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

SRNS-OS-2024-00084

March 20, 2024

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 on the TECHNICAL REVIEW OF THE SEVENTH FIVE-YEAR REMEDY REVIEW REPORT FOR SAVANNAH RIVER SITE OPERABLE UNITS WITH NATIVE SOIL COVERS AND/OR LAND USE CONTROLS SAVANNAH RIVER SITE AIKEN, SOUTH CAROLINA; SEMS Number: 00, SRNS-RP-2023-00715, Revision 0, dated December 2023

Dear Ms. Hammett,

The U.S. Environmental Protection Agency, Region 4 (EPA), has reviewed the seventh Five Year Review for Operable Units with Native Soil Covers, SEMS Number: 00, Revision 0, Dec 2023. 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: 2024.03.20 17:36:14 -04'00'

Jon Richards
FFA Remedial Project Manager
Superfund & Emergency Managment Division

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

GENERAL COMMENTS

1. The appropriateness of the protectiveness determination of "short-term protective" prepared for the C-,K-, and L-Reactor Complexes (CKL Rx) is unclear. According to the Seventh FYR Section III (Progress Since Last Review) and Appendix D (C-,K-, and L-Reactor Complexes) the previous protectiveness statements from the Sixth Five-Year Remedy Review Report (SRNS 2019) concluded that all Operable Units (OUs) were found to be protective except CKL Rx, which was found to be protective in the short-term (Table 5, Protectiveness Determinations/Statements from the Sixth Five Year Remedy Review for SRS OUs with Native Soil Covers and/or LUCs [Land Use Controls] (SRNS 2019)). Appendix D, Section V (Progress Since Last Review) indicates for the CKL Rx remedy to be protective in the long-term, the remainder of the remedy for implementing the in-situ decommissioning (ISD) must be completed according to the recommended follow-up actions to ensure long-term protectiveness. As such, since the remedial actions at the CKL Rx are not completed, the protectiveness determination of "will be protective" is appropriate and falls into the category of remedies where construction activities are ongoing per Environmental Protection Agency (EPA) guidance "Comprehensive Five-Year Review Guidance", 19 EPA 540-R-01-007, OSWER No. 9355.7-03B-P, June 2001, and "Clarifying the Use of Protectiveness Determinations for Comprehensive Environmental 30 Response, Compensation, and Liability Act Five-Year Reviews", OSWER Directive 9200.2-111, September 13, 2012. **Please revise the protectiveness determination from "short-term protective" to "will be protective" and the protectiveness statement as follows**: *"The remedy at the CKL Rx is expected to be protective of human health and the environment upon completion. In the interim, remedial activities completed to date have adequately addressed all exposure pathways that could present unacceptable risks in these areas".*

2. The evaluation of emerging contaminants presented in Section VII (Technical Assessment) of the appendices for each of the OUs is unclear. For example, the Seventh FYR does not list the emerging contaminants that were evaluated as part of the Technical Assessment or provide the rationale to substantiate the assertion that the emerging contaminants are not applicable to the OUs. In addition, it is unclear what fact sheets provided on the EPA webpage were reviewed during the evaluation. **Please revise the Seventh FYR to clarify which emerging contaminants were evaluated and provide the rationale to substantiate why the emerging contaminants are not applicable to the subject OU.**

3. It is uncertain which Regional Screening Level (RSL) is being referred to in both the text and Table B-1, Comparison of Nonradiological Standards in Soil Media, of Appendix B, Evaluation of Changes in Standards and Toxicity, i.e., Threshold Risk (TR) = 1E-06, Threshold Hazard Quotient (THQ) = 1.0 or TR = 1E-06 and THQ = 0.1. **Please revise Appendix B text and tables to identify the RSLs used to evaluate potential changes to toxicity of the constituents of concern (COCs); note that the THQ = 0.1 RSL should be used for comparative purposes for sites with detections of multiple constituents.**

4. Appendix D, Page D-1 of D-23 refers to the consideration of the decommissioning and remediation options for the reactor complexes at SRS, which are stated to include C, K, L, and R as follows: "The three Reactor Complexes were first evaluated together with the R-Reactor Complex to obtain regulatory approval for in situ decommissioning (ISD) as an early remedial action (SRNS 2009a)." It should be noted, however, that P-Reactor was included in the regulatory consideration for in situ decommissioning and was actually the first of the

reactors to undergo early remedial actions for ISD. **This text should be revised to include reference to the P-reactor complex.**

