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

July 24, 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 Comment Letter: 2025 Remediation Effectiveness Report for the U.S. Department of Energy Oak Ridge Site Oak Ridge, Tennessee (DOE/OR/01-2989&D1)

Dear Mr. Petrie

The Tennessee Department of Environment and Conservation (TDEC), Division of Remediation-Oak Ridge Office has reviewed the above referenced document pursuant to the Federal Facility Agreement (FFA) for the Oak Ridge Reservation. This letter meets the FFA review cycle protocol of 90 days for the subject document. The following comments are relevant to that review.

General

1. Brushy Fork Creek was used as a reference site for several watersheds and is mentioned in several sections of the document. It appears the fish monitoring program has shifted to using Hinds Creek (HC) as the primary reference site in recent years, instead of Brushy Fork which has historically been the reference stream. Please provide additional details for this change in reference site and include a discussion of how the two streams compare for context. Please reference this discussion in text in all other sections reporting fish community monitoring (e.g., Bethel Valley (BV), Bear Creek Valley (BCV), etc.). There is a discussion of this shift in text in Section 5.2.1.2.3, but it would be helpful to include a similar discussion in brief in the earlier chapters, as well.

Executive Summary

2. Please edit this section as needed to reflect any changes made in other sections as a result of the following comments.

Section 1.0 Introduction

3. **Page 1-7, Figure 1-3**
   - The Molten Salt Reactor Experiment (MSRE) Interim Record of Decision (IROD) does not appear to be included in this table, please evaluate if this IROD should be reflected in this table and revise appropriately.
   - East Tennessee Technology Park (ETTP)
     - Please clarify why slabs are included as incomplete under ETTP. Further in the document it states provisional management of slabs at ETTP is no longer required.
     - ETTP Main Plant Area (MPA) Final Record of Decision (ROD) – Some areas have had soil deferred to this ROD, please add soil to media column.
   - White Wing Scrap Yard (WWSY)
     - The remedy selected under the WWSY IROD addressed surface debris, not surface soil. Revise the first column to reflect the selected remedy.
     - The final WWSY ROD needs to also address groundwater, surface water, sediments, and ecological. Revise the media column to include these items.

4. **Page 1-9, 4th paragraph**
   Revise the DOE document number for the Phase I Offsite Groundwater Remedial Site Evaluation (RSE) document.

5. **Page 1-11, Section 1.4, 3rd paragraph**
   Remove the sentence that states modifying or terminating land use control (LUC) objectives will be captured in the Remedial Action Report (RAR) Comprehensive Monitoring Plans (CMP) and not in the underlying document. LUCs are part of the selected remedy, changes to these LUCs need to be documented in the decision document to be reflected in the RAR CMP.

6. **Page 1-14, 3rd paragraph**
   Please include nickel in the discussion of numerical criteria set out in TDEC 0400-40-03-.03(1)(j) that differ from federal maximum contaminant levels (MCL).

7. **Page 1-17, 2nd paragraph**
   This paragraph suggests that the excavation/penetration permit (EPP) program is a programmatic control and can be added and deleted from the RAR CMPs at DOE's discretion. The EPP program is a LUC selected in multiple decision documents, and TDEC does not consider this a programmatic LUC. Please revise this paragraph to address this concern. Further tri-party discussion is needed on this paragraph.

8. **Page 1-23, Table 1.2**
   Please include more details on the discussion of sequencing remedial actions (RA) for the S-3 ponds. The table should be revised to include more details, such as when this Project Team discussion occurred, what was discussed, and what is the path forward.

Section 2.0 ORNL – MV

9. **Page 2-60, Figure 2.16**
   Figure 2.16 has "dissolved solids" in the legend, but the text on page 2-59 refers to "total dissolved solids." Figures 2.17 and 2.18 use "Total Dissolved Solids" in the legend. Please revise the figures in the document for consistency or explain the difference more clearly.

10. **Page 2-74, first paragraph**
    On the previous page (2-73), the number of fish species at White Oak Creek kilometer (WCK) 2.3 is trending down from about 2020 to 2024, and Melton Branch kilometer (MEK) 0.6 and MEK 1.4 numbers have remained similar or the same since 2012. Please revise the document to provide evidence to support the statement "fish diversity continues to show improvement...".

