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REGION 4
ATLANTA, GA 30303

ENVIRONMENTAL COMPLIANCE &

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SRNS-OS-2024-00515

AREA COMPLETION PROJECTS

Ms. Avery Hammett, SRS Remedial Project Manager
Remediation and Deactivation & Decommissioning Division
U.S. Department of Energy
Savannah River Operations Office
P.O. Box A
Aiken, South Carolina 29802

EPA comments for the FOCUSED EARLY ACTION CORRECTIVE MEASURES STUDY/FEASIBILITY STUDY IN SUPPORT OF BENEFICIAL REUSE OF SELECT COAL ASH AND COAL FINES AT THE A-AREA ASH PILE (788-A), A-AREA COAL PILE RUNOFF BASIN (788-3A), F-AREA ASH LANDFILL (288-F), H-AREA ASH BASIN (288-H), K-AREA ASH BASIN (188-K), AND L-AREA ASH BASIN (188-L) OPERABLE UNITS, SEMS NUMBERS: 61, 62, 88, 90, & 91, SRNS-RP-2024-00222, REVISION 0, OCTOBER 2024 SAVANNAH RIVER SITE, AIKEN, SOUTH CAROLINA

Dear Ms. Hammett,

The U.S. Environmental Protection Agency, Region 4 (EPA), has reviewed the Focused Early Action CMS/FS for the Beneficial Reuse of Select coal ash and fines for OUs 61,62,88,90, & 91, dated October 7, 2024. EPA comments are attached.

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

Sincerely,

JON RICHARDS

Digitally signed by JON RICHARDS
Date: 2024.12.12 12:57:32 -05'00'

Jon Richards
FFA Remedial Project Manager
Superfund & Emergency Managment Division

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

GENERAL COMMENTS

1. The CMS/FS does not clearly describe how the extent of the coal ash was determined at each Operable Unit (OU). The symbols designating where ash, soil, or a mixture of soil and ash were found in the transects shown on Figures 3 through 8 are not always consistent with the extent of ash shown. For example, soil markers are shown within the ash extent to the northeast on Figure 3 (A-Area Ash Pile Topography and Ash Observation Transects); however, the ash extent does not include observed ash present in the southeastern transect on Figure 7 (K-Area Ash Basin OU Topography and Ash Observation Transects). In addition, it does not appear that the extent of ash was completely defined, as some of the transects do not have an observation of soil to bound the extent (e.g., Figure 5, the northwestern quadrant of the F-Area Ash Landfill, and Figure 8 to the south at the L-Area Ash Basin) or there is an absence of transects (e.g., Figure 6, to the north at the H-Area Ash Basin). Further, it is unclear how the depths of ash as specified in Section 1.2.2 (Nature and Extent of Contamination) were determined for each OU as only surface samples were collected. It is also noted that Format F-4 in the *Environmental Compliance and Area Completion Projects Regulatory Document Handbook*, dated June 2023 (the EC&ACP Regulatory Document Handbook) indicates that schematic cross sections should be provided. *Please revise the CMS/FS to describe how the lateral and vertical extent of the ash at each OU was determined and correct or explain any discrepancies in the symbols used on Figures 3 through 8. Also, revise the CMS/FS to include cross sections of the OUs as indicated in the EC&ACP Regulatory Document Handbook.*

2. The samples collected for characterization of the coal ash are surface samples only, and the CMS/FS does not discuss whether surrounding (adjacent to and below) soil was impacted by the coal ash due to leaching of coal ash contaminants. It is also unclear if groundwater and surface water may be impacted. Although the purpose of the CMS/FS is to support the early action remedial strategy for the remaining coal ash and coal fines OUs that have been identified as candidates for beneficial reuse of ash material, it is unclear if additional sampling and characterization of the surrounding environmental media will be performed. *Revise the CMS/FS to clarify how the surrounding environmental media will be characterized to determine if it has been impacted by the coal ash.*

3. The CMS/FS does not include figures showing the locations of the exceedances of the preliminary remediation goals (PRGs). As noted in Section 2.1.2 (Development of Preliminary Remedial Goals) of Format F-4 in the EC&ACP Regulatory Document Handbook, the CMS/FS should include figures illustrating the locations where the PRGs are exceeded at each OU. *Please revise the CMS/FS to include figures showing the locations where soil samples exceed the PRGs.*

4. The CMS/FS does not indicate that coal ash samples were analyzed for dioxins and furans (D/Fs) or per- and polyfluoroalkyl substances (PFAS). It is unknown if D/Fs may be potential constituents of concern in environmental media at the OUs based on the presence of coal ash. In addition, it is unclear if the biomass facility at the K-Area Ash Basin may contain PFAS in the process water. As such, a screening evaluation of the coal ash and the K-Area Ash Basin should include sampling and analysis of D/Fs and PFAS. *Revise the CMS/FS to discuss the potential for D/Fs and PFAS to be present at the coal ash OUs and include additional sampling for these constituents as necessary to address the apparent data gap in site characterization and nature of contamination.*

