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June 13, 2025

Ms. Melissa Shirley
U.S. Army Corps of Engineers, Mobile District
ATTN: Melissa Shirley, EN-GE
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Subject: Responses to ADEM Comments on *Feasibility Study, Revision 1*
Organizational Maintenance Shop #28
Contract No.: W91278-20-D-0020, Delivery Order No:. W9127820F0288

Dear Ms. Shirley,

AECOM Technical Services, Inc. (AECOM) is pleased to submit formal responses to Alabama Department of Environmental Management (ADEM) comments dated May 1, 2025 on the *Feasibility Study, Revision 1* for Organizational Maintenance Shop #28 (OMS #28; dated October 2, 2024). These responses to comments (RTCs) were prepared under Contract No. W91278-20-D-0020, Delivery Order No. W9127820F0288.

The Adobe PDF of the RTCs plus the native file (e.g., Microsoft Word) will be sent to you via email. A hard copy of the RTCs will be shipped to the recipients on the attached distribution list.

Should you have any questions or comments, please contact me at (864) 561-3414.

Sincerely,

for

Timothy S. Renn, PE
AECOM Technical Services
Project Manager

Enclosure

DISTRIBUTION LIST

Responses to to ADEM Comments dated May 1, 2025 on the Feasibility Study Revision 1 for OMS #28 dated October 2, 2024

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U.S. Army National Guard (ARNG) Responses provided June 13 2025 to Alabama Department of Environmental Management (ADEM) Comments dated May 1, 2025 on the Feasibility Study Revision 1 for OMS #28, dated October 2, 2024

ADEM General Comment 1: ADEM requests that ALARNG provide property ownership maps showing the location of the 25.66 acres that was conveyed to the Alabama Armory Commission in 1953. These maps should demonstrate that Parcel A was not part of the 25.66 acre tract. Also, please provide ownership records of Parcel A to support the rationale that the property was never part of OMS 28.

Additionally, insufficient soil and groundwater data have been collected from Parcel F in close enough proximity to the samples with elevated concentrations that were collected from Parcel A to verify the conclusion that the tetrachloroethylene (PCE) found on Parcel A is the sole source of the PCE in groundwater on Parcel F (Figures 1-5 through 1-9). No soil samples were collected immediately south of SB27 or SB31 on Parcel F. Similarly, no groundwater samples were collected on Parcel F immediately south of GW22, GW23 and GW19 (Figures 1-10 through 1-13). There is a notable data gap for both soil and groundwater in the area on Parcel F, lying between GW38, GW21 and GW17. Therefore, additional soil and groundwater samples are recommended in the aforementioned areas on Parcel F in order to verify that additional soil sources for PCE are not present on Parcel F.

Army Response to General Comment 1: All property ownership maps and records in ALARNG possession have previously been provided to ADEM. Ownership research is more appropriately conducted by ADEM as the regulatory authority because ADEM can compel landowners to address releases on their property that are not the fault or owned by the ALARNG, including Parcels A, B, C, D, G and G.

The Army disagrees with the comment that an adequate number of samples were not collected in proximity to the boundary between Parcel F and Parcel A to determine if PCE detected on Parcel A is the sole source of PCE in groundwater detected on Parcel F. Soil borings SB27 and SB31 are located within 10 feet of the boundary between the parcels, and SB27 and SB31 are less than 50 feet from SB18. Similarly, soil boring SB18 is within 25 feet of the boundary between the two parcels. These soil borings are in close enough in proximity to determine a soil source for groundwater contamination. Furthermore, the highest concentration of PCE in surface and subsurface soils were detected in SB24, with concentrations dropping an order of magnitude or more within 10 feet (SB28, SB29, SB30, and SB31), confirming the source location as SB24. Similarly in groundwater, groundwater grab samples were collected from GW19, GW23, GW22, and GW 21, which are approximately 50 feet apart, and permanent monitoring well OMS-28-5, which is located halfway between these two areas. Standard spacing during the Supplemental Data Gap Investigation (SDGI) for groundwater was 20 to 25 feet unless physical elements prevented such spacing or if a monitoring well already existed. Additionally, the objective of the SDGI (the investigation during which these data were collected) was not to complete a Remedial Investigation (RI); the RI for OMS #28 had previously been approved by ADEM (August 8, 2013). The objective of the SDGI was to determine if other source areas were contributing to groundwater contamination and to refine the delineation of known groundwater contamination sufficiently to reevaluate remedial alternatives presented in the February 2014 FS with current data. In a letter dated January 21, 2020, ADEM agreed that soil and groundwater had been sufficiently delineated by the SDGI to proceed with developing remedial alternatives.