11. **Page 2-74, last paragraph**
    The discussion about physical habitat environmental drivers and surface water physical parameter drivers associated with patterns in benthic macroinvertebrate metrics is helpful, but there is no discussion of how chemical/contaminant conditions at WCK 2.3 or in Melton Branch may contribute to the patterns seen in these macroinvertebrate metrics. Has an analysis similar to the one described associated with the Solid Waste Storage Area (SWSA) 5 South capping project been conducted using stream chemical data? Please revise the document to include a discussion of impacts of Melton Valley (MV) contaminants of concern on macroinvertebrate metric trends over time, given that benthic macroinvertebrate metrics are indicative of stream health associated with impacts from both physical habitat changes as well as chemical/contaminant impacts.

Section 3.0 ORNL – BV

12. **Page 3-3, Table 3.1, last entry**
    The entry for the Phased Construction Completion Report (PCCR) for 3010 Reactor Complex Demolition has a footnote *d* which refers the reader to Appendix C of the RER. Appendix C does not include any information about the demolition of the 3010 Reactor Complex. Please include the information in Appendix C or revise this entry.

13. **Page 3-4, Table 3.1, first entry**
    The entry for the PCCR for Pre-Demolition of the Graphite Reactor Support Facilities and Building 3005 has a footnote *d* which refers the reader to Appendix C of the RER. Appendix C does not include any information about the pre-demolition of the Graphite

Reactor Support Facilities and Building 3005. Please include this information in Appendix C or revise the entry.

14. **Page 3-62, first full paragraph**
First Creek kilometer (FCK) 0.8 and Fifth Creek kilometer (FFK) 1.0 are used as reference sites for White Oak Creek tributaries First and Fifth Creek. Are these reference sites intended to be representative of an unimpacted offsite reference stream such as Hinds Creek kilometer (HCK) 20.6?

15. **Page 3-63, first paragraph**
Ephemeroptera, Plecoptera, and Trichoptera (EPT) taxa richness at FFK 0.2 has increased over the past couple of sampling seasons. Is this indicative of some habitat recovery? Is this also reflected in the higher fish densities in Fifth Creek? Please revise the document to include a discussion of the possible causes for improvement in EPT taxa richness in this stream.

Section 4.0 Y-12 – BCV

16. **Page 4-22 Section 4.2.1.2.2, Table 4.7**
Please revise the document to explain why gross alpha activity was only reported for location Bear Creek kilometer (BCK) 7.87 and not locations BCK 4.55 (Table 4.6) or BCK 9.2 (Table 4.8).

17. **Page 4-22, Section 4.2.1.2.2. Tables 4.7 and 4.8**
For consistency, please include footnotes for isotopic uranium and Tc-99 that explain these constituents are compared to their respective MCL levels in Table 4.7 and Table 4.8.

18. **Page 4-25, Section 4.2.1.2.2, Table 4.9**
This table shows activity in bold for each year where the risk-based concentration (RBC) was exceeded. The table appears to show values for several years where the U-234 concentration exceeded the RBC but was not bolded in the table (i.e., 2005 and 2012-2016). Please update where applicable.

19. **Page 4-31, last paragraph and Figure 4.7**
Figure 4.7 does not show the industrial water use criterion, please revise the figure to show the risk screening criteria.

20. **Page 4-48, Section 4.2.1.2.4, first paragraph**
As shown in Figure 4.8, aqueous concentrations of cadmium at BCK 12.4 have shown a trend that has steadily decreased over the last 10 years. This decreasing cadmium in the surface water does not align with the increasing trend in cadmium bioaccumulation data in stonerollers at BCK 12.4 shown in Figure 4.15. Increasing cadmium bioaccumulation in stonerollers at BCK 12.4, without similar trends in surface water or

at downstream sites, suggests a potential change in a source of cadmium in the headwaters of Bear Creek. Please revise the document to include a discussion of what may be contributing to this increasing trend of cadmium tissue concentrations at BCK 12.4.

