**STATE OF TENNESSEE**
**DEPARTMENT OF ENVIRONMENT AND CONSERVATION**
Division of Remediation, Oak Ridge Office
761 Emory Valley Road
Oak Ridge, Tennessee 37830



June 3, 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: Fiscal Year 2025 Phased Construction Completion Report for the Oak Ridge Reservation Environmental Management Waste Management Facility (DOE/OR/01-3002&D1)**

Dear Mr. Petrie

The Tennessee Department of Environment and Conservation (TDEC), Division of Remediation - Oak Ridge Office, received the draft (D1) Phased Construction Completion Report (PCCR) on March 14, 2025. TDEC reviewed the document in accordance with the Federal Facility Agreement (FFA) for the Oak Ridge Reservation (ORR) (DOR/OR-1014). The D1 report for Fiscal Year (FY) 2025 benefits from improvements completed through resolution of comments made during previous years, including a focused effort to scope this document. TDEC appreciates the U.S. Department of Energy's management of landfill wastewater to maintain compliance with state and federal rules that prohibit excessive leachate depths over the liner system. This includes efforts to minimize closures of leachate collection system valves and clear documentation of calculated impacts during unplanned or unavoidable closures.

As noted in the D1 FY24 PCCR comments (DOE/OR/01-2968&D1), TDEC encourages timely revision of the Sampling and Analysis Plan/Quality Assurance Project Plan (SAP/QAPP) as an appendix to the Remedial Action Work Plan. Updating and approving the SAP/QAPP will reduce future PCCR comments. Although the project team resolved SAP/QAPP issues in 2016 and the U.S. Environmental Protection Agency Administrator's dispute resolution decision on landfill wastewater was issued in December 2020, DOE still operates the EMWMF under the interim 2016 SAP/QAPP approved in 2017 for interim use. TDEC approved this interim plan based on a 2017 milestone, but the document was never finalized.

Resolution of the enclosed comments will facilitate TDEC approval of the 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
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Randy C. Young
FFA Project Manager
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Enclosure

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## Enclosure - Comments

### General Comment

1. For consistency with the 2016 *Sampling and Analysis Plan/Quality Assurance Project Plan* (DOE/OR/01-2734&D1), which TDEC approved *for interim use*, replace *discharge limits* with *release criteria*, throughout the document, except where referring to the ongoing effort to establish discharge limits for radiological and chemical contaminants of concern per the EPA Administrator's decision. Instances of this wording are found on the following pages (and possibly others): 15 (Figure 7), 18, 19 (including Table 8), 20, 33, 48, 65, 67, 73, and 74.

### Specific Comments

1. **Page 4, 3rd bullet**
   Check the document cited in this paragraph and correct the title and/or the citation as appropriate. The sentence refers to the FY 2024 PCCR, but the citation (DOE/OR/01-2941&D2) applies to the FY 2023 PCCR.

2. **Page 5, 2nd bullet, 1st sentence**
   Change *Clean Water Act as an ARAR* to *Clean Water Act and associated regulations as ARARs*.

3. **Page 18 Table 7 Footnote *a***
   As noted in General Comment 1, the FFA parties are working to establish discharge limits for radiological and chemical contaminants of concern in accordance with the EPA Administrator's decision. Revise the last sentence to include both radiological *and chemical* discharge limits to accurately reflect the scope of that decision.

4. **Page 20 & 21, Table 9**
   The leachate volumes reported in this table do not match the subsequent text. The text reports a net increase in leachate from FY 2023 to FY 2024 of 226,100 gallons and provides reasons as to why the volume increased, but Table 9 reports a net decrease in leachate of 112,300 gallons for the same time frame. The text appears to be carried over from the Fiscal Year 2024 PCCR and should be updated to match the table.

5. **Page 33, Section 3.14, 7th bullet**
   Add a sentence like the following, "Neither of the valve closures detained enough leachate to cause a hydrostatic head greater than 1 ft on the liner."

6. **Page 36, Table 15 – Row 3**
   Row 3, "Excavation/penetration permit program," states that these controls are only in place while the site is under DOE control. However, Row 4 indicates that DOE access controls are maintained "indefinitely." For consistency, change the duration of the excavation/penetration permit program land use control to "indefinitely."

## Enclosure - Comments

7. **Page 39, Table 16:**
   The second column header, labeled "Total Depth" contains a reference to a footnote (1), but no footnotes are present on the page.

8. **Page 39, 1st paragraph, 4th sentence**
   Change "*Pending installation of bedrock monitoring wells*" to *Pending incorporation of the new bedrock monitoring wells into the monitoring network* or something similar.