ADEM General Comment 3: Please see Comment 1 above in regard to the soil and groundwater data gaps. Also, please note that groundwater sampling data collected via temporary wells or direct push technology are considered screening tools. The only permanent monitoring well with groundwater data

results that reported PCE concentrations exceeding the maximum contaminant level (MCL) is monitoring well 28-5, which is located on Parcel F. Please address.

Army Response to General Comment 3: See response to comment 1. Also, the results and conclusions of the SDGI were approved by ADEM (January 21, 2020) for their intended purpose (*to determine if other source areas were contributing to groundwater contamination and to improve the delineation of known groundwater contamination to reevaluate remedial alternatives*). DPT groundwater and soil analyses completed during the SDGI were conducted by ELAP certified laboratories, and split samples were also analyzed by mobile and fixed laboratories. Additional permanent monitoring wells are not necessary for this FS. Additional permanent monitoring wells are proposed for installation during the remedial design/remedial action phase of work as needed once a remedy for the site is selected.

Multiple discussions regarding the correlation between the PCE detected in monitoring well OMS-28-5 located on Parcel F and the PCE soil source area detected on Parcel A are presented in the *FS, Revision 1* including in Section 1.3.7 (Nature and Extent of Contamination Summary) and in Appendix C (Exclusion of Responsibility for Offsite Tetrachloroethane [PCE] Contamination Documentation).

ADEM General Comment 4a: The Department has not concurred with ALARNG's conclusion that PCE or any contamination that possibly originated on the border of Parcels A and F is not the result of historic activities associated with OMS 28. This disagreement underlies the ongoing discussion regarding which Remedial Goals are necessary for which parcels and, subsequently, the scope of each Remedial Alternative presented in the Feasibility Study (FS).

It is the Department's understanding that ALARNG has operated on Parcel F (Mobile Airport Authority [MAA] property) with the cooperation of the MAA for many years now. Parcel F exhibits an extensive trichloroethylene (TCE) plume. Supplemental Data Gap Investigation (SDGI) Figures 4-6, 4-7, 4-8, and 5-1 show PCE and TCE contamination on Parcel F. The ALARNG agrees that at least a portion of the plume on Parcel F originates from activities on Parcel E (Mobile OMS 28).

The Department cannot reasonably approve of a Remedial Alternative that divides this plume and assigns responsibility to two parties, one of which remains unknown. Further, there is little evidence that another unknown party contaminated the soils of Parcel A with PCE. The contamination on Parcel A exists in close proximity to the parcels in which ALARNG activities have been conducted for many years. The evidence that PCE on Parcel A degraded into TCE and the two separate TCE plumes of Parcel A and Parcel E flowed directly towards each other and intermingled is insufficient. It could be equally surmised that TCE from Parcel E flowed northwest and now underlies the location of the PCE soil contamination. The current remedial alternatives are designed to bisect a plume into two parts. This design disregards the remediation of a portion of the plume. Therefore, please provide remedial goals for the PCE plume that underlies Parcel A.

Army Response to General Comment 4a: It is unclear where ADEM acquired the understanding that "ALARNG has operated on Parcel F (Mobile Airport Authority [MAA] property) with the cooperation of the MAA for many years now". Ownership of Parcel F reverted back to the City, and the City subsequently conveyed the property to the MAA in 2003. Remedial goals are not provided for the PCE plume and Parcel A for the reasons provided in Section 1.3.7 (Nature and Extent of Contamination Summary) and in Appendix

C (Exclusion of Responsibility for Offsite Tetrachloroethane [PCE] Contamination Documentation) of the *FS, Revision 1*. In particular, the Summary section in Appendix C summarizes why ALARNG is not responsible for the remediation of the PCE identified on Parcel A and therefore why remedial goals are not presented for this parcel. Figure C-15 shows soil locations where PCE was detected and groundwater PCE directions without TCE soil and groundwater detections. Figures C-16 and C-17 also show three-dimensional views of the PCE soil and groundwater detections. The PCE soil concentrations are much higher on Parcel A and PCE was detected in both surface and subsurface soil on Parcel A. PCE is detected in groundwater only on Parcels A and F. Since the source of PCE in groundwater is on Parcel A, remedial goals for the PCE plume are not presented in the *FS, Revision 1*.