5. Subsequent text describes the DOE decision to proceed with accelerated remediation of several subunits of the R-Area Operable Unit (RAOU) under the American Recovery and Reinvestment Act of 2009, and implementation of ISD for the R-reactor complex, but does not mention the P-reactor complex which was remediated prior to the R-reactor complex. **This text should also refer to the P-reactor complex which was remediated prior to the R-reactor complex.**

6. The last part of this paragraph states "the remedy review for the R-Reactor Complex will be presented with the RAOU in a subsequent phase of the Sixth Five-Year Remedy Review." This sixth five-year review was completed previously and included a review of operating equipment. **This statement should be revised to list the actual version of the subsequent five-year review and to be more specific about which components of the remedy will be reviewed.**

SPECIFIC COMMENTS

1. **Section II, Response Action Summary, Page 7:** It is unclear whether the environmental database that is used to track sampling and analysis is available for public access via a web link. The text states, "Technical and administrative protocols have been established to promote the consistent implementation of USEPA guidance at OUs across SRS. An environmental database is used to track sampling, analysis, and results of environmental characterization and monitoring." However, no discussion is presented regarding public access to the environmental database. Please revise Section II to discuss whether the public has access to the environmental database or whether the access is limited (e.g., only available to the Department of Energy [DOE] and/or their contractors).

2. **Appendix C, C-Area Operable Unit, Section VI, Five-Year Review Process, Page C-9:** The text states that interviews with the Savannah River Nuclear Solutions, LLC (SRNS) Environmental Compliance and Area Completion Project (EC &ACP) Post-Closure Leads were conducted on August 23, 2023. However, Attachment C-1, Five-Year Review Site Inspection Checklist – C-Area Operable Unit, II, Interviews, shows that these interviews were conducted on August 3, 2023. **Please verify the date that these interviews occurred and correct the text accordingly.**

3. **Appendix E, Early Construction and Operational Disposal Site [ECODS], L-1, N-2, P-2, R-1A, R-1B, and R-1C, Section IV, Remedial Actions, Page E-5:** The text states that the actual operation and maintenance (O&M) cost for the four ECOD areas from fiscal year (FY) 2019 until the end of FY2023 was $34,124. However, Table E-2, Actual versus Estimated O&M Costs, shows that actual O&M costs from FY2019 until the end of FY2023 was $39,582. **Please verify the correct cost and revise the Seventh FYR accordingly.**

4. **Appendix I, K-Area Bingham Pump Outage Pit, Section IV, Remedial Actions, Page I-5:** The text states that the estimated O&M cost for the K-Area Bingham Pump Outage Pit from fiscal year FY2019 until the end of FY2023 was $5,636. However, Table I-3, Actual versus Estimated O&M Costs, shows that estimated O&M costs from FY2019 until the end of FY2023 was $16,036. **Please verify the correct cost and revise the Seventh FYR accordingly.**

5. **Appendix K, Lower Three Runs Integrator Operable Unit (IOU), Section VI, Five Year Review Process, Summary of Inspections and Interviews, Page K-16:** The text states that the Lower Three Runs IOU Tail Portion was inspected by SRNS EC&ACP on July 6, 2023; however, Attachment K-1, Five-Year Review Site Inspection Checklist – Lower Three Runs Integrator Operable Unit, shows that the SRNS EC&ACP inspection of the Lower Three Runs IOU occurred on July 13, 2023. **Please verify the correct date that the inspection occurred and revise the Seventh FYR accordingly.**

6. **Figure K-3, Lower Three Runs Integrator Operable Unit Ponds and Canal System, Page K-25:** Pond 2 is included in a list of areas that are part of the Upper Subunit in Appendix K, Lower Three Runs IOU, Section III, Background; however, it is not shown in Figure K-3. **Please revise Figure K-3 to show the location of Pond 2.**

7. **Appendix K, Lower Three Runs IOU, Section IV, Remedial Actions, System Operation and Maintenance, Page K-36:** The text states that the estimated O&M cost for the Lower Three Runs IOU from fiscal year FY2019 until the end of FY2023 was $614,600. However, Table K-3, O&M Costs - Actual versus Estimated, shows that estimated O&M costs from FY2019 until the end of FY2023 was $327,500. Please verify the correct cost and revise the Seventh FYR accordingly.