9. **Page 41, second paragraph**
   Section 5.2.2 states that laboratory results are evaluated per the PARCC metrics according to UCOR-4049. However, the report does not clearly summarize any issues identified during this evaluation. Additionally, while later sections mention why some data may not be representative or are rejected, they do not directly link these issues to PARCC criteria. For example, the EMW-UNDERDRAIN tritium result for the duplicate sample was not considered valid, but the basis for this determination is unclear. Was this due to the RPD between the primary and duplicate sample exceeding the acceptable metric? Clarify how PARCC metrics were applied to these data evaluations.

10. **Page 42, last paragraph, 2nd sentence; Page 48, Section 5.2.6, 2nd bullet; Page 63, last bullet, last sentence; and Page 72, 5th bullet, last sentence**
    Explain how contaminants at NT-04 were determined to be associated with other sites, such as lack of detection at the underdrain outlet. The cited evaluation, which is documented in Section 5.2.3 of the FY2020 PCCR (DOE/OR/01-2846&D2), does not address NT-04. If the explanation is added to these parts of the document, it is not necessary to include the explanation in the conclusion bullets on Pages 73 and 74.

11. **Page 43, third paragraph**
    The paragraph states that all groundwater and surface water results exceeding TVs are below action levels. However, data in Table 19 and Table 20 do not support this statement, as the November 2023 lead value at GW-964 exceeds the AL. Revise the text to accurately reflect this information and update any other similar statements throughout the document for consistency.

12. **Page 43, last paragraph, 2nd sentence**
    The text states that uranium is the only TV exceedance in surface water. However, pages 42-43 and Table 21 indicate that tritium at EMWNT-05 also exceeded the TV. Although this exceedance may be an anomaly, as it was not confirmed by the duplicate sample and subsequent results aligned with historical data, the statement about uranium being the only exceedance remains inaccurate. Revise the text to accurately reflect this context or explain why the tritium exceedance was not considered significant.

## Enclosure - Comments

13. **Page 46, Section 5.2.4**
    a) Based on the TV exceedance at NT-04 on 08/12/24, revise this section to include a trend analysis for uranium-238 or provide an explanation why a trend analysis is not warranted.
    b) The document states that trend analysis was not performed for tritium at EMWNT-05 because the exceedance was not confirmed by the duplicate or subsequent samples, which is reasonable given that the data is consistent with historical measurements. However, the justification for omitting trend analysis for uranium-238 at NT-04 and EMWNT-03A is less clear. Even if the elevated levels are attributed to nearby contamination unrelated to EMWMF, tracking trends at these monitoring points is important to assess potential changes or migration from adjacent areas. Include a trend analysis for uranium-238 or provide additional rationale for its omission.

14. **Page 48, 1st paragraph**
    a) Revise the fifth sentence to state that TDEC *observed* or *provided oversight during the core review and selection of the screened intervals*.
    b) Add well construction logs to Appendix E in addition to the boring logs and revise the appendix title accordingly.

15. **Page 49, Section 5.3.2, 2nd sentence**
    Change *extrapolated* to *interpolated*, as the contours are based on data within the well and stream network.

16. **Page 54, last sentence**
    Replace *observed* with *calculated* or *estimated* unless the flow rates were directly measured using borehole flow meters, tracer studies, or another direct measurement method.

17. **Page 55, Figure 18**
    The potentiometric elevation contour lines do not reflect the water level of 989.45 feet above mean sea level at GW-952. Clarify whether the water table is above the bottom of the geologic buffer at the southern ends of Cells 1 and 2.

18. **Page 62, third bullet**
    The report states that EMWMF Operations has implemented non-chemical measures to control algae growth in the Sediment Basin and reduce algae-induced high pH. Provide details on these measures and their effectiveness. Additionally, since pH is a concern with the discharge limits being discussed for the EMWMF, it would be helpful to understand how these measures (or future ones) will address this issue.

19. **Page 62, Section 5.3.4**
    The 2016 *Sampling and Analysis Plan/Quality Assurance Project Plan* (DOE/OR/01-2734&D1) requires comparison of results from four sample locations to site-specific maximum values (e.g., for total suspended solids [TSS], pH). What TSS value is used for comparison? Neither the SAP nor PCCR cite this value.

Tables 5 and 7 report maximum suspended solids concentrations for leachate (29,200 µg/L) and contact water releases (47,000 µg/L), respectively. Add text to Section 5.3.4 to elaborate on erosion and sediment control monitoring results, the effectiveness of best management practices (BMPs), and steps DOE has taken or is taking to improve their effectiveness.