ADEM General Comment 4b: As discussed in the Supplemental Data Gap Investigation (SDGI), this surficial aquifer consists of a heterogeneous mix of sands, clays, and combinations of the two. This local stratigraphy of interfingered sands, clays, clayey sands and sandy clays, etc., forms semi-confining conditions that produce tortuous preferential pathways for contaminants in groundwater to travel. The following are influential in regard to the dimensions and shape of a contaminant plume: precipitation, hydraulic conductivity, groundwater flow velocity, groundwater flow direction, the number and frequency of contaminant releases, contaminant concentrations, and density. These factors may result in a seemingly discontinuous plume when it is actually connected by some relatively obscure sand seam or other feature that has not been located within such heterogeneous sediments due to the “hit or miss” nature of soil and groundwater sampling locations and techniques.

Only TCE was found in discrete groundwater sample OMS-28-GW43 (10 micrograms per liter [µg/L]) in the lower surficial aquifer on Parcel B. Similarly, only TCE was found in discrete grab sample OMS-28-GW46 (8.1 µg/L) from the middle surficial aquifer on Parcel D. TCE concentrations at both locations were less than the TCE concentrations in discrete grab samples from hydraulically upgradient locations OMS-28-GW10 (68.9 µg/L) and OMS-28-GW13 (37.2 µg/L), which were also collected from the middle surficial aquifer on Parcel F. Only TCE (i.e., no PCE) was reported in samples collected from OMS-28-GW10 and OMS-28-GW13. While TCE is a degradation product of the reductive dechlorination of PCE, its presence in GW43 and GW46 does not indicate that it was generated by the breakdown of PCE when considering the potentiometric surface of the surficial aquifer. Therefore, please provide remedial goals for the contaminants present in Parcel B.

Army Response to General Comment 4b: Discrete groundwater sample location GW43 is located approximately 60 feet northeast of discrete groundwater sample location GW24, where PCE was detected at 100 µg/L in the middle surficial aquifer. Groundwater flow from GW24 to GW43 is possible as a local trough feature runs north-south between well OMS-28-5 and an area west of well OMS-28-7 with groundwater converging from each side before turning northward as described in Sections 3.1.4 (Figure 3-2) and 3.2.1 (Figure 3-3) of the *SDGI*. Groundwater conveyed through this trough passes through GW24, transporting TCE from the degradation of PCE in the source area on Parcel A northward towards GW43.

The low concentration of TCE detected in the middle surficial aquifer zone at GW46 is likely from the spread of the ALARNG TCE plume that originates on Parcel E, northward and westward. However, it is unlikely that TCE from GW46 would travel to GW43 from the middle surficial aquifer without evidence of TCE in discrete groundwater sample locations GW57 or GW45 in either the middle or lower surficial aquifers.

Please also refer to response 4b in the response to comments dated October 2, 2024 and Section 1.3.7.3 of the *FS, Revision 1* as to why no remedial goals are presented for Parcel B.

ADEM General Comment 4c: The Department takes a more conservative approach regarding the protection of potential receptors to groundwater contaminants. Groundwater contaminant plume boundaries are extended to the nearest downgradient well with concentrations below screening levels or MCLs. Without sampling points placed on the parcel boundary, the Department cannot determine if that contamination has not migrated into these adjacent parcels.

Please submit boundary-line data demonstrating that contamination has not migrated offsite as part of any remedial actions. Also, please provide remedial goals for the contaminants present in Parcel C.