8. **Appendix L, R-Area Bingham Pump Outage Pits (643-8G, 643-9G, and 643-10G) and R-Area Unknown Pits Operable Unit, Attachment L-1, Five-Year Review Site Inspection Checklist – R-Area Bingham Pump Outage Pits (643-8G, 643-9G, and 643-10G) (RBPOPs) and R-Area Unknown Pits #1, #2, and #3 (RUNKs) OU, Page L-19:** Appendix L, Section VI, Five-Year Review Process, Summary of Inspections and Interviews, states that interviews were conducted with Phil Carter, SRNS EC&ACP, and Brian Hanshew, SRNS EC&ACP Post-Closure Lead, on August 3, 2023; however, Attachment L-1 shows that interviews were conducted with George Joyner, SRNS EC&ACP, and Richard Feagin, SRNS EC&ACP, on October 26, 2018. **Please verify that the most recent information/year for Attachment L-1 is used and revise the Seventh FYR accordingly.**

MINOR Specific COMMENTS

1. **List of Acronyms and Abbreviations, Page iii:** There are several acronyms and abbreviations that are not used in the text; specifically, 2,4-Dinitritoluene (DNT), Hazard Index (HI), Polybrominated diphenyl ethers (PBDE), Polyfluoroalkyl substances [sic] (PFOS), Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX), and 2,4,6-Trinitrotoluene. Conversely, there are three abbreviations used in the text that are not listed in the List of Acronyms and Abbreviations; specifically, Monitored Natural Recovery (MNR), National Environmental Protection Act (NEPA), and River Water System (RWS). **Please add the acronyms and abbreviations that are used in the text and remove the acronyms and abbreviations that are not used in the text from the List of Acronyms and Abbreviations.**

2. **Attachment C-1, Five-Year Review Site Inspection Checklist – C-Area Operable Unit, Page C-30:** Section D. General, 1, Vandalism/Trespassing is not completed. **Please complete Section D. General, 1, Vandalism/Trespassing.**

3. **Table D-2, PAOU Refined COCs and Cleanup Levels (used for CKL Rx evaluations) *(continued/end)*, Page D-26:** The abbreviation "CMCOC" [Contaminant Migration Constituent of Concern] is used for the first time in the footnote for Table D-2 but is not defined. **Please define the abbreviation "CMCOC" upon first use.**

4. **Appendix G, Gunsite 012 (NBN) Operable Unit, Section VII, Technical Assessment, Page G-9:** The text lists the LUCs that are in place; however, the sentence provides insufficient detail on the media being protected by the use restrictions. The sentence currently states, "...use restriction to prevent unauthorized contact, removal or excavation of, and restrictions to prevent disturbance of the Gunsite 012 OU." **Please revise the text to clarify what type of media is being prevented from removal or excavation.**

5. **Appendix J, L-Area Bingham Pum Outage Pits (643-2G and 643-3G) (LBPOP) and P-Area Bingham Pump Outage Pits (643-4G) (PBPOP), Section VI, Five-Year Review Process, Page J-6:** The text states, "During the meeting, the participants will view drone footage of CAOU and will be provided an opportunity to walk down the OU." However, this sentence should be revised to state that drone footage of the L- and P-Area Bingham Pump Outage Pits will be viewed. **Please revise the sentence accordingly.**

6. **Appendix K, Lower Three Runs Integrator Operable Unit (NBN), Section VII, Technical Assessment, Page K-17:** The abbreviation "RG" [Remedial Goal] is used for the first time but is not defined. **Please define the abbreviation "RG" upon first use.**

7. **Figure K-11, PAR Pond Water Surface Profiles (2023), Page K-33:** Figure K-11 shows PAR Pond Water Surface Profiles for years 2021 and 2022; however, the title states that 2023 water surface profiles are shown. **Please correct the title of Figure K-11 to state that 2021 and 2022 water surface profiles are shown.**

8. EPA HQ Comments below:

1	Community Outreach	Community Notification and Involvement states that the public will be informed through a public notice in local newspapers and through the mailing list. Newspaper notices are not very effective in encouraging community involvement and Administrative Records are often confusing for the average person to navigate. **Have other efforts to inform and involve the public been considered such as social media posts, website announcements, mass postcard mailers, fact sheet etc?**	Community involvement and Interviews
2	3	"The trigger date for submittal of the next five-year remedy review report to the regulatory agencies is based on the USEPA signature date of the previous report. Therefore, the final signature for the last grouping of the Seventh Five-Year Remedy Review Report is due no later than January 21, 2029." **-The date the report is due is based on the**	Triggers and Inspections

