



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

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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: 2024 Remediation Effectiveness Report for the U.S. Department of Energy Oak Ridge Site, Oak Ridge Tennessee (DOE/OR/01-2960&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. The U.S. Environmental Protection Agency (EPA) guidance recommends using skin-on fillets with belly-flap for a more representative human health assessment for polychlorinated biphenyl (PCB) exposure. How are fish tissue fillets analyzed for PCBs?

Executive Summary

2. General

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 East Tennessee Technology Park (ETTP) row only includes groundwater and land use controls (LUCs) as the media included in the future Zone 1 Groundwater Plumes Record of Decision (ROD). Since the K-720 Fly Ash Pile will be addressed under this future ROD, revise the media to include soil.

4. Page 1-9, Section 1.3.2

In accordance with the "Informal Dispute Resolution Agreement [IDRA] for Issues Associated with the 2014 Remediation Effectiveness Report for the U.S. Department of Energy Oak Ridge Reservation, Oak Ridge, Tennessee" signed in June 2016, the Remediation Effectiveness Report (RER) must include a list of the State-permitted facilities receiving waste from Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) response actions. Revise this section to comply with the IDRA.

5. Page 1-18, Figure 1.5

The labels on the x-axis shift and do not align as the months progress. Please correct the labels so it is clear which data points are associated with which months.

Section 2.0 ORNL - MV

6. Page 2-27, second paragraph

These are the first exceedances of the mercury ambient water quality criteria (AWQC) at the White Oak Dam (WOD) in five years. Can these exceedances be attributed to anything?

7. Page 2-60, Table 2.15.

Methylene chloride was detected in groundwater samples collected at wells ORMW-01A, OMW-01AA, and OMW-02C at concentrations greater than the maximum contaminant level (MCL) during Fiscal Year 2023 (FY23). This is the first-time exceedances of methylene chloride have been noted in these wells. Revise the text to include a discussion of these exceedances.

8. Page 2-62, Section 2.2.1.2.4

Regarding influent levels of Sr-90 and tritium exceeding the Waste Acceptance Criteria (WAC), please provide the effluent concentrations to illustrate removal efficiency of the remedy.

9. Page 2-62, Section 2.2.1.2.3

Add language to the text explaining why sunfish are only analyzed for Cs-137 and not the other radionuclides identified as contributing to risk range exceedances in the Melton Valley Interim ROD. Tritium has a low bioconcentration factor (BCF) and would not be expected to bioaccumulate, but Sr-90 does bioaccumulate and was identified as contributing to risk exceedances. Sr-90 has also continued to exceed ROD goals until recently, whereas Cs-137 has not exceeded ROD goals for some time.

10. Page 2-62, Section 2.2.1.2.3, second paragraph

Provide some additional information about the PCB fish tissue result from MEK 0.2 that was excluded as a statistical outlier. If the measured PCB concentration is not a result of a lab error, it should still be included to accurately represent the findings, and a qualifier can be provided for any statistical anomaly.

11. Page 2-63, first paragraph

Explain what may be contributing to the significant reduction in 1,2,3,7,8-pentochlorodibenzo-p-dioxin which was responsible for the decreased toxic equivalent (TEQ) in gizzard shad in 2023. Additionally, explain how many gizzard shad were included in each of the whole-body composites, including a summary of the lipid variability among fish sampled for comparison against similar data reported in the 2023 RER.

12. Page 2-63, second paragraph

This section includes a discussion of human health risk from dioxins/furans in largemouth bass filets, including a specified risk/hazard limit for dioxins/furans in consumable fish tissues not to exceed 1.2 TEQs. This section also discusses monitoring of dioxins/furans in stonerollers and gizzard shad, using whole body composites, to monitor for ecological risk, but an ecological risk/hazard threshold is not included for ecological receptors. Without a referenced ecological risk limit, it is difficult to understand if the measured concentrations in 2023 present elevated risk to ecological receptors. Please include in the text a reference to ecological risk limits for dioxins/furans (understanding that ecological risk will be addressed in a future final ROD) in order to better interpret these data. Do current tissue concentrations in shad from WCK 1.5 exceed ecological risk thresholds?

13. Page 2-64

Since the number of fish species at Melton Branch sites was much lower than at the reference sites and the types of species present at this site are more pollution-tolerant fish species, provide an analysis of stream conditions based on pollutant-tolerant versus -intolerant species present and the total number of species for a more complete understanding of conditions.

14. Page 2-65, second paragraph, last sentence

Is the observance of sedimentation recent and can a conclusion be made as to why this is occurring?