Army Response to General Comment 4c: Please refer to the response to ADEM General Comment 1 regarding sample spacing and parcel boundaries. Calculation of concentrations between monitoring points using mathematical interpolation techniques such as kriging is standard practice. The Maximum Contaminant Level (MCL) isoconcentration line for a contaminant of concern (COC) is calculated using mathematical interpolation between the monitoring points. The plume boundary is shown as the MCL isocontour because COCs below the MCL will not be remediated and do not pose an unacceptable risk. It is standard practice to delineate the plume to MCLs in groundwater and show the plume boundary as the MCL, not to non-detect values.

No chlorinated VOCs were detected above MCLs on Parcel C during the SDGI. The SDGI was accepted by ADEM in January 2020. As stated in Section 1.3.7.3 of the *FS, Revision 1*, since there were no COC detections above MCLs at Parcel C, the FS will not address Parcel C; therefore, no remedial goals are provided for Parcel C in the *FS, Revision 1*.

ADEM General Comment 4d: The parcels adjacent to Parcel G (Parcels A, B, and F) exhibit unacceptable risks (Table 18 of the Risk Assessment Report Revision 1). Section 3.6.2 of the Risk Assessment Report states that no receptors were evaluated at Parcel G because chemicals of potential concern (COPCs) were not identified in any media sampled at this parcel. However, Figures 1-10, 1-11, and 1-13 of the *FS, Revision 1* indicate that the PCE plume underlying Parcels A, B, and F extends into Parcel G. Therefore, please provide remedial goals for Parcel G.

Army Response to General Comment 4d: The unacceptable risk identified in the *Risk Assessment Report Revision 1* referenced in the comment is based on PCE concentrations in groundwater. However, the PCE detected on offsite private property is not a result of ALARNG activities. Therefore, the ALARNG will not provide remedial alternatives and goals for Parcel G as the PCE underlying this parcel is not related to ALARNG activities. See Appendix C (Exclusion of Responsibility for Offsite Tetrachloroethane [PCE] Contamination Documentation) of the *FS, Revision 1* for a detailed summary of why ALARNG is not responsible for the PCE detected on Parcel G. In addition, please see the Army's response to ADEM General Comment 4a.

ADEM General Comment 6: ADEM notes that the SDGI did not propose to exclude PCE from the chemicals of concern (COCs) requiring remediation. This unexpected change occurred in the FS. If this is the path chosen, then the lateral extent of PCE contamination in soil and groundwater is not sufficiently delineated in the surficial aquifer. Please address.

Army Response to General Comment 6: Exclusion of PCE from the COCs requiring remediation in the *FS, Revision 1* should not have been unexpected. In a letter dated September 10, 2020, the Army National Guard notified ADEM of their intent "to remove remediation of the PCE contamination in soil and groundwater" from the Feasibility Study (dated February 2014) as a result of the SDGI and the risk assessment and "the determination that Alabama Army National Guard is not responsible for the PCE Release". This letter also stated that "The revised Feasibility Study will document the reason for the revision and the absence of PCE from consideration for remediation action." In response to this letter, ADEM (February 25, 2021) requested that the "ALARNG also include all analytical data, lines of evidence, and rationale supporting the proposed removal of the PCE contaminated area from ALARNG's scope of responsibility as part of the revised FS." The ADEM-requested information is provided in Section 1.3.7 and Appendix C (Exclusion of Responsibility for Offsite Tetrachloroethene (PCE) Contamination Documentation*),* of the *FS, Revision 1*.

For the reasons documented in Section 1.3.7 and Appendix C of the *FS, Revision 1*, PCE impact to soil and groundwater is not related to past activities conducted by the ALARNG at OMS #28. As such, delineation of PCE in the surficial aquifer is not the responsibility of ALARNG, and ALARNG will not conduct further investigation. It should be noted that PCE exceedances in the surficial aquifer (upper, middle, and lower) are delineated on all sides by non-detect values or concentrations lower than the PCE MCL.

ADEM General Comment 7: The subject document states that Remedial Investigation (RI) Report Revision 2 was approved by ADEM in a letter dated August 8, 2023. However, the document was approved in August 2013. ADEM received the ALARNG letter regarding PCE contamination on September 10, 2020, after the SDGI had been approved on January 31, 2020. ADEM notes that neither the approved RI nor the SDGI excluded PCE as a COC. Please address.

