



**STATE OF TENNESSEE  
DEPARTMENT OF ENVIRONMENT AND CONSERVATION**

Division of Remediation, Oak Ridge Office  
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Oak Ridge, Tennessee 37830

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COUNTY MAYOR'S OFFICE

November 8, 2024

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

Dear Mr. Petrie

**TDEC Comment Letter: 2024 Five-Year Review for the Upper East Fork Poplar Creek and Chestnut Ridge Administrative Watersheds and the Lower East Fork Poplar Creek and Oak Ridge Associated Universities South Campus Facility Operable Units on the U.S. Department of Energy Oak Ridge Site, Oak Ridge Tennessee (DOE/OR/01-2962&D1)**

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

**Section 1.0 2024 Oak Ridge Site Five-Year Review (FYR)**

1. **Page 1-6, Figure 1.2** – Please confirm if the Chestnut Ridge Record of Decision (ROD) should also include addressing groundwater.
2. **Page 1-13, Table 1.2** – Soil should also be listed under the future follow-up action for the Phase II Interim RA for Contaminated Soils and Scrapyard. It appears not all contaminants of concern (COCs) were addressed for protection of the industrial worker; therefore, additional soil characterization and remediation may be necessary for exposure units already addressed under the Interim ROD (IROD).

## Section 2.0 Upper East Fork Poplar Creek (UEFPC) Watershed

3. **Page 2-19, Table 2.4** – The property record notices only list the Roane County Register of Deeds office under the implementation and frequency column. Please revise to include Anderson County Register of Deeds or explain why only Roane County is listed.
4. **Page 2-50, Section 2.2.2.1, second paragraph** – This paragraph states that the UEFPC Phase II IROD does not include actions to address inaccessible soil. There is significant discussion of implementing the selected remedy as soil becomes accessible, both within the text of the IROD, and within DOE's responses within the IROD responsiveness summary section. Revise this paragraph to reflect that the Phase II IROD does include actions to address inaccessible soil as it becomes accessible (e.g., EU-5) or further explain what is meant by this statement.
5. **Page 2-50, Section 2.2.2.2, first bullet** – This bullet suggests that not all human health soil COCs identified during the baseline human health risk assessment (BHHRA) are addressed under the Phase II IROD, but rather characterization and remediation is limited to what is considered the *primary* COCs. TDEC has concerns that the Phase II IROD does not characterize and evaluate risk to the industrial worker for all known COCs, and the no further action determination for protection of the industrial worker may not be appropriate. Furthermore, a non-comprehensive COC list may necessitate additional land use controls (LUCs) such as implementing the excavation/penetration permit program (EPPP) for any subsurface work (0 ft). TDEC requests that DOE schedule a meeting with the tri-parties to further discuss this concern.
6. **Page 2-57, Section 2.2.5.2.2** – The vapor exposure evaluation was limited to the Old Salvage Yard (OSY) site in EU-11 and EU-13. Due to the presence of a large volatile organic carbon (VOC) plume within the UEFPC watershed and the lack of milestones and forward progression in implementing the soil remedy in exposure units (EUs) over the VOC plume(s), a vapor intrusion (VI) screening should be conducted for all EUs to evaluate if VI is an issue that needs to be addressed while the soil remedy is implemented. Conduct a VI screening for all EUs overlying the VOC plume(s) or explain why a comprehensive VI screening has not been conducted.
7. **Page 2-57, Section 2.2.5.2.2, last paragraph** – This paragraph discusses that regional screening levels (RSLs) were used to perform the vapor exposure evaluation for the OSY site in EU-11 and EU-13. Are there groundwater monitoring wells in the vicinity of OSY to conduct a VI screening using vapor intrusion screening levels (VISL)?
8. **Page 2-81, Table 2.28** – Has the East End VOC (EEVOC) Action Memorandum (AM) been updated to reflect the change in the carbon tetrachloride ambient water quality criteria



(AWQC)? If not, the assumption used at the time of the remedy selection may not be valid and the AM should be revised to reflect the more stringent/protective AWQC.

### Section 3.0 Chestnut Ridge

9. **Page 3-34, Section 3.3.4.2.2** – There is detailed discussion of fish tissue trends for selenium and mercury for largemouth bass samples, but there is only minimal discussion of the arsenic fish tissue trend. The text states that arsenic tissue concentrations remain low and comparable to recent years; however, the data shown in Figure 3.8 suggests an increasing trend of arsenic in largemouth bass tissue in recent years. The arsenic tissue concentrations appear to be approaching 3x higher than the concentrations recorded in the last 3-5 years, with the last comparable measurements recorded in 2006. The Filled Coal Ash Pond (FCAP) ROD does not include Rogers Quarry, but the quarry does receive inputs from the FCAP, and the FCAP ROD addresses threats to plants, animals, and humans. Please provide additional discussion of these increasing arsenic tissue trends. How do these concentrations compare to AWQC or other risk-based levels for fish tissue? Has something changed in recent years that would promote increased accumulation of arsenic in fish tissue?
10. **Page 3-35, second paragraph** – The statement that mercury concentrations in forage fish are well below the AWQC seems contradictory to the statement in the previous paragraph (“...elevated selenium and mercury concentrations in fish from Rogers Quarry suggest continuing low-level inputs from FCAP.”) Additionally, the AWQC is listed as 1.5 µg/g dry weight when the standard U.S. Environmental Protection Agency (EPA) AWQC for mercury is 0.3 mg/kg in wet weight. Explain the difference in AWQC limits used, and further elaborate how modifications to the passive treatment system (PTS) have decreased exposure to ash-associated contaminants when there are still elevated selenium and mercury concentrations in fish.
11. **Page 3-37, Section 3.3.5.1, Question A** – Were the additional maintenance activities on erosion controls measures standard maintenance, or was this maintenance in response to an observation or event? Is it possible that stormwater represented an ash transport pathway that bypassed the wetland/PTS, representing migration of ash contamination into McCoy Branch and Rogers Quarry that may not have been captured by the PTS effluent monitoring?
12. **Page 3-39, Table 3.19** – The listed response to Question C in the table is contradictory to the measured contaminants levels in fish tissue. The response states “...there is no evidence the health of fish populations is affected by exposure to ash.” Adverse effects to fish have been measured in literature to occur between 0.2 – 1.0 µg/g mercury in fish. While adverse effects may not be physically evident, these levels of concentrations can affect reproductive success and behavior in fish which can be destructive. Adjust the language in the Question C response to reflect current literature on the effects of elevated contaminant levels (particularly mercury) in fish communities.

