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**To:** [Mayton, Dennis H.](#); [Petrie, Roger](#); [Brad Stephenson](#); [Dana Casey](#); [Kahalealii Ishikawa](#); [Courtney Thomason](#); [Randy Young](#); [Primrose, Annette L \(ACP\)](#)  
**Subject:** [EXTERNAL] EPA DRAFT D4 FFS Comments  
**Date:** Tuesday, June 28, 2022 06:20:00  
**Importance:** High

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Good morning,

Since DOE is in the process of revising the FFS, I thought it might be helpful(?) to have our draft comments too.

Attached are our draft comments on the D4 FFS (and D3 Appendix E) and I hope that these can be addressed in the pending revision.

Monday is a holiday and Tuesday is my wife and my recovery from the fireworks and my nervous dog keeping us up until early Tuesday morning (last year it ended around 2:30 am!). It sounds like a war outside of my house – at least it did last year! Hope everyone can have a safe and enjoyable July 4<sup>th</sup> holiday weekend.

Thanks,

Carl

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**APPENDIX C**

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Attachment 1. EMWMF summary statistics and comparison to AWQC for Unfiltered Surface Water from EMW-VWEIR 2005-2021

- The frequency of exceedance above the TDEC Chapter 0400-40-03 fish and aquatic life Criterion Continuous Concentration (Fish CCC) general water quality criteria does not seem to take into account those samples with elevated non-detect detection limits above the Fish CCC.
- The last two columns of the table present the 24% Derived Concentration Guideline (DCG) values for radionuclides and frequency of samples above the 24% DCGs. It is unclear why DOE's adjusted 24% DCG criteria (in lieu of the standard DCGs) are being presented in the AWQC comparison table.
- No surface water criteria was provided for gross alpha and gross beta. Note that the reference standards for gross alpha (15 pCi/L) and gross beta (50 pCi/L) are in the National Primary Drinking Water Regulations (40 CFR 141).
- The maximum detection limit for total PCBs in surface water is more than 100-times above the recommended organisms only criteria yet this is not reflected in the frequency of exceedance calculation. It is recommended that a more sensitive analytical PCB method such as PCB congener analysis be used in lieu of the aroclor method. This would achieve

significantly lower detection limits necessary to achieve the reference standard for PCBs.

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Attachment 2. EMWFM summary statistics and comparison to AWQC for Unfiltered Contact Water 2005-2021

- The maximum detection limit for total PCBs in surface water is approximately 281-times above the recommended organisms only criteria yet this is not reflected in the frequency of exceedance calculation. It is recommended that a more sensitive analytical PCB method (e.g., PCB congener analysis) be used in lieu of the aroclor method. This would achieve significantly lower detection limits necessary to achieve the reference standard for PCBs. Additionally, the range of detection limits for cadmium and several pesticides (DDT, chlordane, dieldrin, endrin, heptachlor, heptachlor epoxide, methoxychlor) exceed the Fish CCC yet these exceedances are not reflected in the frequency of exceedance.
- The last two columns of the table present the 96% Derived Concentration Guideline (DCG) values for radionuclides and frequency of samples above the 96% DCGs. It is unclear why DOE's adjusted 96% DCG criteria (in lieu of the standard DCGs) are being presented in the AWQC comparison table.
- See Attachment 1 comment on PCBs, gross alpha, and gross beta.

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Attachment 3. EMWFM summary statistics and comparison to AWQC for Unfiltered Leachate 2005-2021

- See Attachment 2 comments.

Attachment 4. Winnowing Table

- Most inorganics listed in the table are described as having low mobility based on geologic setting. Without leachate partitioning analysis, varied geologic setting based on distance from surface water body, and geochemical and biological factors that may directly affect leaching to groundwater, these comments seems premature and unsupported.

**APPENDIX D**

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Table D.2. Numeric AWQC that are potential chemical-specific ARARs/TBCs for key COCs in EMWFM/EMDF landfill wastewater

- Table note [b] states "A 10<sup>-5</sup> risk level is used for setting TDEC recreational criteria for all carcinogenic pollutants. Recreational criteria for noncarcinogenic chemicals are set using a 10<sup>-6</sup> risk level." However, noncarcinogenic chemicals are assessed using a hazard quotient for individual noncarcinogenic chemicals or hazard index for multiple noncarcinogens. Please revise table note [b] to reflect a hazard quotient of 1.

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**APPENDIX E (previous D3 version)**

- Introductory paragraph, Page E-3 – This section states, "Due to the short time that debris will be exposed prior to microencapsulation, it is assumed this resulting contaminated leachate will be addressed similarly to leachate resulting from non-treated mercury waste...". While this assumption may be true, it is unclear what is meant by a short time. Please elaborate on what constitutes a short period of time for exposed wastes. It would be helpful to provide a conservative estimated amount of time that waste is expected to be exposed along with the

microencapsulation timeframe based on the volume of waste expected to be disposed in EMDF. Additionally, please include the date for the *Treatability Study Report for Y-12 Site Mercury Contaminated Soil* (i.e., 2013).