5. The human health risk assessment (HHRA) does not consider risks from exposure to the whole soil column by hypothetical residents. **It is EPA's standard practice to evaluate all soil depths as a potential exposure source to hypothetical future residents in the event that the site is redeveloped.** Therefore, *please recalculate risks to future residents using soil data from all depths.*

6. There are no details presented in either the HHRA or the ecological risk assessment (ERA) on data sensitivity, with respect to comparisons of non-detected (ND) data with screening levels. *Please revise both risk assessments to discuss the evaluation of ND data.*

7. The output from ProUCL which is used in the risk assessments is not included in the report; *please revise the report to include the ProUCL output.*

8. The ecological risk assessment mentions threatened and endangered species (TES) surveys conducted in the 1990s that only include plants. *Please include a TES survey for all potential ecological species of concern at SRS, as appropriate.*

9. The uncertainties sections included in Appendix D (Ecological Risk Assessment) do not present a true consideration of uncertainties, as required by the EPA. **EPA defines uncertainty as a lack of data or an incomplete understanding of the context of the risk assessment decision. It can be either qualitative or quantitative.** This appendix does not discuss whether media samples/data are sufficient to support risk assessment conclusions/recommendations, or whether constituents that are missing from the evaluation(s) due to missing toxicity information might have a significant impact on the risk estimates. This information is important for making appropriate risk management decisions for the site, by placing the risk assessment results in the proper context. Therefore, *please revise the ERA to include a qualitative discussion of how the magnitude of uncertainties affects the conclusions for each constituent of potential ecological concern.*

SPECIFIC COMMENTS

1. **Section 1.2.1, Operable Unit Description, Page 1-14 of 1-24:** The text states that ash/soil samples were collected at the A-Area Ash Pile (AAP) and A-Area Coal Pile Runoff Basin (ACPRB) OU in 2008, but a brief summary of the number, locations, and depths of the samples is not provided. *Please revise this section to give an overview of the samples collected at the AAP and ACPRB OU.*

2. **Section 2.2, General Response Actions, Pages 2-5 to 2-7 of 2-10:** According to Section 2.2 (General Response Actions) of Format F-4 of the EC&ACP Regulatory Document Handbook, this section should discuss the estimated area or volume where the identified response actions (e.g., treatment, containment, or exposure technologies) may be applied. For example, it is unclear whether excavation may be applied to all areas of the H-Area Ash Basin, such as where ash was found in the Carolina Bay and where standing water is present. *Please revise this section to include discussion of the estimated area or volume to which the response actions can be applied.*

3. **Section 3.1.2, Alternative A-2: LUCs with Beneficial Reuse, Pages 3-2 to 3-8:** The description of the Phase II excavations indicates that unrestricted use of the ash units is the goal, but confirmation sampling of the underlying soil is not discussed. The surrounding soil should be sampled after the coal ash has been removed and prior to restoration of the ash units. In addition, "confirmation sampling" is identified in the cost estimate in Appendix H (Detailed Cost Estimates), but it is unclear if this refers to soil sampling or sampling of the ash material for its beneficial reuse as lower fill (i.e., the additional testing discussed in the following paragraph). *Please revise this section and the cost estimate as necessary to include confirmation soil sampling to ensure the ash units are restored to unrestricted use levels.*

4. **Figure 10, Preliminary CSM for the A-Area Ash Pile, Page 5-15 of 5-62; Figure 11, Preliminary CSM for the A-Area Coal Pile Runoff Basin, Page 5-16 of 5-62; Figure 12, Preliminary CSM for F-Area Ash Landfill OU, Page 5-17 of 5-62; Figure 13, Preliminary CSM for H-Area Ash Basin OU, Page 5-18 of 5-62; Figure 14, Preliminary CSM for K-Area Ash**

Basin OU, Page 5-19 of 5-62; Page 15, Preliminary CSM for L-Area Ash Basin OU, Page 5-20 of 5-62: None of the conceptual site models (CSMs) in these figures shows a complete exposure pathway for residents exposed to subsurface soil; as discussed previously, the entire soil column may be an exposure unit for future residents. *Please replace the dashes ("incomplete exposure pathway") in the boxes for future residents with filled circles, indicating complete exposure pathway for quantitative exposure.*

5. **Table 6, Summary of the Screening of Technologies for the Remaining Coal Ash and Coal Fines Operable Units, Pages 5-55 to 5-62:** The descriptions of the effectiveness, implementability, and cost are not always discussed in the appropriate columns. For example, the effectiveness of institutional controls is not discussed in the Effectiveness column and instead the text states that it is low cost. *Please revise this table to discuss the effectiveness, implementability, and cost of each general response action in the appropriate columns.*

