



REGION 4

ATLANTA, GA 30303

June 24, 2024

VIA ELECTRONIC MAIL

Mr. Roger B. Petrie
Federal Facility Agreement Manager
Oak Ridge Office for Environmental Management
Department of Energy
Post Office Box 2001
Oak Ridge, Tennessee 37831

Dear Mr. Petrie:

The U.S. Environmental Protection Agency has completed review of the *Remedial Design Work Plan for the Environmental Management Disposal Facility, Oak Ridge, Tennessee* (DOE/OR/1-2971&D1) received by EPA on March 25, 2024.

The above referenced document is intended to present the plan for the remedial design as described in the Environmental Management Disposal Facility Record of Decision. The design will be included in a future Remedial Design Report/Remedial Action Work Plan that will provide the details for construction of the Remedial Design Work Plan.

Please find the attached comments which must be resolved before a revised document is submitted.

If you have any questions or comments, please contact me at (943) 212-7256, or electronically at sayer.john@epa.gov.

Sincerely,

John W. W. Sayer
Remedial Project Manager
Federal Facilities Branch
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EPA comments on the ***Remedial Design Work Plan for the Environmental Management Disposal Facility, Oak Ridge, Tennessee (DOE/OR/1-2971&D1)***:

General Comments

1. The exact scope of the RDWP is not clear and greater specificity is requested. The purpose of the RDWP is described as “providing the applicable and relevant and appropriate requirements (ARARs) from the approved EMDF ROD for the landfill design, along with other design requirements for the balance of the landfill design (including the disposal cells, Landfill Wastewater Treatment System [LWTS], and support facilities), identifies the RDR/RAWP that will be submitted for U.S. Environmental Protection Agency (EPA) and Tennessee Department of Environment and Conservation (TDEC) approval, and provides a high-level schedule for this activity.” The use of terms like “balance of landfill design” and “support facilities” fails to convey the specific scope. Please provide a detailed bullet list of the design components covered by the document to clarify the scope of the RDWP.
2. A subset of the EMDF ROD’s Applicable or Relevant and Appropriate Requirements (ARARs) is provided in the RDWP to provide a list of ARARs that apply to the specific scope of the RDWP. However, no rationale or grounds are given for omitting numerous ARARs from the EMDF ROD from this table and it is unclear if those missing are genuinely not relevant to the scope (and for what reason) or if they have been omitted erroneously. The lack of clarity on the specific scope of the RDWP (see comment above) compounds this issue.
3. The siting of the EMDF in Central Bear Creek Valley in an area of significant topographic variability and rainfall means that climate change resiliency measures are of specific importance to the design of EMDF. The EMDF ROD specifically requires: “The design, construction, and operation of the EMDF at the CBCV [Central Bear Creek Valley] Site 7c to satisfy design-based and performance-based requirements of DOE [Department of Energy] and ARARs [Applicable or Relevant and Appropriate Requirements] and to include climate resiliency measures.” Other than the siting and design components mentioned in the ROD and listed in Section 3.3., what additional studies have been done or are planned to address climate change resiliency in the of EMDF design due to the increasing frequency of extreme weather events?
4. The RDWP Table 4 (Key Activities and Dates for Design Elements for the Balance of Construction Scope) indicates that a 30 percent design will not be submitted. As such, the RDWP should include the preliminary design phase information (30% design) consistent with Section 4.7.4, Preliminary Design Phase, of RD/RA Handbook, 9355.0-048, EPA 540/R-95/059, dated June 1995 (RD/RA Handbook). The information presented in the RDWP is generally consistent with

the preliminary design phase information per the RD/RA Handbook; however, it is noted that there is no discussion of geotechnical data related to the EMDF design (e.g. slope stability). Please revise the RDWP to add a section on geotechnical data and its influence on the preliminary design.