20. **Page 63, last bullet**
    This bullet states that the field duplicate results differ by an order of magnitude or more. Does the RPD for these samples exceed the established acceptable RPD in the QAPP?

21. **Page 64, Table 28**
    Some AWQC or stormwater criteria are listed as "." in the table. To improve clarity, explain whether this notation means AWQC is not available in the State of TN or whether detection limits were below the AWQC fish and aquatic limits for PCBs.

22. **Page 65, Section 5.3.5, first paragraph, 3rd sentence**
    Change *approved release criteria* to *release criteria approved for interim use*.

23. **Pages 67 and 68, Table 30**
    TDEC downloaded EMW-VWEIR data from OREIS to check values in Table 30. For Uranium-238, the data includes 44 measurements with 38 detections, while Table 30 lists only 11 detections. The minimum detected value from OREIS is 0.823 pCi/L, but Table 30 shows this value for U-235/236 instead of U-238. The maximum detected value from OREIS for U-238 is 10.7 pCi/L, whereas Table 30 shows this value for U-235/236.

    Similarly, OREIS data for U-235/236 include 44 measurements with a maximum detected value of 1.95 pCi/L, but Table 30 lists 10.7 pCi/L as the maximum. Explain the discrepancies between the OREIS data and the values presented in Table 30 of the PCCR.

    Given these apparent discrepancies, it would be helpful to review the data tables in the PCCR for accuracy and consistency with OREIS data or provide an explanation for any differences.

24. **Page 68, Table 30:**
    The Yttrium-90 data appears to be missing from this table. Revise to include these data.

25. **Page 69, Section 5.3.8**
    Document what type of air samplers (low or high volume) and size of filter media used.

## Enclosure - Comments

26. **Pages 70 & 71, Section 5.3.8, Table 31 & 32**
    a) If appropriate, clarify why Table 32 shows 54 samples for each of the three primary sample locations for weekly sampling. Weekly sampling would typically produce 52 samples in a fiscal year.
    b) Additionally, is the air sampling conducted in/adjacent to the cells (as shown in Table 32) using the same sampler types and media as the primary samplers used in quarterly monitoring? Are there any differences in how these samples are collected or processed? Clarify which samples, if any, are composited, including the method used.

27. **Page 72, 1st full bullet and Page 73, 10th bullet**
    Add a sentence like the last sentence of Section 5.2.5 to explain when data from the new wells will be incorporated into the monitoring program.

28. **Page 76, 3rd citation**
    Change 2002 to 2001. The Remedial Action Work Plan (RAWP; DOE/OR/01-1874&D2) issue date is January 2001.

    The LUCIP (DOE/OR/01-188~~4~~&D2) is an appendix to the RAWP (DOE/OR/01-187~~4~~&D2). This is consistent with information in an email from DOE (Dennis Mayton) to TDEC (Brad Stephenson) on July 8, 2024, which describes an Appendix to the RAWP: *The current version of the EMWMF LUCIP is the 2001 DOE/OR/01-1884&D2. Subsequent versions of the LUCIP were not approved.*

29. **Pages 76-77, References**
    a) Cite the *Fetter* and *UCOR-4517* references in the document or remove them from the reference list.
    b) Add UCOR-4049 to the reference list on p. 77.

30. **Appendix B**
    List the following documents in Appendix B, if appropriate.
    - DOE/OR/01-1884&D2. *Land Use Control Implementation Plan for the Disposal of Oak Ridge Reservation Comprehensive Environmental Response, Compensation, and Liability Act of 1980 Waste, Oak Ridge, Tennessee*, ~~2002~~ 2001.
        - Change *2002* to *2001*, as noted in a separate comment.
    - DOE/OR/01-2021&D3. *Baseline Groundwater Monitoring Report for the Environmental Management Waste Management Facility, Oak Ridge, Tennessee*, 2002.
    - DOE/OR/01-2895&~~D1~~ D2. *2021 Fifth Reservation-Wide CERCLA Five-Year Review for the U.S. Department of Energy Oak Ridge Reservation, Oak Ridge, Tennessee*, 2021.
        - Change *D1* to *D2*.
    - DOE/ORO/2196/R1. *Compliance Plan – National Emission Standards for Hazardous Air Pollutants for Airborne Radionuclides on the Oak Ridge Reservation, Oak Ridge Tennessee*, 2005.

## Enclosure - Comments

31. **Page D-12, Footnote 3**
    a) Add the reference for the *Environmental Monitoring Plan* cited as *UCOR 2011* in Chapter 7.
    b) If appropriate, list the *Environmental Monitoring Plan* in Appendix B.