



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

March 04, 2019

**CERTIFIED MAIL**  
**RETURN RECEIPT REQUESTED**

Mr. Brian Hennessey, 730-B  
SRS Remedial Project Manager  
Area Completion Projects  
Savannah River Operations Office  
P.O. Box A  
Aiken, South Carolina 29802

**ENVIRONMENTAL COMPLIANCE &**

**MAR - 4 2019**

**AREA COMPLETION PROJECTS**

Dear Mr. Hennessey:

The U.S. Environmental Protection Agency (EPA) has received and is reviewing the Human Health and Ecological Evaluation for Confirmation Sampling at the 488-1D Ash Basin and Inlet Basins, Revision 0, dated October 2018.

EPA cannot approve the above mentioned report until the comments below have been addressed. If you have any questions or concerns, please contact me at (404) 229 -9500.

Sincerely,

A handwritten signature in black ink, appearing to read "Diedre Lloyd".

Diedre Lloyd  
Remedial Project Manager  
Restoration and Sustainability Branch  
Region 4, Superfund Division  
61 Forsyth Street, S.W.  
Atlanta, Georgia 30303

cc: Angelia Holmes, DOE-SRS, C. L. Bergren, SRNS-ACP (Signed Original), Karen Adams, DOE-SRS, Susan Fulmer, SCDHEC

**HUMAN HEALTH AND ECOLOGICAL EVALUATION FOR  
CONFIRMATION SAMPLING AT THE 488-1D ASH BASIN AND INLET BASINS (U)  
SEMS NUMBER: 63  
ERD-EN-2018-0007  
REVISION 0  
DATED OCTOBER 2018**

**SAVANNAH RIVER SITE  
AIKEN, SOUTH CAROLINA**

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**EPA COMMENTS**

1. Section 1.0, Introduction of the Human Health and Ecological Evaluation for Confirmation Sampling at the 488-1D Ash Basin and Inlet Basins (U), SEMS Number: 63; ERD-EN-2018-0007, Revision 0, dated October 2018 (the Report), indicates that confirmation sampling was conducted in accordance with the *Confirmation Sampling and Analysis Plan (SAP) for Coal and/or Ash Removal at the Savannah River Site (SRS) (U) (SRNS 2014a)*, the *Field Sampling Plan (FSP) for the 488-1D Ash Basin (U) (SRNS 2015)*, and the *Field Sampling Plan for the D-Area 488-1D Inlet Basins (U) (SRNS 2014b)*. Given that the Report is an independent document, please include the SAP and the FSP as attachments to the Report.
2. Section 2.1, the human health (HH) analytical approach section of the Report, indicates that the HH risk-based threshold levels (TLs) are the EPA residential regional screening levels (RSLs) as established in the Confirmation Sampling and Analysis Plan (SAP) for Coal and/or Ash Removal at SRS (SRNS 2014a). Since the SAP was not appended to the Report, an independent review was conducted of the TLs presented in Table 1, Human Health Threshold Levels, against the most current (i.e., November 2018) EPA residential RSLs. Based on this review, minor variations were noted in the TLs. For example, the residential RSL/PRG [Preliminary Remediation Goal] presented in Table 1 for arsenic is 0.61 milligrams per kilogram (mg/kg); however, the November 2018 residential RSL is 0.68 mg/kg. Similar variations in the RSLs were also noted for cadmium and mercury. Please use the most recent data for comparison.
3. Section 2.2, the ecological analytical approach section of the Report, indicates that the ecological based TLs (ECO TLs) are the Los Alamos National Laboratory (LANL) ECORISK Database low-effects screening level for soil media (LANL, 2015). While it is understood that the ECO TLs are those presented in the SAP, it is unclear why the more recent version of the ECO TLs as presented in LANL ECORISK Database (Release 4.1) were not used?
  - a. Additionally, it is unclear if the lowest available LANL soil-based Lowest-Observed Adverse Effect Level (LOAEL) was selected or if specific receptors were selected?
  - b. This does not appear to be the case with arsenic, as the LANL 2015 database contains more sensitive LOAELs than those used.
4. Section 3.0, Acceptance Criteria, describes using ProUCL to calculate representative site concentrations for comparison to the selected human health-based and ECO Threshold Levels (TLs). The mean contaminant levels were used for this purpose. This approach is not consistent with USEPA's standard approach to risk assessment and may not be sufficiently protective to support final risk management decision making. Please revise this section to provide a reference supporting the current approach and justify selection of the arithmetic mean, rather than the 95% Upper Confidence Limit (UCL) of the mean, as the basis for exposure point concentrations, consistent with

a Reasonable Maximum Exposure (RME) condition or revise the current assessment to predicate TL comparisons on site-specific 95UCLs for all contaminants of concern.