6. **Appendix B, Contaminant Migration Model, Section B-2.4, Modeling Parameters for the FAL, HAB, KAB, and LAB OUs, Page B-24 of B-86:** The text states that a more representative source thickness was used for the Tier II simulations, but it is unclear what thicknesses were used at each OU as this is not specified in Section B-2.5 (Results of the Tier I and Tier II Analyses). *Revise Appendix B to specify the source thicknesses used for each OU in the Tier II screening and discuss how they were selected as more representative thicknesses.*

7. **Appendix B, Contaminant Migration Model, Section B-2.6.1, HAB OU Uncertainty Analysis, Page B-29 of B-86:** The discussion for Uranium-235 indicates that it was not retained as a contaminant migration (CM) refined constituent of concern (RCOC) because it was only detected one time out of the nine samples collected. This may indeed be the case, however, the sensitivity of the detection is not discussed. This section states that the detection (0.56 picocurie per gram [pCi/g]) is qualified as estimated and exceeds the maximum SRS background uranium-235 activity concentration of 0.17 pCi/g. It is unclear if the detection limit is sensitive enough to detect uranium-235 at the level of the background concentration. *Revise this section to discuss the sensitivity of the uranium-235 results to support the removal of this CM RCOC based on the frequency of detection.*

8. **Appendix C, Human Health Risk Assessment, Section C-1, Introduction, Page C-7 of C-152:** The guidance document(s) used to conduct the HHRA are not stated in the introduction. *Please revise this section accordingly.*

9. **Appendix C, Human Health Risk Assessment, Section C-2.1.1, Constituents of Potential Concern, Page C-14 of C-52, and Table C-2, Human Health COPC Screening for HAB, KAB, and LAB OUs Ash/Soil Media (0 to 0.3 m [0 to 1 ft]), Page C-35 of C-52:** This section states that nonradiological constituents were compared to the target hazard quotient of 0.1 residential soil Regional Screening Levels (RSLs); however, Table C-2 shows some constituents being compared to RSL x 0.1 (i.e., THQ = 0.1) and others being compared to the RSL (i.e., THQ = 1), without any rationale presented for this approach. **EPA requires that all sites with multiple potential constituents of concern be screened at the THQ = 0.1 level**; therefore, *please revise Table C-2 to screen all constituents at THQ = 0.1 and report exceedances accordingly.*

10. **Appendix C, Human Health Risk Assessment, Section C-2.1.2, Risk/Hazard Calculation, Page C-14 of C-52:** The equation for carcinogenic risk estimates shown at the bottom of this page contains an error; it currently shows multiplication by 1E-0, but should show multiplication by 1E-06. *Please correct this equation.*

11. **Appendix D, Ecological Risk Assessment, Section D-1, Introduction, Page D-9 of D-112:** The guidance document(s) used to conduct the ERA are not stated in the introduction. *Please revise this section accordingly.*

12. **Appendix D, Ecological Risk Assessment, Section D-2.3.3, Uncertainty Discussion for the Soil Medium for the FAL, HAB, KAB, and LAB OUs, Page D-25, etc. of D-112:** The lack of an ecological screening value for a potential constituent of concern is not an appropriate criterion for recommending no further remedial evaluation. Instead, the magnitude of uncertainty associated with not evaluating one or more constituents should be discussed and weighed to determine whether there is a significant impact to the risk estimates. Therefore, *please revise this section for all constituents where there is no screening value by removing this statement and adding a brief toxicity discussion to justify the recommendation of no further remedial evaluation in conjunction with any other evidence (e.g., non-exceedance of background concentration, etc.).*

13. **Appendix D, Ecological Risk Assessment, Section D-2.3.4, AAP and ACPRB OU – Soil Medium, Page D-31 of D-112:** It is uncertain why sediment and surface water results are included in this section. Based on the CSMs, there are no complete aquatic exposure pathways on the site. Section D-1.3, Habitats/Receptors/Preliminary Assessment and Measurement Endpoints, mentions that there was marginal aquatic habitat present in this part of the site at one time, but it has become much less appreciable through secondary succession. *Please either revise this section by removing all discussions of risk results based on aquatic exposure pathways, or add a new symbol to the appropriate CSM, indicating that the aquatic exposure pathways were once considered complete but are not currently operating.*

14. **Appendix E, Principal Threat Source Material Evaluation, Attachment 1, Default Regional Screening Levels (RSLs) for Composite Worker (i.e., Industrial Worker) Scenario, Page E-27 of E-32:** Screening against RSLs was conducted using THQ = 1; however, as discussed previously, screening should be conducted using THQ = 0.1. *Please rescreen the soil data used in the Principal Threat Source Material (PTSM) Evaluation using RSLs THQ = 0.1.*