



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

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

June 29, 2022

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: *Focused Feasibility Study for Water Management for the Disposal of CERCLA Waste on the Oak Ridge Reservation, Oak Ridge, Tennessee (DOE/OR/01-2664&D4)***

Dear Mr. Petrie

The Tennessee Department of Environment and Conservation, Division of Remediation-Oak Ridge Office has reviewed the above referenced document pursuant to the Federal Facility Agreement (FFA) for the Oak Ridge Reservation.

1. **Page iv**
  - a. The *Contents* lists an Appendix N, but no such appendix is provided. A complete appendix must be included.
  - b. Appendix N is titled "...Agreement." There were multiple EIT Agreements. Please include all agreements in this appendix for the administrative record.
2. **Page x, last bullet**

The tri-parties must ensure these EMWMMF implementation documents are completed in a timely manner considering the remaining operational life of the landfill.
3. **Page 46, next to last paragraph**

Please update this language to reflect approval of the ROD amendment in 2016.

4. **Appendix E, general**

Given the obvious concerns with the amount of mercury-contaminated waste planned to be generated from UEFPC remediation projects, the state does not support the use of manganese as a surrogate for mercury to calculate a site-specific leaching factor. Per a discussion among the tri-parties on June 23, 2022, the state understands this approach will no longer be used and the methodology employed in the previous FFS versions (D1-D3) will replace Appendix E in a D4/R1 version of the FFS to be submitted in mid-July. In consideration of this, the state is not providing specific comments on the FFS D4 version of Appendix E. Per the agreement discussed June 23, 2022, TDEC also understands DOE will continue efforts to refine the Kd value of mercury.

5. **Page K.1-11, Tables K.1.6 through K.1.9**

To understand why certain POEs were considered more heavily for risk than others and directly compare BCK 0.7 to the reference site please provide the total weight of the fish.

6. **Page K.1-13, Tables K.1.11 and K.1.12**

Please clarify how the fish catch rate per trip value was calculated by providing a comment on the associated rows explaining how those percentages were derived. Additionally, the text in this section identifies the site-specific fish consumption rate as 11 meals per year but then presents a table showing fish meals calculated for BCK 0.5 (19.3 meals) and BCK 3.3 (11 meals). Explain how these two combine to a site-specific fish ingestion rate of 11 fish meals.

7. **Page K.1-14, Table K.1.11**

The values in the "Edible grams caught" row are carried over from Table K.1.10 The values should be "49.6 x .43 x 30."

8. **Page K.1-14, Section K.1.3.1.2**

Identify the specific default value used in PRG calculation. It is stated the default assumption is 6387 g/year. In Section K.1.7.1.1 the default ingestion rate is defined as 34, 8oz (227g) meals per year, which equates to 7718 g/yr. Please address this discrepancy here and throughout the document.

9. **Page K.1-15, Table K.1.12**

While detail is provided in Appendix B, please include a brief summary of the maximum concentrations. A comparison of counts alone between the sample sites negates the levels detected.

10. **Page K.1-16, Section K.1.4.2**

There appears to be a typo in the definition of SFi, "(pCi- 1)." Is this picocuries per liter (pCi/L) or picocuries raised to the exponent -1? Also, please clarify whether the Exposure Duration of 26 years is based on years of exposure during adult life or the operational period of EMDF.

11. **Page K.1-26, Section K.1.4.3.3**

A lack of detection in recent fish samples does not necessarily indicate there is no bioaccumulation occurring. It is unknown whether rad was not detected in fish tissue was because no bioaccumulation occurred or because rad was not present in the water column during the lifetime of the fish that were sampled. Please add language clarify this point.

12. **Page K.1-27, Cesium-137**

Cs-137 was infrequently detected in EMWMF discharges and has not been a major contributor to EMWMF waste streams, so it is not surprising there were no detections of Cs-137 in fish tissue from the POEs. However, there have been periodic Cs-137 detections in game fish at the confluence of Poplar Creek and the Clinch River in the last several years, which is downstream of landfill discharges. It is difficult to know from these limited data if the detections at the confluence of Poplar Creek and Clinch River are a result of higher Cs-137 concentrations in surface water in that area or not, but it is indicative that Cs-137 does bioaccumulate in fish in waterbodies associated with the ORR. Given that Cs-137 is considered a major dose contributor at EMDF, please edit the text to discuss the possibility of bioaccumulation with additions of Cs-137 into the EMDF waste stream.

13. **Page K.1-28, Plutonium-238 and -239**

Despite limited inventory in EMWMF and low mobility of Pu, Pu was still detected in about 0.5% of EMWMF's discharges, and the inventory of Pu in EMDF is likely to be greater (estimated to be about 1.7% of the radiological inventory) than what is known in EMWMF. Please address the fact that a larger plutonium inventory for EMDF may result in more plutonium discharges, and thus a greater degree of bioaccumulation in the future.

14. **Page K.1-29, Section K.1.4.4, first paragraph**

Please identify the criteria used to make the determination that levels of radioactivity observed in Bear Creek fish tissue samples present no significant risk to a hypothetical angler.

15. **Page K.1-31, Section K.1.5.3.1**

Add "per year" after "meals" in the third sentence and change "BCK 5 - 3.3" to "BCK 0.5 - 3.3."

16. **Page K.1-33, Table K.1.17**

Please add site-specific parameters for East Fork Poplar Creek.

17. **Page K.1-34, Table K.1.19**

Please explain why fish numbers were extrapolated to 500m for BCK 0.7 and 1.2km for BCK 3.3 rather than the same length of stream when the actual reaches sampled, 95m and 84m, were similar in length. As currently shown, it appears the expected number of fish at BCK 0.7 is artificially low since numbers were only extrapolated to less than half the stream length as used for BCK 3.3.

18. **Page K.1-35, Section K.1.5.9**

Please define "RGs."

19. **Page K.2-6, second bullet**

Since a limit of mercury at AWQC could appear contrary to the anti-degradation regulations, the document should note that anti-degradation compliance is being met through the EIT agreement that will be attached in Appendix N.

20. **Page K.2-8, Section K.2.1.3, second paragraph**

- a. As the EMDF is a new discharge, anti-degradation regulations are applicable to PCBs and a method for compliance with these regulations must be addressed.
- b. Please elaborate in the last sentence concerning "additional controls" and how this will comply with anti-degradation requirements.
- c. A PCB sampling method must be employed to ensure detection below AWQC in compliance with anti-degradation.

21. **Page K.2-8, Section K.2.1.4, last sentence**

Does cadmium not require additional controls because it is not expected in the waste inventory? If so, please state this.

22. **Page K.2-9, Section K.2.2, fourth paragraph**

Delete the first sentence. This is not part of any EIT agreement and standard practice is the application of monthly limits. See Tenn. Comp. R. & Regs. § 0400-40-05-.08(1).

23. **Page K.2-10, last sentence**

Change "lowest" to "most stringent."

Questions or comments concerning the contents of this letter should be directed to Brad Stephenson at the above address, by phone at (865) 220-6587 or by email at [brad.stephenson@tn.gov](mailto:brad.stephenson@tn.gov).

Sincerely

A handwritten signature in blue ink that reads "Randy C. Young". The signature is stylized, with the first name "Randy" being the most prominent and the last name "Young" written in a cursive-like script.

Randy C. Young  
FFA Project Manager  
Division of Remediation - Oak Ridge Office

- ec: Samantha Urquhart- Foster, EPA  
Carl Froede, EPA  
Sam Scheffler, DOE  
Dennis Mayton, DOE  
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