



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION

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

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COUNTY MAYOR'S OFFICE

June 11, 2025

Mr. Roger Petrie
Federal Facility Agreement Manager
Oak Ridge Office of Environmental Management
U.S. Department of Energy
Post Office Box 2001
Oak Ridge, Tennessee 37831

TDEC Comments: EMDF Groundwater Field Demonstration First Wet Season Monitoring Results, Oak Ridge, Tennessee (UCOR-5851)

Dear Mr. Petrie

The Tennessee Department of Environment and Conservation (TDEC), Division of Remediation - Oak Ridge Office, received the subject document on June 6, 2025. As described in Section 8.6 (p. 46) of the RDWP/RAWP [Remedial Design Work Plan/Remedial Action Work Plan] for the *Groundwater Field Demonstration at the Environmental Management Disposal Facility [EMDF], Oak Ridge, Tennessee* (DOE/OR/01-2948&D2), this report is a technical memorandum that summarizes monitoring results from Groundwater Field Demonstration (GWFD) for the first winter wet season (2024-2025) and associated evaluation/interpretation of those results. As described in the RDWP/RAWP, measurement of the seasonal high water table during the GWFD will determine the design elevation of the base of the landfill's geologic buffer.

As stated in the RDWP/RAWP (p. 46), "DOE will accept comments on the TMs, but because these are not primary FFA documents, revisions to the TMs are not planned." Therefore, TDEC offers the following comments for consideration as the GWFD project continues.

General Comments

- 1) Based on water level data collected during the first wet season, the GWFD succeeded in reducing or eliminating the influence of direct infiltration from rainfall. The response varies by piezometer. TDEC also notes that natural variation in the seasonal high water table accounted for several feet of decline over the 6-year period preceding the GWFD.
- 2) Based on water level data collected during the first wet season, the GWFD succeeded in lowering the water table in areas critical for designing the base elevation of the landfill's

geologic buffer. Water levels in the six key piezometers within the study area declined steadily throughout the wet season, while water levels along the eastern edge of the study area rose slightly near the end of the wet season.

Specific Comments

- 1) Page 3, 1st paragraph, 1st sentence: The text correctly states the purpose of the GWFD, which is to determine the seasonal high water table elevation that will be used to design the elevation of the base of the landfills geologic buffer. Subsequent text (Page 7, Section 3.1, 1st sentence) acknowledges the geologic buffer elevations cited in Table 1 are associated with the *preliminary* design.

Other references to the geologic buffer (e.g., Page 13, 4th paragraph) could be read to mean the geologic buffer elevation has already been determined. It is important for all parties to remember that the seasonal high water table elevation determines the design elevation, not the other way around.

- 2) Page 5, Section 3, 2nd Paragraph, 2nd Sentence: The sentence implies that dissipation of water introduced during drilling and well development caused the measured water level to rise in all three new piezometers. If that is the intent of the sentence, it is unclear why the water levels rose instead of falling as the introduced water dissipated.
- 3) Page 8 (2nd paragraph & Table 1): As discussed during the project team meeting on April 23, 2025, TDEC and DOE interpret "wettest month" differently. TDEC drafted that terminology in the context of water levels used to calculate the seasonal high water table. That is, the wettest month is specific to each piezometer *within* the GWFD study area (landfill footprint) and is the month with the highest water level in that piezometer. Data collected from the piezometers over several years indicated that the wettest month for one piezometer might not be the wettest month for another piezometer.

As indicated by the second paragraph and Table 1 on Page 8, as well as discussions during the April meeting, it appears that DOE interprets "wettest month" to apply to apply only to piezometers *outside* the study area. TDEC is willing to discuss and consider which interpretation is appropriate, given the downward trend that is now evident in water levels at the six GWFD piezometers.

- 4) The application of several terms to piezometers and measured water levels is unclear.
 - a) Page 9, last sentence (also Page 13, 2nd paragraph, last sentence): The meaning of "base conditions" is unclear.
 - b) Page 10, 1st sentence (also Page 13, 3rd paragraph, 1st sentence): The meaning of "baseline conditions" is unclear.
 - c) Page 10, 2nd paragraph, 1st sentence: The meaning of "base flow conditions" is unclear.

- 5) Page 10, Section 3.3: This section states that precipitation measured at the Spallation Neutron Source (SNS) from December 2024 through March 2025 was about 2.16 inches below the 30-year average.
- a) It is unclear which stations (or group of stations) provide the data used to calculate the 30-year average. It appears the SNS station (Tower F) only became operational in 2017, about 8 years ago.
 - b) TDEC analyzed 36 years of rainfall data (1990–2025) from one long-term monitoring station (Oak Ridge Station KOQT) and calculated the Standard Precipitation Index (SPI) for each month from December 2024 through April 2025. SPI is the standard used in meteorology for comparing monthly precipitation to the long-term historical average, while adjusting for seasonal differences and variability. This standard approach provides a more objective measure than raw totals or averages. All months in the evaluation period fell within the normal range (± 1 standard deviation), indicating typical precipitation levels for the season.
 - c) Regardless of whether precipitation during the first wet season is interpreted as normal or “somewhat less” than normal, the data do not warrant adjusting the results, as allowed by text from the ROD, repeated in the fifth bullet on Page 1 of the subject document.

Questions or comments concerning the contents of this letter should be directed to Brad Stephenson at the above address, by phone at 865-352-1235, or by email at brad.stephenson@tn.gov.

Sincerely

Randy Young Digitally signed by Randy Young
Date: 2025.06.11 15:03:51 -04'00'

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FFA Project Manager
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