groundwater flow.

Mr. Holmes agreed that once groundwater reaches the Memphis Aquifer, it flows toward the Allen Well Field. Mr. Holmes stated that the desktop review prepared by TechLaw only addressed flow in the Memphis Aquifer. He said that water is lower in the Memphis Aquifer because of pumping, and that pumping began in the 1880s at a well in Memphis; a paper reviewed for the SRI indicated that first well was artesian, a flowing well with the potentiometric surface above ground level. The paper noted the water level has been dropping since the 1880s as the number of extraction wells increased.

Ms. Lloyd said that groundwater flow has changed since the Allen Well Field began operation. Mr. Holmes agreed that it has for the Memphis Aquifer. Mr. Holmes said the contamination at DDMT is in the Fluvial Deposits Aquifer.

Ms. Lloyd stated she does not disagree with what Mr. Holmes has said, but she would like groundwater flow to be incorporated in the CSM. Ms. Lloyd said she would like the CSM to be in a primary document. She stated that the regional EPA team always wants a CSM included in either an ESD or a ROD amendment.

Mr. Holmes said that if the remedy changes from EBT to AS/SVE, then that would need to be documented in an ESD or ROD amendment. He said that now that the team is closer to having a groundwater remedy, the Army would like to implement it as soon as possible.

Ms. Lloyd answered that the team could go that route. She said that if the ROD amendment is written carefully, perhaps the team just needs to see what changed since the amendment. Mr. Holmes said that only the groundwater remedy is addressed, data would be gathered to allow adding a vapor remedy later. Ms. Lloyd said an ESD has fewer requirements for public participation and an ESD is a lot less work than a ROD amendment. Mr. Holmes stated that perhaps the ESD or ROD Amendment for the groundwater remedy and VI LUC could be written in such a way that addition of a VI remedial action could be added if necessary. Ms. Lloyd stated that if a LUC is added because of VI potential, then an ESD can be built on that.

Vapor Intrusion (VI) Study

Mr. Holmes noted that Ms. Lloyd had sent some additional comments on the 2019 soil vapor sampling memorandum and asked if she would like to discuss the comments. Ms. Lloyd said that instead of her going over her comments, the team should close that report cycle.

Mr. Holmes said EPA recently submitted comments on the Indoor Air Quality Assurance Project Plan (QAPP); the comments were forwarded to Mr. Mokri so that the comments could be addressed in VI Comprehensive Sampling Plan currently being prepared. Mr. Mokri noted that one of the comments concerned not delaying indoor air samples and that is being addressed. He stated the first stage is a passive soil survey followed by active sampling of VMPs. Mr. Holmes noted the team is considering whether indoor air samples would be appropriate once the screening samples were obtained.

Ms. Lloyd suggested that the soil vapor sampling memo should be considered closed, and that those comments could be addressed through the SAP and the CSM. Mr. Holmes agreed. Ms. Lloyd said she would send a letter noting EPA considers the reporting cycle complete.

Mr. Holmes stated the team has completed discussion of the items on the agenda. The team concluded the meeting and discussed how to proceed on the site driving tour.

The ongoing preliminary assessment and site inspection for PFAS was briefly discussed including the airplane crash on the MI. Ms. Lloyd said one thing that needs to be captured in the PFAS discussion is where the airplane crashed and whether any fire-fighting foam was used on it. Mr. Foster said the preliminary assessment has been completed, although the reporting is still in process.



Service Layer Credits: TN Department of Transportation

Figure 7 Phase II Data Gap Soil	Sampling Locations and Results		
8 8	DRAWN BY:	ЛС	
Field emphis, Tenness County, Tenness	DATE:	11/01/2017	
Dunn ense Depot Me mphis, Shelby (SCALE:	AS SHOWN	
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Figure 29

TOTAL CVOC PLUME TIME TREND

SOURCE AREAS INTERIM REMEDIAL ACTION COMPLETION REPORT

DUNN FIELD DEFENSE DEPOT MEMPHIS, TENNESSEE

Legend Total CVOC Isopleth (ug/L) **— —** 50 **— —** 100 **-** 500 **— —** 1000 **— —** 5000 **— —** 10000 Total CVOC Ranges (ug/L) • 0 - 100 • 101 - 500 501 - 1000 9 1001 - 5000 5001 - 10000 10001 - 50000 Dunn Field Property Line ----- Original Dunn Field Perimeter

Highest concentration at well pairs used for contour.
Total CVOCs include: CT, CF, DCA, DCE, cDCE, tDCE, TCA, TCE, PCE, PCA and VC.
Highest Total CVOC labeled for each event.

Feet



3

MW-130



MW-220



4











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CH2MHILL

LSV: Loess Screening Value FDSV: Fluvial Deposits Screening Value cDCE: cis-1,2 dichloroethene TCA: 1,1,2-tetrachloroethane TeCA: 1,1,2,2-tetrachloroethane VC: vinyl chloride ND: CVOCs not detected NS: not sampled

Figure 12

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CVOC Concentrations in Deep Soil Vapor

Dunn Field West Post-ROD Supplemental Investigation Report

Defense Depot Memphis, Tennessee

Legend

	Shallow VMP
	Deep VMP
•	SVE System VMP
	Fluvial Well, MW-87 Area
	Fluvial Well, Background
	Fluvial Well, DF West
	Original Dunn Field Boundary
	Roads
\square	TA-3 Loess Excavation Area
	In Situ Thermal Desorption Treatment Area
	Fluvial SVE Well 60-foot radius of influence

25 50 Feet

Projection: NAD 1927 StatePlane Tennessee Units: Feet, Elevation Units: Feet, NAVD88

Date: 2/28/2022 Edition: Rev 0

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- No Action
- Institutional Controls
- Monitored Natural Attenuation Naturally occurring biodegradation is not occurring on the MI. Physical components of natural attenuation (dispersion, dilution, sorption and volatilization) are still applicable.
- Long-term Monitoring
- Containment
 - o Physical barriers (slurry wall, sheet piling, grout curtain)
 - Hydraulic Barrier (groundwater extraction)
- Treatment
 - o In situ Biological Treatment
 - Enhanced bioremediation
 - Phytoremediation
 - o In situ Physical/Chemical Treatment
 - Air sparging
 - Bioslurping
 - In situ chemical oxidation/reduction
 - Dual Phase extraction
 - Thermal Treatment
 - In-well air stripping
 - Passive/Reactive treatment barriers
 - In situ flushing
 - Ex situ Biological Treatment
 - Bioreactors
 - Constructed wetlands
 - Ex situ Physical/Chemical Treatment (Aqueous)
 - Adsorption
 - Advanced oxidation processes (UV, ozone hydrogen peroxide)
 - Ex situ air stripping
 - Ex situ Physical/Chemical Treatment (Vapor)
 - Adsorption
- Discharge/Disposal
 - o On-site Discharge (aqueous) surface water or groundwater
 - On-site Discharge (vapor) atmosphere
 - Off-site Discharge (aqueous) POTW