#### Section 4.0 Oak Ridge Associated Universities South Campus Facility (ORAU)

13. **Page 4-11, Section 4.1.5.2.2** – The VI screening concluded that groundwater concentrations exceed the commercial VISLs. These exceedances suggests that there is a potential for VI to occur and the current remedy may not be protective to the indoor worker in adjacent buildings. Please explain why the results of the VI screening do not impact the protectiveness determination.

#### Section 5.0 Lower East Fork Poplar Creek (LEFPC)

14. **Page 5-14, Section 5.1.4.2.2, second paragraph** – While sunfish tissue mercury concentrations decrease below the EPA threshold in the Clinch River a few kilometers downstream of the confluence with Poplar Creek, TDEC DoR-OR has collected largemouth bass fish tissue in the stretch of the Clinch River immediately adjacent to the Poplar Creek input and measured concentrations well-above the EPA threshold for mercury. Largemouth bass feed higher in the food chain than sunfish and are not necessarily directly comparable, but they do represent a target recreational fish species in this area. While these data are sparse at this time, this area of the Clinch River has also been demonstrated in recent years to attract attention from recreational fishers, as documented through the TDEC DoR-OR-led Roving Creel Survey. Please address the potential for recreational exposures immediately adjacent and downstream of ORR discharges.
15. **Page 5-14, Section 5.1.4.2.2, fifth paragraph** – While methylmercury has decreased in some biota over the last 13 years, that does not appear to be true of all measured biota. Several groups appear to have remained consistent in methylmercury concentrations depending on the site at which they are measured. Update the text to discuss and reflect this variation in trends.
16. **Page 5-17, Section 5.1.5, Question B (Table 5.6)** – There continue to be homeless encampments regularly encountered by TDEC DoR-OR within the LEFPC floodplain and in known mercury hotspots associated with the Bruner site. How is human health risk to these populations being evaluated in this FYR?
17. **Page 5-18** – Response to Question C in the table states that the remedial action objectives (RAOs) remain protective of ecological receptors. Several biota receptors have measured mercury bioaccumulation concentrations above the EPA AWQC for fish (0.3 mg/kg). Elevated levels of methylmercury in biota have been shown to have various adverse effects on those communities (e.g., reproduction, reproductive success, behavior, etc). Explain how these RAOs are protective despite elevated levels of mercury and methylmercury in biota communities.
18. **Page 5-21, Section 5.1.5.2.2, first paragraph** – Areas within the LEFPC floodplain continue to be used for homeless encampments in recent years. TDEC DoR-OR



continues to observe both members of the homeless community as well as their campsites during routine monitoring activities in these areas. Please address this risk pathway associated with the change in land use here, in addition to continued standard residential development.

19. **Page 5-21, Section 5.1.5.2.2, last sentence** – Please edit the final sentence to include a very high-level conclusion regarding the concern for overbank sediment deposition and recontamination of the remediated floodplain soils. Details can be reviewed in the 2021 FYR document, but it would be helpful to address the conclusions of the study of the potential for recontamination in full here to complete the answer/discussion addressing Question B.
20. **Page 5-22, Section 5.1.7** – EPA has disagreed with the protectiveness statement of “protective of human health and the environment” for the last couple of FYRs. The protectiveness statement remains the same in this current FYR, but there has been little to no discussion of how EPA’s concerns have been resolved regarding the changes in the food chain and risk assessment modeling implemented during the 2021 FYR. Please provide some additional information on how this disagreement on protectiveness has been addressed to support this protectiveness statement for LEFPC.

#### **Appendix A: Site Visits**

No Comments

#### **Appendix B: Applicable Relevant and Appropriate Requirement (ARAR) and Human Health Risk Updates**

21. **Page B-20, Section B.3.4.2** – The updated VI screening for the EEVOC plume appears to be limited to groundwater wells located on the distal edge of the plume. Groundwater concentrations are much higher near the source area and the potential for VI is much greater in that area. Please explain why the screening was not conducted across the footprint of the plume and revise the VI screening to address the entire plume area.

#### **Appendix C: Property Transfers for UEFPC Watershed**

No Comments

#### **Appendix D: Certificate of LUC Implementation for Fiscal Year 2023**

No Comments

#### **Appendix E: Fiscal Year 2022 UNC Engineering Evaluation Report**

No Comments

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](mailto:eileen.marcillo@tn.gov).

Sincerely

**Randy Young** Digitally signed by Randy Young  
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