Specific Comments

1. Executive Summary, Page IX: The text states that the EMDF design will include the following scope:
 - Landfill disposal cells with disposal capacity of up to 2.2 million cy
 - The results of the Groundwater Field Demonstration will determine the seasonal high water table that will control the final design elevation of the geologic buffer in the knoll area
 - Upgradient stormwater diversion ditch
 - Landfill Wastewater Treatment System (LWTS)
 - Support facilities
 - Performance monitoring network

To provide clarification on the scope covered by the RDWP, please add specificity on the following:

Does the RDWP include the design of the initial waste cell or all 4 waste cells?

If the RDWP covers the scope of more than the initial waste cell, what is the schedule/sequencing for those waste cells?

What individual components comprise the "Support facilities"?

What individual components comprise the "Performance Monitoring Network"?

Are there any other design scope items not specifically mentioned in the document that are covered by the term "balance of landfill design" (see General Comment 1)?

2. Section 3.1.1, Geology, Page 5: The text states that the formations underlying the EMDF predominantly consist of shales, siltstones, and mudstones with little limestone present in the bedrock underlying the proposed disposal cells; however, according to Figure 5 (EMDF Siting and Preliminary Layout), disposal cells 1 and 2 directly overly the bedrock of the Maryville Limestone. Please revise the text to address this discrepancy.
3. Section 3.1.4, Ecological Resources, Page 8: This section states that "Approximately 6.03 acres of wetlands will be eliminated by the EMDF Project" and that "sensitive resources, including Tennessee dace, will be relocated." This text differs from page F-5 of the *Remedial Design Report/ Remedial Action Work Plan for the Environmental management Disposal Facility, Oak Ridge, Tennessee: Early Site Preparation Activities* (DOE/OR/01-2934&D2) which states

approximately 0.3 acres of wetlands would be disturbed. Please reconcile and describe how the regulatory acceptance process for elimination of wetland areas and sensitive resources was/will be addressed in accordance with ARARs in the EMDF ROD.

4. Section 3.3, Design Components, Page 15: Measures to reduce the concerns from climate change and provide resiliency to potential increase in rainfall and flood events are bulleted in this section; what additional studies have been done or are being planned, to address climate change resiliency in the of EMDF design due to the increasing frequency of extreme weather events?
5. Section 3.3.1, Siting, Page 15: This section states that “wetlands and sensitive resources were avoided, as possible and practical,” appears inconsistent with text in Section 3.1.4 (comment above). Please reconcile the inconsistencies and revise the text in Section 3.3.1 to reflect the impacts to wetlands and relocation of sensitive resources.
6. Section 3.3.3, Landfill Design, Page 19: The first paragraph states, “Leakage rates observed during operations will be compared to this rate to determine if there are anomalous leakage rates requiring evaluation and possible actions.” This sentence is duplicated twice in this paragraph, please remove the redundant sentence.
7. Section 3.3.3, Landfill Design, Page 19: The second paragraph states: “A monitoring system will be designed and proposed as part of the RDR/RAWP. This preliminary groundwater and surface water monitoring system will be used as the basis for the follow-on Operations RAWP, which will contain the Sampling and Analysis Plan/Quality Assurance Project Plan for EMDF Operations.” Please clarify the use of “preliminary” when describing the groundwater and surface water monitoring system. Under what circumstances will the groundwater and surface water monitoring system be modified after submittal of the RDR/RAWP?
8. Section 3.3.3, Landfill Design, Page 19: The final cover design text describes the requirements for the cover system, but the design description is missing. Please add additional text for the design description for the cover design. In addition, a slope design description (such as slope grade) to meet ARARs and stability requirements should also be described in this section.
9. Section 3.3, Design Components, Page 19: A cross-section of the general landfill design is needed to communicate how the components of landfill design such as landfill cover, slope design, and liner design relate to other, similar to Figure 8 of *Proposed Plan for the Disposal of Oak Ridge Reservation Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Waste* (DOE/OR/01-2695&D2/R1) available online at the following link: <http://ucor.com/wp-content/uploads/2021/11/Final-EMDF-Proposed-Plan-8-30-18.pdf>
10. Section 3.3.4, LWTS, Page 20: The first line of text states, “The LWTS will be designed to treat all landfill wastewater derived from the EMDF, both contact water and leachate.” Contact water is

defined in EMDF ROD as “stormwater resulting from precipitation that falls into an active cell and comes in direct contact with landfill waste and does not infiltrate to the leachate collection system”. Will the LWTS also treat other forms of contaminated stormwater from the EMDF landfill?

