



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

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

July 23, 2021

Mr. Roger Petrie  
DOE FFA Project Manager  
Oak Ridge Office of Environmental Management  
U.S. Department of Energy  
Post Office Box 2001  
Oak Ridge, Tennessee 37831-2001

**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&D3)**

Dear Mr. Petrie:

The Tennessee Department of Environment & Conservation (TDEC) appreciates ongoing collaboration with the U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (EPA) to provide an additional disposal option for wastes generated during cleanup of legacy contamination on the Oak Ridge Reservation (ORR). We also share the mutual goal of providing additional onsite disposal capacity in a timely manner to minimize impacts to cleanup schedules. Toward that end, we are sharing this response 60 days ahead of the review schedule prescribed in the Federal Facility Agreement for the ORR (FFA).

The TDEC looks forward to reviewing and approving the Focused Feasibility Study (FFS) for wastewater management at the Environmental Management Waste Management Facility (EMWMF) and the proposed Environmental Management Disposal Facility (EMDF) once a complete draft is submitted. The third draft (D3) is not approvable because it does not conform with the EPA Administrator's decision, dated December 31, 2020, and it includes outdated information. Among other instructions, the decision directs DOE to revise the FFS to include previously omitted regulations specified by EPA, incorporate site-specific information and fish tissue study results, and develop Preliminary Remediation Goals (PRGs) for landfill effluents containing radionuclides.<sup>1</sup>

The TDEC recommends that DOE revise the FFS to conform with the EPA Administrator's decision and develop discharge limits for landfill wastewater that are demonstrated to be protective of human health and the environment, following CERCLA requirements and

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<sup>1</sup> The subject of adding Applicable or Relevant and Appropriate Requirements (ARARs) from the Administrator's decision has been discussed by a team formed from legal and technical staff from the FFA parties. Many of the ARARs discussed are included in the FFS document, but there is not agreement on the full list. Eventually, all ARARs will be combined in the ROD for EMDF and be used as the basis to change the ROD for EMWMF.

guidance. As stated in the decision, the FFS revision should occur in parallel with review of the draft Record of Decision (ROD) for EMDF. TDEC's recommendation is intended to facilitate approval of the FFS, which in turn will facilitate approval of the EMDF ROD once this and the state's other key concerns are resolved. The revised document should also correct outdated information for the Administrative Record, including but not limited to the following.

- The D3 FFS says the EMDF proposed plan will include selection and approval of a landfill wastewater management alternative, but the proposed plan was issued for public review in 2018 with a statement that evaluation and documentation of wastewater management alternatives was not yet complete.
- The D3 FFS includes maps showing the proposed EMDF at a location east of and immediately adjacent to the EMWMF, but the 2018 proposed plan presents a site about 1.5 miles west of the EMWMF as the preferred location.
- The D3 FFS cites an outdated (2012) 303(d) list of impaired waters rather than the most recent (2020) one that reflects the listing of Bear Creek for mercury and PCBs.

In addition, the FFS should confirm that any wastewater management alternative selected for implementation will include active treatment of all landfill wastewater for all contaminants of concern (radionuclides and chemicals) using industry-standard methods for each contaminant type. While the Administrator's decision did not require technology-based effluent limits to be established, the decision is being made in the context of the CERCLA, and there is a basis for treatment in the following, as explained below.

- 1) CERCLA sec. 121 expresses a preference for treatment:
  - b) GENERAL RULES
    - (1) Remedial actions in which treatment which permanently and significantly reduces the volume, toxicity or mobility of the hazardous substances, pollutants, and contaminants is a principal element, are to be preferred over remedial actions not involving such treatment.
- 2) Moreover, the Administrator's decision also recognizes the principle of As Low As Reasonably Achievable (ALARA) in managing radioactive exposures. By recognizing 10 CFR 61.41, the ALARA principle is incorporated into the FFS decision.
- 3) In Appendix K of the D3 FFS, there is unreasonable reliance on an assumption of one fish per year being taken by a trespasser in the lower part of Bear Creek that DOE does not protect as part of the Y-12 security perimeter. While the decision recognizes land use as a consideration in determining risk, the Phase I Bear Creek Valley ROD relied on a zoned approach from the 1998 ORR End Use Working Group report.