21. **Page 4-53, Section 4.2.1.2.4, last paragraph**
Please revise the document to include a discussion of what may be contributing to the low EPT taxa richness documented in North Tributary 3 (NT-3) since 2019. Have site conditions changed in recent years that could be contributing to this pattern that appears to be isolated within the tributary? Given that taxa richness in NT-3 has exhibited a reduction unique to the area, does DOE plan to include NT-3 in any future chronic toxicity testing scope?

22. **Page 4-60, Section 4.2.3, Table 4.21**
The Operable Unit 2 (OU-2) ROD does not only require the elimination of a direct exposure pathway to waste and soils but also includes the relevant and appropriate requirement that the operator of Class II or IV solid waste disposal facility must not contaminate or significantly limit the future uses of underlying groundwater. Please include an explanation of how DOE verifies compliance with these relevant and appropriate requirements for groundwater and how DOE confirms the remedy selected in the OU-2 ROD remains protective for SY-200.

Section 5.0 Y-12 – UEFPC

23. **Page 5-12, Table 5.2**
Please clarify in the document the requirements for GW-722. It is not clear in the East End Volatile Organic Compound (EEVOC) plume section of the table what schedule and parameters apply specifically to GW-722. As written, it appears that GW-722 requires semiannual grab samples for Volatile Organic Compounds (VOC) in addition to annual grab samples for metals, nutrients, and radionuclides. Please clarify if this is the case. If GW-722 is required to have semiannual VOC samples, does this apply to all ports in this multi-port well? Data in the Oak Ridge Environmental Information System (OREIS) show that several ports do not have semiannual grab samples for VOCs. Similarly, metals such as mercury are not routinely sampled in each port according to OREIS data. Please update the table where required.

24. **Page 5-35, Figure 5.9**
The site label East Fork Poplar Creek kilometer 24.4 (EFK 24.4) within the graph does not match the label in the figure caption (EFK 24.2). The subtext for the figure suggests samples came from both locations over the years. Please revise the document for consistency, as needed.

25. **Page 5-35, Table 5.10**
    Please revise the document to clarify whether central stoneroller samples were submitted as composite samples or as individual fish samples.

26. **Page 5-37, Figure 5.11**
    Figure 5.12 (page 5-38) displays fish density measurements for EFK sites further downstream from Upper East Fork Poplar Creek (UEFPC) stream sites. Why does Figure 5.11 not display fish species richness data for EFK 18.7 or EFK 6.3? Please revise this figure to include this information as it would help inform the effectiveness of remedies as discussed for fish density measurements at various sites.

Section 6.0 Y-12 – Chestnut Ridge

No Comments

Section 7.0 – ETTP

27. **Page 7-32, Section 7.5, first paragraph, second sentence**
    As written, the sentence appears to indicate that this is a final ROD rather than an interim ROD, and that it addresses all threats posed by contaminant sources within bedrock or below the water table. Please revise this text to match text taken directly from the MPA IROD which states, "This MPA IROD further addresses principal threats posed by the contaminant sources that remain below the water table and/or within bedrock at the six CVOC groundwater plumes."

28. **Page 7-32, Table 7.5**
    Please revise the ROD column in the table to more specifically identify the MPA IROD rather than using "MPA Groundwater."

Section 8.0 – CERCLA Actions at Other Sites

No Comments

Section 9.0 – Offsite

29. **Page 9-19, Section 9.3.2, second bullet point:**
    Please revise the text to include EPA in the composition of the Watts Bar Interagency Working Group.

Appendix A: Certification of Land Use Control Implementation

No Comments

Appendix B: Selected ORNL Groundwater Data

No Comments

Appendix C: Building D&D

No Comments

Appendix D: Offsite Detection Monitoring

30. **Page D-18, Section D.2.1, Second Paragraph**
    Please revise the document to identify replacement sample points for RWA-133 and SYN-164. Alternatively, if there is no plan to monitor replacement sample points, please revise the document to explain why replacement locations were not selected.

Questions or comments concerning the contents of this letter should be directed to Eileen Marcillo by phone at (865) 985-2397 or by email at eileen.marcillo@tn.gov.

Sincerely

Randy Young
Digitally signed by Randy Young
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