11. Section 3.3.4, LWTS, Page 20: The first paragraph after the ROD quote states that the primary treatment system, “will treat the primary expected contaminants of concern (COCs)” but does not clarify which chemicals are the primary COCs. It is noted that Table 2 and Table 3 use the term “Key” COCs. Please revise the text to specifically identify the primary COCs.
12. Section 3.3.4, LWTS, Page 20: The text in the first paragraph after the ROD quote states that the primary treatment system, “will treat the primary expected contaminants of concern (COCs)” but does not clarify which chemicals are the primary COCs. It is noted that Table 2 and Table 3 use the term “Key” COCs. Please revise the text to specifically identify the primary COCs.
13. 3.3.4.2, LWTS discharge location and effluent limits, Page 26: The first paragraph states discharge limits will be established using reasonable potential evaluations to determine effluent limits for the LWTS based on the remediation goals established in the EMDF ROD (and shown in Sect. 3.3.4.1 of this RDWP).” However, while this sentence is correct for the discharge limits for radionuclides, other pollutants will also be subject to Technology Based Effluent Limits (TBELs) per EMDF ARARs. Please change this sentence to reflect this information.
14. 3.3.4.2, LWTS discharge location and effluent limits, Page 27: The first paragraph states. “As needed, compliance criteria that correspond with the Preliminary Remediation Goals/cleanup levels may be documented in an Explanation of Significant Differences for the EMDF ROD.” Please change this text to clarify specifically what “compliance criteria” may be documented in an Explanation of Significant Differences for the EMDF ROD.
15. Section 4.0, Remedial Design Schedule, Page 30: The schedule includes key line items and milestones but is missing the associated regulatory agency review periods necessary for the planning process. Please revise the schedule to include the regulatory review period for each activity.
16. Section 6, Applicable or Relevant and Appropriate Requirements, page 35: This section states that “The ARARs for the EMDF design are provided in Appendix A. These ARARs are a subset of the ARARs identified in the EMDF ROD. The project proposes no changes to these ARARs. The selected remedy in the EMDF ROD is designed to meet all identified ARARs.” Please note that a RDWP cannot change ARARs to the ROD, only a Post-ROD change document such as an explanation of significant differences (ESD) or a ROD Amendment can change an ARAR. Please add a disclaimer stating that in the event of a difference between the ARARs stated in Appendix A and those stated in the EMDF ROD, the EMDF ROD ARARs are binding.

17. Appendix A. Applicable or Relevant and Appropriate Requirements: The ARARs table omits a significant amount of ARARs from the EMDF ROD. As an example, the table completely omits what it calls “Location-specific applicable or relevant and appropriate requirements” that are listed in the EMDF ROD, simply stating “None.” “Location Specific” ARARs include requirements for wetlands, floodplains, waters of the state, erosion control requirements, aquatic ecosystems, historical and archaeological resources, threatened, endangered and rare species. These ARARs amount to some 16 pages in the EMDF ROD. However, it is unclear how each missing ARAR is specifically addressed. The reader does not know if a missing ARAR is not applicable, has already been addressed, or is not part of the RDWP scope of work. Figures 2, 4, and 5 shows wetlands, floodplains, and Waters of the state in the project area. While some descriptions of these natural resources are made in Section 3, with some referencing of other documents, it is not apparent how the individual ARARs that cover these resources (and missing from the ARARs table) were specifically addressed. Please add a description for clarification on which document the “Location-specific” ARARs missing from the Appendix A were or will be addressed.