15. Page 2-73, Signs

The required LUCs, per the Melton Valley Land Use Control Implementation Plan (LUCIP), for the White Oak Creek Embayment Sediment Retention Structure (SRS) need to be re-evaluated for effectiveness to protect the recreational user. In April 2024, TDEC staff observed and spoke with a fisherman standing on the SRS and fishing into the Embayment. Please add this to Table 2.18 to initiate Oak Ridge National Laboratory (ORNL) Project Team discussions.

Section 3.0 ORNL – BV

16. Page 3-5, Table 3.1

Provide a footnote for the last two entries explaining why approval was not required considering Removal Action Reports (RmARs) are primary documents in accordance with Appendix I-6b of the FFA.

17. Page 3-23, Section 3.2.1.2.1.3, last sentence

Include all sources of CERCLA wastewater treated at the Process Waste Treatment Complex (PWTC). The ETPP *ROD for Soil, Buried Waste, and Subsurface Structure Actions in Zone 2* and the ETPP *ROD for Interim Actions in Zone 1* authorize its use, and recently the Y-12 Project Team was informed that small amounts of wastewater from CERCLA work at Y-12 were taken there as well.

18. Page 3-29, last paragraph

Delete “MCL screening level” and replace with language referencing the most stringent applicable AWQC.

19. Page 3-59, Section 3.2.1.2.3

This section notes improved trends in fish and benthic communities from previous decades. Please elaborate on the statistical significance of these trends to better correlate to the remediation effectiveness.

20. Page 3-63, first full paragraph

Considering the trend depicted in Figure 3.25, how is it concluded that fish densities “have improved since 1985”? Are there continued impacts due to the historical development activities or are contaminant inputs also contributing to the lack of change in fish densities in First Creek?

21. Page 3-64

- a. This section notes variability is likely due to stream conditions that have been stressed by chronic inputs. Recognizing both sites could be equally impaired by inputs, is FFK 1.0 a suitable reference site to compare to FFK 0.2?
- b. Elaborate on the improvements described, as Figure 3.26 does not depict fish density improvement trends.

Section 4.0 Y-12 – BCV

22. General

As appropriate, preface existing ROD references as “interim” or “Phase I” actions.

23. Page 4.1, first paragraph, last sentence

Regarding Figure 4.1 depicting "LUCs/engineered remedies," does this mean all areas in BCV with LUCs (as shown in Figure 4.1) have engineered remedies in place? Clarify where engineered remedies are in place.

24. Page 4-5, last sentence

Replace "upcoming" with an estimated date.

25. Page 4-18, Zone 1, second paragraph

To support the statement that NT-8 discharges are dominated by U-238, provide and compare U-238/U-234 ratios from upstream sampling locations.

26. Page 4-24, first paragraph

Clarify the statement that NT-8 "dominates the uranium flux at BCK 9.2" considering Table 4.7 indicates a larger flux was measured upstream of NT-8 at BCK 11.54/11.54A.

27. Page 4-41, second paragraph

- a. Provide a qualifier in the first sentence regarding the concentrations approaching the AWQC. Is this on average?
- b. Regarding the last sentence, are considerations being made to alter sampling frequency to aid in fish pollution recovery?

28. Page 4-53, BCBG

Contrary to this sentence, the information is not included in Table 4.17. Please correct this statement.

Section 5.0 Y-12 – UEFPC

29. Page 5-18, BSWTS

For the past 20 years, Big Spring Water Treatment System (BSWTS) has had fluctuating mercury effluent levels often coinciding with filter replacements. However, since January 2021 the mercury discharges appear to be on an overall upward trend, while the influent levels do not. In addition, the facility exceeded the ROD goal five times in FY23, which is unusual, and removal effectiveness was lower than in previous years. Is there an explanation for this trend and decline in performance during FY23?

30. Page 5-32, last paragraph, and Figure 5.10

Aqueous mercury concentrations and redbreast sunfish tissue mercury concentrations appear to be trending upward over the last few years at EFK 24.2, however mercury flux and average concentrations are lower in 2023 compared to previous years. Please explain what may be contributing to this pattern in fish tissue at EFK 24.2.

Section 6.0 Y-12 – Chestnut Ridge

31. Page 6-11, Section 6.2.4

Add a frequency qualifier in front of “S&M inspection” in the last sentence.

32. Page 6-13, Section 6.3

Elaborate on the type and amount of “waste remaining in place.”