The use of dilution is improper. Although couched in terms of screening alternatives for treatment systems at different locations evaluated in the FFS, the assumptions about fishing and fish consumption and a 64-to-1 dilution factor are not consistent with using the Tennessee water quality standards as "relevant and appropriate" requirements to regulate the discharge of radionuclides. Rather than stating treatment will be used, Appendix K appears to present dilution to demonstrate one-quarter of Derived Concentration Standards (DCS) for the set of radionuclides likely to be discharged in landfill wastewater from EMWMF and EMDF would not require treatment to comply with the CERCLA risk range to the  $1 \times 10^{-5}$  level. This does not consider the effect of bioaccumulation.

Tennessee rules do not allow a mixing zone for a bioaccumulative pollutant, and the interpretive rule cited here applies to determine how the water quality standards are used. So, in deciding whether the discharges would meet the risk level for recreational use under 0400-40-03-.03(4), there should not be a mixing zone or any approach with the same effect of a mixing zone.<sup>2</sup>

- 4) DOE shared its conceptual design for a treatment system at EMDF. The design would allow landfill wastewater from a period of extreme rainfall over many days to be contained in tanks before treatment. The first stage consists of chemical precipitation for all wastewater and is followed by secondary treatment for mercury and radionuclides. In Appendix D of the D3 FFS (p. D-33 and Table D.1), the state rule for bypassing a treatment system are cited and identified as applicable. Following the approach taken in the Administrator's decision, there should be a parallel citation of this rule as relevant and appropriate for radionuclides.<sup>3</sup>

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<sup>2</sup> The requirement is how an ambient water quality standard is meant to be interpreted. Perhaps it should be given the status of an ARAR itself, but no mixing zone should be used in establishing water-quality based limits for radionuclides.

0400-40-03-.04(17) Mixing zone - That section of a flowing stream or impounded waters in the immediate vicinity of an outfall where an effluent becomes dispersed and mixed.

0400-40-03-.05(2) For measuring compliance with permit conditions, the effect of treated sewage or waste discharge on the receiving waters shall be considered beyond the mixing zone except as provided in this paragraph. Such mixing zones (See definition) shall be restricted in area and length; and shall not (a) prevent the free passage of fish or cause aquatic life mortality in the receiving waters; (b) contain materials in concentrations that exceed acute criteria beyond the zone immediately surrounding the outfall; (c) result in objectionable colors, odors, or other conditions; (d) produce undesirable aquatic life or result in dominance of a nuisance species; (e) endanger the public health or welfare; or (f) impair classified uses; (g) create a condition of chronic toxicity beyond the edge of the mixing zone; (h) adversely affect nursery and spawning areas; or (i) adversely affect species with special state or federal status. Mixing zones shall not apply to the discharge of bioaccumulative pollutants to waters of the state where the risk-based factors in Rule 0400-40-03-.03(4)(l) are exceeded for the pollutant group.

<sup>3</sup> 0400-40-05-.07(2)(l) and 0400-40-05-.07(2)(m); the federal counterpart is 40 CFR 122.41(m).

It is not the intent to provide the complete review of ARARS at this time, but ARARS discussed in earlier meetings are omitted from the D3 FFS. More discussion can occur in the context of the D1 ROD, and TDEC reserves its rights to further comment on ARARS.

In summary, the FFS must be completed in accordance with the EPA Administrator's decision to include previously omitted regulations specified by EPA, incorporate site-specific information and fish tissue study results, and develop PRGs for landfill effluents containing radionuclides. The revised FFS should also correct outdated information for the Administrative Record. Approval of the FFS must precede approval of the EMDF ROD and EMWMF ROD modification. Final limits are needed in those documents to evaluate potential risk to public health and demonstrate the protectiveness required by the CERCLA. Finally, the FFS should confirm that any wastewater management alternative selected for implementation will include active treatment of all landfill wastewater for all contaminants of concern using industry-standard methods for each contaminant type.

Please direct any questions or comments regarding this letter to Brad Stephenson at (865) 220-6587.

Sincerely



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