

DOE-18-0346

I-22133-0051



STATE OF TENNESSEE  
DEPARTMENT OF ENVIRONMENT AND CONSERVATION

Division of Remediation - Oak Ridge  
761 Emory Wiley Road  
Oak Ridge, Tennessee 37830

July 26, 2018

Mr. John Michael Japp  
DOE FFA Project Manager  
P.O. Box 2001  
Oak Ridge, Tennessee 37831-8540

**Re: Pre-published Technical Memorandum #1 (TM-1) for the Proposed Environmental Management Disposal Facility (EMDF)**

Dear Mr. Japp,

On July 5, 2018, the U.S. Department of Energy (DOE) - Oak Ridge Office of Environmental Management (OREM) emailed an electronic copy of the *pre-published version of TM-1 for the EMDF Characterization effort along with Appendix E* to the Tennessee Department of Environment and Conservation (TDEC) - Division of Remediation (DoR). Technical Memorandum #1 (TM-1) presents site characterization results from late winter and early spring of 2018. The transmittal email states:

*"The other appendices contain data that have already been provided. This document is provided for your information prior to approving the Proposed Plan. If the State or EPA (Environmental Protection Agency) have comments on this pre-published TM that can be easily taken care of prior to its final submittal to the administrative record, we will work to get those addressed."*

Although not specified in the July 5 email, "other appendices" appears to refer to information that OREM delivered to TDEC on June 14, 2018. OREM's follow-up email later that day says, "Each CD [compact disc] contains the Phase 1 validated results in draft form, since the TM is not due to be delivered until late this month." Based on this communication, TDEC understood that OREM was planning to deliver a complete version of TM-1 with data in final form. On July 25, 2018, Dave Adler of OREM notified TDEC that the pre-published draft version of TM-1 constitutes a "final, formal submittal". He also requested that TDEC comments focus on whether TDEC draws the same conclusions as OREM from site data presented in TM-1.

In response to OREM's request, TDEC offers the following comments based on a preliminary review of the information described above.

- 1) OREM delivered the report text and Appendix E just one day before TDEC comments were due on the second draft (D2) Proposed Plan, per protocols in Section XXI of the Federal Facility Agreement (FFA) for the Oak Ridge Reservation (ORR). Therefore, there was insufficient time for TDEC to review the results and evaluate their impact on the protectiveness and compliance of OREM's preferred alternative prior to submitting comments on the Proposed Plan on July 6, 2018 (within the timeframe required by the FFA).

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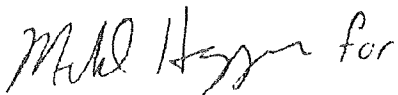
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- 2) An initial review of the data provided by OREM indicates that groundwater levels appear to be substantially higher than predicted or assumed in the fifth draft (D5) of the Remedial Investigation/Feasibility Study (RI/FS) report over a large portion of the proposed landfill. TM-1 does not mention the higher-than-projected water levels.
- At GW-988/989, groundwater levels presented in TM-1 are about 35 feet higher than originally projected in the D5 RI/FS report.
  - As acknowledged by OREM, groundwater levels presented in TM-1 may not represent the highest water groundwater levels that might be encountered at CBCV Site 7c.
    - At the May 23 project team meeting, OREM acknowledged the data collection effort missed the peak groundwater level of the 2018 winter wet season. They said TM-1 would estimate the peak water levels at Central Bear Creek Valley (CBCV) Site 7c based on measurements from wells at the Environmental Management Waste Management Facility (EMWMF).
    - TM-1 mentions that OREM installed continuous groundwater elevation monitors at EMWMF in 2017. Figure 6.20 labels those locations as "EMWMF Comparable Wells". However, TM-1 does not present groundwater levels measured at those locations.
    - Water levels measured at the EMWMF indicate the highest water levels during 2018 at 13 of the 27 continuously monitored wells appear to have occurred during early February 2018. However, this is uncertain because OREM had not provided data from late February at the time of TDEC's preliminary evaluation of TM-1.
    - OREM began recording groundwater levels at newly installed wells at the CBCV Site 7c on March 8, 2018. In an effort to provide data from the winter wet season before installing wells at Site 7c, OREM agreed to monitor existing wells at comparable sites identified in the Phase 1 Field Sampling Plan (Table 6) throughout January and February. Unfortunately, monitoring did not begin until February 22, 2018 at those locations.
    - Recognizing that the peak groundwater level varies from year-to-year depending on rainfall and other factors, TDEC offers the following as a point of reference for one of the comparable wells shown on Figure 6.20. The fourth draft (D4) RI/FS report (Appendix E, Attachment A, p. 68) says: "The water level hydrographs (Figures 27 and 28) indicate that the highest water levels reached for the period of record so far occur around January 6, 2015, in most wells except for GW-976(I) where the maximum water level occurs around January 22, 2015." (Page 65 of Appendix E, Attachment A says the maximum was on January 20, 2015.) Either way, the 2015 data suggest that the 2018 data set may have missed the highest water level at that well (GW-976).

- 3) Based on conceptual design information in the D5 RI/FS (Figure 6-29) and site characterization data collected for TM-1, groundwater levels during the spring of 2018 would be within the waste over a large portion of the proposed landfill.
- 4) Vertical hydraulic gradients at the CBCV Site 7c locations measured for TM-1 range from strongly downward to strongly upward. Throughout the RI/FS and Proposed Plan phases of the EMDF project, OREM has hypothesized that landfill construction would lower groundwater levels sufficiently to meet siting requirements by cutting off infiltration from precipitation. Given the presence of upward gradients and the height of observed existing water levels above the projected elevation of the bottom of waste, there is no certainty that landfill construction will lower water levels sufficiently to keep water levels below the waste.
- 5) Surface water sampling location maps in Appendix A present a location mislabeled as NT10-14. The location shown is on the D10W drainage.

The December 7, 2018, Dispute Resolution Agreement (DRA) says the results and analysis of the field investigation shall be included in the administrative record before the Proposed Plan public comment period. It also says that TDEC and EPA shall review the results before selecting the remedy and executing the Record of Decision (ROD). During the July 25, 2018, project team meeting, OREM contractors stated that TDEC and EPA formal comments will be on Technical Memorandum #2 (TM-2), which will incorporate a full year of data to be collected before ROD execution. In the meantime, we look forward to discussing TDEC's analysis of the TM-1 data in more detail and getting a better understanding of DOE's conclusions.

Sincerely,



Randy Young  
FFA Manager

cc: Dave Adler, DOE-OREM  
Patricia Halsey, DOE-OREM  
Rich Campbell, EPA  
Carl Froede, EPA  
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