



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8960

May 24, 2018

Mr. Brian T. Hennessey
SRS Remedial Project Manager
Infrastructure and Area Completion Division
U.S. Department of Energy
Savannah River Operations Office
P.O. Box A
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EPA COMMENTS for the PERIODIC REPORT 5 FOR THE UPPER THREE RUNS INTEGRATOR OPERABLE UNIT (IOU) (U), CERCLIS: 70, [SRNS-RP-2017-00548] REVISION 0, DATED FEBRUARY 2018, Savannah River Site, Aiken, South Carolina

Dear Mr. Hennessey,

The U.S. Environmental Protection Agency, Region 4 (EPA), has reviewed the Periodic Report 5 for the Upper Three Runs OU, CERCLIS Number: 70, SRNS-RP-2017-00548, Revision 0, Feb 2018. EPA comments are attached.

If you have any questions or require additional information, please contact me at (404) 562-8648.

Sincerely,

A handwritten signature in black ink, appearing to read "Jon Richards".

Jon Richards
Acting FFA Remedial Project
Manager
Superfund Division

ec: C.L. Bergren, SRNS-ACP
Susan Fulmer, SCDHEC

HUMAN HEALTH RISK ASSESSMENT (HH) REVIEW**General Human Health (HH) Risk Comments:**

1. Section 2.1.2 (Human Health Benchmark Screening and Results) of the Periodic Report 5 for the Upper Three Runs Integrator Operable Unit (UTR PR5 Report) discusses benchmark exceedances for cesium-137 (Cs-137) for the onsite worker in the Tinker Creek subunit in 2014/2015 that were determined to be a result of stormwater discharges from the saltstone processing and disposal facilities. However, the discussion regarding this event and how this impacts future data collection is incomplete, as follows:
 - The UTR PR5 Report does not discuss in detail, or provide figures of the extent of, contamination found in the sediments of Tinker Creek or surrounding soils. The UTR PR5 Report should be revised to include additional detail about the extent of contamination in the Tinker Creek sediments, including figures depicting the locations of the Z-Area Stormwater basin and Z-01 outfall, the location of the soil/sediment removal that occurred after the release event, and the location of impacted sediments/sediment breaks in Tinker Creek.
 - Table 2-2, Human Health Benchmark Exceedance Summary for UTR PR5, lists the Cs-137 exceedances as being collected in 2010. The UTR PR5 report should clarify whether the Cs-137 human health benchmark exceedances also occurred in 2010, and if so, Table 2-2 should be revised to also include the exceedances from the 2014/2015 data collection. Alternatively, correct the collection date listed in Table 2-2.
 - The UTR PR5 Report does not indicate where future background data will be collected from Tinker Creek or how future background sample locations will be selected to ensure that locations where elevated Cs-137 levels from the 2013 storm water discharge event that resulted in human health benchmark exceedances in Tinker Creek, are not included in the background data set.

Please revise the UTR PR5 Report to address these concerns.

2. Section 3.1 (Identification of Data Needs) discusses the use of passive diffusive gradients in thin films (DGT) samplers in the UTR IOU to provide screening data to estimate concentrations in fish tissue to support future HH subsistence fisherman scenario benchmark screening and the ecological screening. However, this discussion does not provide information about the comparability of data collected using DGT samplers to data obtained directly from fish tissue. *Please revise the UTR PR5 Report to provide information that demonstrates use of the DGT samplers will provide sufficiently representative data compared to actual fish tissue data, and to state whether future data collection for evaluation of the subsistence fisherman will also include some fish tissue to ensure the continued reliability of the DGT data.*

1. **Figure 1-2. Upper Three Runs IOU on page 1-9 of 1-58:**

Figure 1-2 is not depicted on the page labeled Upper Three Runs IOU on page 1-9. *Please revise the UTR IOIU PR5 Report to include this figure.*

2. **Figure 1-4d, Operable Units, Potentiometric Contours, and Groundwater Plumes Associated with the UTR IOU – H, S, and Z Areas, page 1-31 of 1-58:**

Figure 1-4c Operable Units, Potentiometric Contours, and Groundwater Plumes Associated with the UTR IOU – F and E Areas is duplicated and is included in place of Figure 1-4d, Operable Units, Potentiometric Contours, and Groundwater Plumes Associated with the UTR IOU – H, S, and Z Areas in the UTR PR5 Report. *Please revise the UTR PR5 Report to include the missing Figure 1-4d for the H, S, and Z areas.*

ECOLOGICAL RISK ASSESSMENT (ERA) REVIEW

General ERA comments:

1. The toxicity of metals to aquatic community-level receptors in surface water is best assessed using the dissolved fraction. The UTR PR5 Report does not mention if the surface water metals data represents the total or dissolved fraction. Amend the text to clarify this issue. Assessing surface water toxicity using total metals is overprotective, and hence acceptable, even though quite conservative. No action would be required if total metals data were used in the UTR PR5 Report data evaluation. However, *this discrepancy (if present) needs to be discussed in the text in order to put the surface water risk evaluation in its proper context.*
2. The “Tier I” and “Tier II” terminology is confusing when referring to the surface water benchmarks. First, the definitions provided in the text for these two terms is unclear. Second, the wording is not always used consistently in the text (e.g., see first and second sentences in the paragraph under Surface Water on page 2-13 of 2-54 which refer to “Tier I (low effect level)” and “Tier I (acute level)”). And third, although not intended, it mimics the language used to denote the Tier I (no-effect) and Tier II (low-effect) soil and soil/sediment benchmarks. Instead, it is recommended to call these two types of surface water benchmarks by their actual meaning, i.e., acute surface water benchmarks and chronic surface water benchmarks. This approach will remove all confusion and simplify the text. It would still be necessary to explain (a) the exact meaning of each term, and (b) why these benchmarks are used in the PR even though their exceedance both indicate the potential for effect. *Amend the text accordingly.*
3. Multiple times throughout the report (e.g., page 2-14 of 2-54), the text provides a benchmark but omits the units. Ensure that all the concentrations are associated with their proper units. Next, providing the concentrations, benchmarks, and hazard quotients in scientific notation (i.e., 00E-/ +00) adds an additional mental step required to “translate” these numbers into understandable values based on the decimal system. Although not a request, please consider providing all values as decimals in future PRs. Also, the text and data tables present the concentrations of the surface water analytes and benchmarks in units of mg/L. It is more usual to provide surface water concentrations in units of µg/L.

One reason may be that the “typical” analyte concentration in surface water is closer to 1 or 10 µg/L than 1 or 10 mg/L, thereby avoiding unnecessary zeros. *Although not a request, please consider providing surface water concentrations in units of µg/L in future PRs. Finally, for the sake of consistency, ensure that all the concentrations in the text are presented either in scientific or decimal notation (e.g., see the bottom two paragraphs on Page 2-14 of 2-54).*

4. Frequency of Detection (FOD) is one of the three criteria used to determine if further ecological evaluation is needed for a particular matrix at a given exposure area. The text does not specify that this criterion should only be used if a dataset contains a minimum number of samples which, by convention and consensus, is set at 20. Please clarify this issue in the text. Also, specify that FOD will not be used as a decision criterion if the number of samples collected from a particular exposure area is less than 20. *This requested modification needs to be reflected throughout the UTR PR5, as necessary.*

Specific ERA comments:

1. **Executive Summary, Data Needs and Early Actions, Page ES-8 of ES-10:**

This section indicates that passive diffusive gradients in thin films (DGT) samplers have been used successfully by regulatory agencies and can be used to collect screening-level contaminant data to estimate concentrations in fish tissue without catching or destroying any fish. Regardless, while this approach may be accurate, *additional information and/or research studies should be provided that explain why it would be better to collect DGT data instead of actual fish data.* These research studies will help project managers determine the acceptability of using DGT data over actual fish data and help make defensible risk-management decisions.

2. **Section 2.1.3, Ecological Benchmark Screening and Results, Page 2-13 of 2-54:**

The second paragraph on page 2-13 indicates that the mean ratio for aluminum is 2.11E-01 mg/kg. However, this mean ratio is inconsistent with the value listed on Table 2-4 Summary of Ecological Benchmark Exceedances for Sediment/Soil for UTR PR5. *Ensure that the aluminum mean ratio listed on page 2-13 is consistent with the mean ratio listed on Table 2-4.*

3. **Section 2.1.3, Ecological Benchmark Screening and Results, Surface Water, Page 2-16 of 2-54:**

This last paragraph on Page 2-16 indicates that while the mercury levels are above the Tier II surface water benchmarks, the concentrations observed are within the National Pollution Discharge and Elimination System (NPDES) permitted levels. However, in order to verify this statement, it is recommended to *revise section 2.1.3 by providing the NPDES-permitted levels for mercury.*

4. **Section 2.1.3 Ecological Benchmark Screening and Results, Biological Data and Benchmark Screening Results, Page 2-17 of 2-54:**

The second paragraph on Page 2-17 states, “IOU collected data including past fish condition factors and health assessment index (necropsy) data show no deleterious effects on the health of individual fish within the UTR system.” The fish condition factor and

the fish health assessment index (necropsy) are two measures of effect which are simply too crude to be used in support of future risk management decision making. These two measures can be expected to generate false negatives (i.e., concluding that an effect is not present when it in fact exists) because they are not sensitive enough. *This comment does not impact the current PR but is included to notify SRS that these two measures of effect should not be used as lines of evidence in a future Baseline Ecological Risk Assessment (BERA) for the Upper Three Runs Integrator Operator Unit.*

5. **Appendix A Benchmarks for SRS PR5 — Human Health and Ecological, Ecological Benchmarks - Tier II, Pages A-34 to A-44.**

Many of the Tier II surface water ESVs presented in the table are referenced as Aquatic Water Quality Criteria (AWQCs). EPA's AWQCs as presented in the aquatic life criteria tables available at <https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table>. This table provides acute and chronic benchmarks for metals, organochlorine pesticides, and a handful of other analytes. Yet, the table in Appendix A of the UTR PR5 Report also includes AWQC for numerous analytes not included in EPA's aquatic life criteria table (e.g., heptachlorodibenzo-p-dioxin, diethylphthalate, and dozens of others). It appears that the "Source" of these compounds was wrongly attributed to EPA's AWQC. *Amend the table to address this issue.*