33. Pages 6-24 – 6-25, Figures 6.7 and 6.8

While concentrations remain within the range seen within the last 20 years, largemouth bass fillet arsenic concentrations did increase in 2023, and this represents a notable increase within the last three to four years. Additionally, despite decreased concentrations at lower sites in McCoy Branch, arsenic tissue concentrations in dace at MCK 1.6 and 1.9 have increased in recent years. Selenium concentrations have also significantly increased at MCK 1.9 and remain elevated at MCK 1.6. All together, these data may indicate reduced efficacy of the FCAP engineered wetland and/or increasing contaminant loading from Filled Coal Ash Pond (FCAP) into Rogers Quarry. Table 6.8 also indicates the wetland is not reducing arsenic and selenium in the discharge (difference in filtered sample data between MCK 2.05 and MCK 2.0 is the most striking, but the issue is apparent in both filtered and unfiltered data) to the same level of effectiveness as is occurring for the other monitored contaminants. Please provide an explanation for this increase in tissue concentrations in Rogers Quarry.

Section 7.0 – ETPP

34. Page 7-39, Table 7.6

The table shows 80 bluegill were collected for PCB analysis, but Oak Ridge Environmental Information System (OREIS) has only 74 bluegill measurements (gross weight and length). Nine bluegill are listed for each of the composite samples. Please explain this discrepancy.

35. Page 7-43, last paragraph

- a. Despite the statement regarding the inability to collect the target number of fish species (including largemouth bass), Table 7.7 reports removal of 25 largemouth bass from the K-901-A Pond during FY23. Please explain why none of the 25 fish were available for analysis.
- b. Based on later discussion in this section, it seems management of largemouth bass as an undesirable species has been successful, with fewer and fewer fish reported each year. Are considerations being made for an alternate species for PCB trend-analysis as the largemouth bass population continues to decrease?
- c. Include text discussing the PCB bioaccumulation expectations for largemouth bass and common carp based on feeding habits, trophic level, and lipid content. The 2022 RER includes PCB results from 20 largemouth bass fillets with similar concentrations, on average, as the one common carp fillet sample reported in

this RER. The common carp tissue concentrations reported in the 2023 RER were much higher than the largemouth bass samples. Are common carp and largemouth bass analogous in their feeding habits, trophic level, and lipid content?

- d. While protection of piscivorous wildlife is not explicitly stated as a goal in the ETPP Ponds Action Memorandum, there was tri-party agreement to address eco-risk under the 2016 Five Year Review, with additional management actions conducted in FYs 2017-2019. Whole-body PCB concentrations in gizzard shad have continued to be significantly higher than all other target species monitored in the K-901-A Pond, with two of the three highest concentrations reported within the last three years. Please explain how ecological risk to piscivorous receptors is being addressed in the K-901-A Pond.

36. Page 7-56, Section 7.4.2.5, second bullet

Provide the number of trespassers, as this metric can help assess the efficacy of signage and patrols as LUCs.

Section 8.0 – Other Sites

37. Page 8-8, Section 8.3.1.2, third sentence

Provide the analyses to demonstrate TCE in GW-842 is exhibiting “a long-term decreasing concentration” as detections depicted in Figure 8.4 do not indicate this.

38. Page 8-9, Figure 8.4

Regarding the slight increases and first TCE MCL exceedance since 2015 at GW-841 does DOE plan on increasing monitoring at these wells to support the protectiveness evaluation with respect to vapor intrusion? Well GW-841 is directly adjacent to an occupied building and the selected remedy for this site is “no action,” which may not be protective.

Section 9.0 – Offsite

39. Page 9-8, Section 9.2.2, third paragraph

Regarding potential exposure pathways from the car dealership, has laminar flow underneath the paved area been evaluated?

40. Page 9-13, Table 9.3

Considering the fishing advisory for striped bass in Watts Bar Reservoir due to PCBs, why are largemouth bass not sampled for PCBs?

41. Page 9-21, Section 9.4.2.1, second to last paragraph

The results of the FY22 TDEC Roving Creel Survey are published on the TDEC Division of Remediation – Oak Ridge Office website in the *Environmental Monitoring Report for Work*

Performed: July 1, 2021 through June 30, 2022. Please edit the text to reflect the final study results available from this monitoring effort.

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 Monitoring

42. Page D-29, Section D.2.1.1.1

Provide a basis for the suspicion of radon contributing to elevated alpha activity.

Questions or comments concerning the contents of this letter should be directed to Dana Casey by phone at (865) 310-0253 or by email at dana.casey@tn.gov.

Sincerely

Randy Young Digitally signed by Randy Young
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