



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
Division of Remediation, Oak Ridge Office
761 Emory Valley Road
Oak Ridge, Tennessee 37830

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COUNTY MAYOR'S OFFICE

July 19, 2024

Mr. Roger Petrie
Federal Facility Agreement Manager
Oak Ridge Office for Environmental Management
U.S. Department of Energy
PO Box 2001
Oak Ridge, TN 37831

Dear Mr. Petrie

RE: Addendum to the Final Zone 1 Remedial Investigation and Feasibility Study for a Supplemental Ecological Evaluation at the East Tennessee Technology Park, Oak Ridge, Tennessee (DOE/OR/01-2561&D3/A1)

The Tennessee Department of Environment and Conservation (TDEC) Division of Remediation, Oak Ridge Office (DoR-OR) is in receipt of the U.S. Department of Energy (DOE) letter dated April 24, 2024, transmitting the above referenced document. DoR-OR received the transmittal the same day. TDEC has completed a review of the document pursuant to the Federal Facility Agreement (FFA) for the Oak Ridge Reservation and offers the following comments for consideration:

General Comments

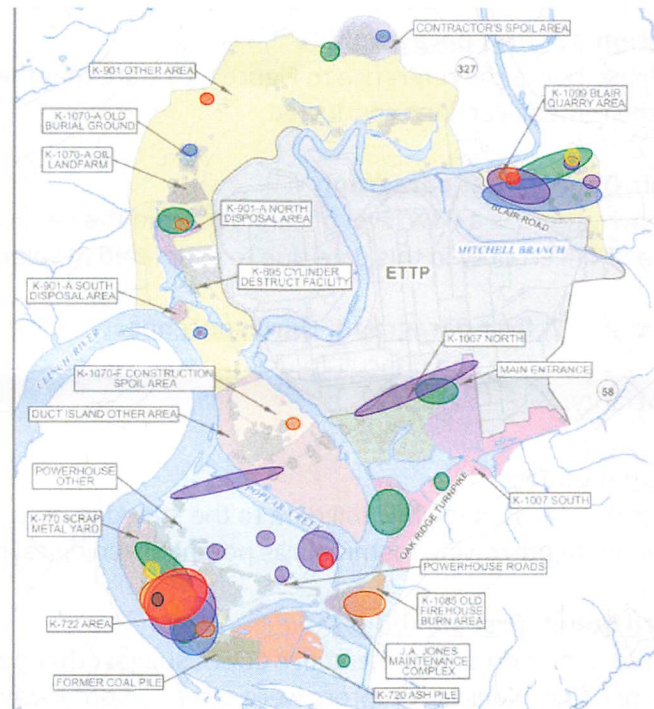
1. Please include a figure showing the size and location of each habitat area. Interpretation of the data contained in the document requires the reader to reference previous documents for visual representations of these specific areas.
2. The Zone 1 Ecological Tech Memo discusses 5 habitat areas, ranging in size from 4.2 acres to 520.4 acres. The Addendum discusses remediation areas, but it is not clear which ecological habitat areas coincide with the remediation areas. For example, is Blair Quarry considered part of the larger K-901 habitat area? Please add discussion to clarify this confusion.
3. The measured contaminant of ecological concern (COEC) concentrations across the K-901 habitat area are averaged to estimate reasonable exposure to a receptor. While 500+ acres may reasonably accommodate a single local wildlife receptor population, consideration should be given to physical or geographic barriers to gene flow which may result in multiple smaller populations. For example, if Blair Quarry is considered part of

the larger K-901 habitat area, then Poplar Creek may represent a gene flow barrier, and averaging soils concentrations within Blair Quarry across the K-901 area may be underestimating risk to receptors within Blair Quarry. Please add text discussing the decision to include the entire K-901 area in a single large habitat area or reference this discussion in a previous document.

4. Remediation and risk management decisions were made to leave small, localized areas of contamination in place that exceed remedial goal options (RGOs) and ecological remediation levels (ERLs). The decision to average chromium soil concentrations across 520 acres in the K-901 area ignores many locations that exceed the local wildlife RGO of 49.7 mg/kg, with some exceedances approaching 10x the RGO (471 mg/kg). While the population is relatively healthy, localized exposure to elevated COECs could introduce sub-lethal impacts and genetic changes to subsets of the larger population. These changes could eventually impact population dynamics, especially if these localized "hot spots" are near critical natural resources necessary for wildlife survival. Please add text discussing how the contamination exceedances do not pose risks to wildlife receptors.
5. The document does not include a detailed discussion of the chosen ecological receptor(s). The baseline ecological risk assessment (BERA) in the Zone 1 Remedial Investigation Feasibility Study (RIFS) discusses wide-ranging wildlife receptors represented by red-tailed hawks and long-tailed weasels. Localized receptors are represented by shrews. Is this still the case? Please add text discussing which wildlife species were assessed and the process used to determine the appropriate habitat area.
6. The information provided in Section 4.2 lacks consistency among the COECs. Are RGOs as risk drivers the focus of each COEC or is the intent to focus on ecological receptor groups based on previous risk management decisions?
7. Please consider adding a figure like the one below showing COEC exceedances in relation to habitat areas.