5. The Data Usability Reports for Confirmation Sampling at the 488-1D Ash Basin and Inlet Basins were not attached to the Report. As such, data validation of the confirmation sampling results for the 488-1D Ash Basin and Inlet Basins could not be verified. Please submit the requested reports.
6. Based on review of Sections 4.1 and 5.1, addressing data associated with the 488-1D Ash Basin and Inlet Basins, respectively, it appears that samples from different basins (e.g., northern and southern basins) and features (e.g., cap, berm, and basins) within the basins were combined.
  - a. It is noted that this approach may result in biased statistics. EPA requests that the Report be revised to include separate analysis of each independent dataset or clarify the rationale for pooling of datasets from different areas/features.
7. Based on review of Section 5, Inlet Basins Data Evaluations, the Inlet Basin dataset only contains eight observations and yet statistical tests were still performed. It should be noted that the USEPA Statistical Software ProUCL 5.1 for Environmental Applications for Data Sets With and Without Nondetect Observations (USEPA 2015), indicates that in order for statistical tests to be performed, sample sizes should be equal to or greater than 10 observations. Revise the Report to reference and follow USEPA's ProUCL guidance on conducting statistical tests on small datasets. Alternatively, revise the Report to include an uncertainty analysis section that specifically identifies issues and biases related to the use of small data sets and other similar considerations that may affect the results of the analyses performed.
8. The verification of attainment of constituent of concern (COC) cleanup levels was achieved by comparing the COC mean concentrations to their respective human health-based and ECO TLs, and not a more conservative 95% Upper Confidence Limit (UCL) of the mean. Usually, the 95% UCL of the arithmetic mean is used because of the uncertainty associated with estimating the true average concentration at a site. The use of an upper-bound estimate provides reasonable confidence that the true average will not be underestimated. Please provide a rationale for using the other than the 95% UCL, as outlined above.
9. Section 5.4, Inlet Basins Conclusions, indicates that since residual concentrations of the analytes detected at the Inlet Basins met the pre-established HH cleanup criteria, the Inlet Basins will be graded and contoured to support unrestrictive land use. Noting that this decision was based on a comparison of the mean COC concentrations to HH TLs and that the Report does not present a quantification of residual site risk and hazard, it is unclear if the unrestricted land use designation is supported. In order to support pragmatic risk management decisions, an assessment (predicated on use of the 95UCL as the basis for exposure point concentrations) should be conducted for all constituents with a maximum detected concentration in excess of health-based TLs (i.e., regardless of whether the secondary mean-based assessment concentration meets the cleanup criteria). Please provide the requested information.
10. Section 2.2 Ecological, Page 2 of 34, This section indicates that the ECO TLs represent the Lowest-Observed Adverse Effects Level (LOAEL)-based thresholds. An alternative to such an approach would be to use a Maximum-Acceptable Toxicant Concentration (MATC), calculated as the geometric mean of a No-Observed Adverse Effects Level (NOAEL) and a LOAEL. Such an approach represents a more defensible cleanup goal because it falls between the no-effect and low-

effect TLs. Revise this section to justify the use of an effect-based ECO TL instead of a MATC ECO TL, and explain how this decision was reached.

11. Table 2, Ecological Threshold Levels, Page 21 of 34: Based on review of Table 2, it is unclear why the SRS 95<sup>th</sup> percentile background concentration was not used for the ECO TL when a Los Alamos National Laboratory (LANL) screening value was unavailable. This occurred for three analytes, with K-40 being the most important, since this analyte's maximum detected concentration is comparable to background. Revise the Report to clarify why the SRS 95<sup>th</sup> percentile background concentration was not used for analytes without a LANL ECO TL.
12. Table 4, 488-1D Ash Basin: Maximum Detected Concentration Compared to Threshold Levels, Page 23 of 54: This table contains entries for Pb-214, Ac-228, and Pb-212, but does not summarize the maximum detections or TLs for these analytes. It should be noted that Appendix A provides a table of all confirmation sampling results and TLs for the three referenced analytes; as such, it is unclear why these constituents were not included on Table 4. Revise Table 4 of the Report to include the maximum detected concentrations and TLs for these analytes.