- Table E.2. Detected mercury samples meeting TCLP mercury RCRA limit (Table 24 from DOE/OR/01-2540&D2) – The table note acknowledges that more data are needed to bring the percentage of samples below 0.2 mg/L to below 87%. It is unclear why 87% was selected as the suitable limit or threshold for samples below the RCRA limit of 0.2 mg/L. This sentence should be removed from the table notes.
- Table E.3. Summary statistics for Alpha-5 (Bldg. 9201-5) total mercury – Please include the range of detection limits (minimum and maximum) for non-detected Alpha 5 total mercury concentrations. It is also unclear if full value detection limits are reflected in Figure 2.6 “Mercury use areas and mercury soil concentrations at Y-12”. Please elaborate on how non-detect values were treated in the development of the color-coded figure.

## **APPENDIX K**

- Table K.1.11 Calculated number of fish meals, Page K.1-14 – Note that the edible grams caught should be based on the edible weight of each fish multiplied by the product of the total fishing trips and fish catch rate per trip. The edible weight of each fish was calculated as 49.6 grams of filet yet 341.2 grams of filet was listed. Note that 341.2 grams of filet would yield an edible grams caught value of 4,401.48 grams, which is incorrect. Please change the 341.2 grams to 49.6 grams of filet as was calculated for BCK 3.3 and shown in the table. The corrected value would yield an edible grams caught value of 639.84 grams.
- Section K.1.3.1.2 Number of fish meals per year, Page K.1-14 – This section states, “The inclusion of this site-specific information and calculation illustrates the conservatism in the default assumption of 6387 g/year.” Please clarify that this value is based on a TDEC-recommended fish ingestion rate of 17.5 grams/year. The value appears to be based on 170 g/meal (i.e., 6-oz fish meal) instead of EPA’s recommended 227 g/meal (8-oz fish meal). Please revise the default assumption from 6,387 to 7,718 grams/year.
- Section K.1.7.1.1. The default fish ingestion rate is listed as 34 8-oz (227 grams) meals per year. Please note that the number of fish meals associated with the 17.5 g/day default assumption is 28 (not 34) 8-oz fish meals.
- Table K.1.14 PRG Calculator Inputs, Page K.1-24 – This table lists an exposure frequency of 365 days/year for the calculation of the recreational surface water PRGs. However, the exposure frequency used to derive the fish tissue PRGs for the fish ingestion pathway is listed as 350 days/year in Table K.2.3. The exposure frequency should be consistent between surface water and biota. Therefore, please update the fish tissue PRGs to account for an exposure frequency of 365 days/year.
- Section K.1.4.3.3 Uncertainty concerning certain BCFs, Page K.1-26 – This section states, “... radionuclides were not found in high concentrations in the fish tissue samples collected, even considering ongoing discharges from EMWTF and releases from the legacy contamination sites in Bear Creek Valley. This indicates that there are other, possibly site-specific factors that reduce the bioaccumulation of these radionuclides.” This statement is unsupported and should be omitted as the sampling events conducted were insufficient to draw meaningful conclusions about the uptake of radionuclides in fish. The sampling inadequacy issue was conveyed by EPA and TDEC during various technical meetings and in multiple

correspondence. The bioaccumulation of radionuclides in fish could be informed through the collection of additional fish tissue data. The results from the limited (two rounds) fish tissue radionuclide evaluation does not outweigh the number of studied reflected in the default bioconcentration factors used in the PRG calculations.

- Table K.1.19 Extrapolated Number of Fish in POE, Page K.1-34 – During the dispute resolution technical discussions, DOE indicated that the electrofishing technique scanned all areas multiple times without any limitations to the surveyed areas. However, this table presents scaled-back species-specific fish counts that are described as an extrapolated number of fish in 500 m (BCK 0.7) and 1.2 Km (BCK 3.3). If the number of fish being reported are based on a limited surveyed area, the fish counts may not represent the actual total fish counts in Bear Creek. Please elaborate on the length of reach sampled and the total length of the two points of exposure. Note that this potentially adds uncertainty to the estimated average number of fish meals for Bear Creek.
- App. K - Attachments and App. K.2 “Non-Radiological Discharge Limits” – No comments.

And...

1. Sec. K.1.4.3.3, p.K1-26 – Although no radionuclides were found in this one sampling event, many more than one fish sampling event would be needed to calculate a site-specific BCF. It was noted that both RESRAD and PRG BCF values were deemed ‘too conservative’ for DOE in this calculation. So we agree a site-specific study would probably produce much more reasonable BCFs, but judgements based on one sampling event should not be used to draw this conclusion of these well, peer-reviewed BCFs from many past year reliable studies.