All ETP Z1 COEC
exceedances overlaid

(combo of Addendum
Figures 8-14)



Legend:
Arsenic = blue
Chromium = green
Lead = purple
Mercury = yellow
Zinc = red
PCBs = orange
U-234/238 = gray

8. The document discusses uncertainties associated with sampling data for multiple COECs. In several cases, text states that estimated/J-flagged data cannot be used to confirm presence of the contaminant in the surface soils (e.g., arsenic, lead, mercury). J-flags indicate uncertainty in the measured concentration but do reflect a detection, indicating that COEC is present in the soil. Text should be revised globally to state that the COECs are present, but uncertainty remains in the measured concentrations.
9. The document mentions uncertainties associated with unvalidated data but does not discuss why this data persists. Please include text discussing how risk management decisions are made despite the presence of unvalidated data and what attempts, if any, have been made to remove data gaps by validating the data.
10. Please provide discussion of the potential for cumulative or additive toxic effects on wildlife from exposure to COEC exceedances from multiple chemicals. Blair Quarry and the K-722 area appear to contain COEC exceedances of many contaminants. Although the industrial nature of the K-722 area may not provide suitable habitat, that is presumably not the case at Blair Quarry. Were soil toxicity tests conducted to assess mixed contamination?

Specific Comments

1. **Page 20, Section 3.3, first paragraph**
For clarity, please revise the reference to Figure 6 to state that the figure shows the locations of the remedial actions conducted.
2. **Page 25, Blair Quarry, first paragraph**
Please clarify why there is a “low level of confidence” in the verification samples. Is there a high degree of uncertainty in this data due to estimated (J) values in the dataset?
3. **Page 28, Section 4.2, first paragraph, third sentence**
The sentence is confusing and difficult to understand. Please consider revising the sentence for clarity.
4. **Page 28, second bullet**
Please discuss the decision to limit soil data to the stated interval. This interval may effectively eliminate burrowing mammals as potential ecological receptors.
5. **Page 28, third bullet, first sub-bullet**
Does the stated definition of *Representative COECs* suggest that pockets of COECs representing risk to ecological receptors were screened out in favor of the widespread COECs? Please add text discussing the less widespread COECs that were not chosen as *representative COECs*.
6. **Page 36, Figure 9**
Please include in the legend a symbol indicating exceedances of the local wildlife RGO and average ERL. This information will provide a better assessment of chromium exceedances, especially in the K-901 Other Area, Powerhouse Area, and Contractor's Spoil Area.
7. **Page 39, Table 8**
In most cases, the local wildlife RGOs and average ERLs are more protective than the plant and invertebrate RGOs. For consistency and ease of comparison, please include in all tables the plant RGOs, invertebrate RGOs, local wildlife RGOs, and average ERLs.
8. **Page 46, Section 4.2.6, second paragraph, second to last sentence**
Should this sentence indicate using this method is less conservative “than using only detections”? Also, please discuss what this result and method are being used to identify.
9. **Page 55, Section 4.2.8.5, first paragraph**
Please include the source of the polycyclic aromatic hydrocarbon (PAH) benchmark for birds and discuss the reason the benchmark was developed with two orders of magnitude for conservatism. Given that one of the final ecological receptor species for

risk was a small mammal, is there a PAH benchmark for mammals that could be used in place of the avian benchmark to reduce uncertainty?

10. **Page 56, second and third paragraphs**

The text summarizes uncertainty related to limited PAH sample sizes. Please discuss how the data gap was addressed and how it supports the decision that no ecological remedial actions will occur.

This letter meets the FFA review cycle protocol of 90 days for the subject document. TDEC looks forward to working with DOE to ensure timely resolution of these comments and strongly encourages a comment resolution meeting prior to formal submittal of a document revision. Questions or comments concerning the contents of this letter should be directed to Randy Hoffmeister at the above address or by phone at (865) 985-2513.

Sincerely

Randy Young

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

ec: Mark McIntosh, DOE
Joanna Hardin, DOE
Sam Scheffler, DOE
Samantha Urquhart-Foster, EPA
Tanya Salamacha, UCOR
Sid Garland, UCOR
OREM Mailroom
ORSSAB
Colby Morgan, TDEC

xc: Wade Creswell, ORRCA
Amy Fitzgerald, ORRCA
Terry Frank, ORRCA

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