ADEM General Comment 7 does not suggest that ALARNG should install wells that breach the confining unit. While remediating TCE separately from PCE in a commingled plume is impractical, complete delineation of the PCE plume is incomplete if the two plumes are addressed separately. This will require additional monitoring wells to be installed. Regardless of whether wells are installed for plume delineation or for monitoring of remedial progress, the previous well installation recommendations still apply. Please address.

Army Response to General Comment 7: Concur that there was a typographical error in the "Army Response to General Comment 7" provided as an enclosure to the Army National Guard letter dated October 2, 2024, providing the *FS, Revision 1.* The date of the ADEM letter approving Remedial Investigation (RI) Report Revision 2 was indeed August 8, 20**1**3. The typographical error was not carried into the *FS, Revision 1*.

The objectives of the RI and SDGI were to identify the nature, extent, fate, transport, and potential risk resulting from contamination identified during the investigations. Although PCE was not specifically excluded as a COC, Section 4.2.4 of the SDGI stated, "The origin of the source of the PCE in soil [on Parcel A] is unknown since there is no record of ALARNG using PCE at the OMS #28 facility. However, the old ruins of a small shack were found within 15 feet of soil sample OMS-28-SB24 on Parcel A, which had the highest concentrations of PCE detected in the surface and subsurface samples." In addition, please see

response to ADEM General Comment 6.

The location of additional monitoring wells proposed for installation during the remedial design/remedial action phase of work will be dependent on the remedy selected during the Proposed Plan phase.

ADEM General Comment 8: The topographic maps referenced in the SDGI (Figures 3-2 and 3-3) did not include groundwater elevation data for MW-8 as it was reportedly damaged. Historic groundwater elevations for MW-8 (prior to its damage) indicate that the potentiometric surface elevation of the shallow groundwater table at this location is at a higher elevation than MW-9 and frequently higher than most other wells at the site. Groundwater elevation data from this well are essential to producing more accurate potentiometric surface maps and for the analysis of the contaminant plume. Please address.

Army Response to General Comment 8: Although monitoring well MW-8 is a source well (wash pad), water level elevation in MW-8 is not crucial for developing a potentiometric map since OMS-28-03, OMS-28-07, MW-5, and MW-6 (which surround MW-8) can be used to accurately determine groundwater flow direction in the vicinity of MW-8 using triangulation as a 3-point or 4-point problem. Furthermore, groundwater elevations at OMS-28-03, OMS-28-07, MW-5, and MW-6 have historically been similar to those at MW-8.

ADEM General Comment 9: The damaged wells should be able to be located as they have been surveyed and were located during the SDGI. Please repair or abandon these wells as soon as possible. These damaged wells, especially deep well OMS-28-6, can provide a potential vertical conduit for contamination of the deeper aquifer from the surficial aquifer and/or surface water.

Army Response to General Comment 9: ALARNG agrees that documented damaged wells should be able to be located based on existing survey information. OMS-28-6 will be properly abandoned during the Remedial Action phase as described in Section 1.3.7.2 of the *FS, Revision 1*, and OMS-28-2 will be properly abandoned during the Remedial Action phase as described in Section 4.1.2.1.1 of the *FS, Revision 1*. Note that in Table 3-1 of the *SDGI*, it is stated that OMS-28-6 was found destroyed and the hole in the ground (assumed to be the grout column) was filled with soil to approximately 9 feet below ground surface; this depth is too shallow to provide a conduit from the surficial aquifer to the deeper aquifer.

ADEM New Comment 14: Section 4.1.2.1.1 states, “With regard to the affected offsite undeveloped parcels, the ALARNG can only recommend to the affected landowners that land use controls (LUCs) similar to those proposed for Parcel E be implemented.” Figure 4-1 illustrates the proposed LUC boundaries. Please provide copies of correspondence between ALARNG and these offsite property owners identified by Remedial Alternative 2. The inability to implement LUCs on the properties shown in Figure 4-1 would make Remedial Alternative 2 impracticable. ALARNG is obligated to effectively remediate any offsite contamination associated with site activities.

Army Response to New Comment 14: ALARNG has not yet contacted the offsite property owners regarding LUCs. In the event that LUCs are included in the selected alternative, ALARNG would contact the property owners of affected properties to recommend and discuss implementation of LUCs on the property. LUCs could be implemented on each property by its property owner.