		statutory date, December 21. Not the date of a previous FYR signature.	
3	VII	**The next FYR review is due on the statutory date of December 21, not the date the last FYR was signed.**	Next Review
4	Table 1	States the triggering action date is January 21, 2024, but SEMS states the statutory date is December 21. **Please confirm the correct date.**	Triggers and Inspections
5	4	"USDOE functions as the lead agency for remedial activities at SRS, with concurrence by the USEPA Region 4 and the SCDHEC." -The USEPA jointly selects the remedy. **Please update sentence.**	Other
6	Interviews	It looks like only two staff were interviewed. I also did not see the interview questions/responses. **For the next 5YR, consider more a diverse group of interviewees, including others that work at the site and the public.**	Community involvement and Interviews
7	Figure 1	Consider updating Figure 1, so the public/others can clearly delineate where the LUCs boundaries are located. **A legend would be helpful as well as including the surrounding area to understand where the LUCs are located.**	LUC

EPA Reg 4 Attorney Comments:

1. General Comment on LUC Objectives.
    a. LUC Objectives for all OUs are listed in Table 3 beginning on p. 27 of 40. However only some of the OU-specific appendices restate these objectives in section IV (Remedial Actions) of the appendix. See App. C, D, and N. For consistency and clarity, **recommend adding a bulleted list of LUC objectives in the same section for App. E, F, G, H, I, J, K, L, and M.**
    b. The Technical Assessment section of each Appendix includes the following generic statement: "The LUCs that are in place include physical access controls to prevent unauthorized entry to SRS (fences, guards, security patrols, etc.), use restrictions to prevent unauthorized contact, removal or excavation of subsurface soils, and restrictions to prevent disturbance of [the respective OU]. Warning signs are in good condition, and no activities were observed that would have violated the LUCs. All LUC objectives are being met." This does not address how each OU's individual/specific LUC objectives are being met. For example, a LUC

objective in App. C (C-Area OU) is to "Prohibit the development and use of property for residential house, elementary and secondary schools, childcare facilities, and playgrounds." **To support the statement that "All LUC Objectives are being met," recommend revising the Technical Assessment section of each OU-specific appendix to address the relation between LUCs and specific objectives for each OU.**

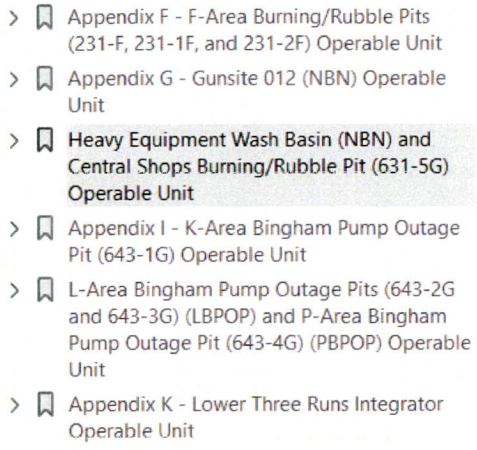
c. App. N. **Add the following LUC objective from Table 3 (p. 31 of 40 for this specific OU) to the bulleted list on p. N-6 of N-28: "Maintain the integrity of any current of future remedial system or monitoring system."**

2. Table 4, p. 33 of 40.
   a. Comments for C-Area Operable Unit state that actual costs are higher than estimated due to "maintenance costs being underestimated." Recommend providing additional information to explain why costs were underestimated, consistent with other entries in the table. For example, several other entries describe additional maintenance activities that were necessary. **Please also provide this additional explanation at the end of the first paragraph on p. C-9 of C-30.**
   b. Comments for Heavy Equipment Wash Basin (NBN) and Central Shops Burning/Rubble Pit (631-5G) state that maintenance costs were "slightly underestimated." **Recommend deleting the word "slightly." That word is not used in the comments for any other estimate despite other entries having a similar or lower % of estimate. E.g. for R-Area Bingham Pump Outage Pits (643-8G, 643-9G and 643-10G) and R-Area Unknown Pits #1, #2, and #3, the % of estimate is lower (179% vs. 252%) but the comments for that entry do not use the term "slightly."**

3. Table 5, p. 35 of 40.
   a. The entry for C-Area Operable Unit reads "NA" for the protectiveness determination and statement from the 6th FYR, and includes footnote "a" stating this OU was not included in the 6th FYR. However, C-Area Operable Unit was evaluated in the 6th FYR. **Recommend correcting this entry by deleting the superscript "a" and correcting the protectiveness determination and statement entries to read, "Protective" and "The remedy at CAOU is protective of human health and the environment."**
   b. The entry for the Wetland Area at Dunbarton Bay in Support of the Steel Creek IOU includes a protectiveness determination and statement. However this OU was not evaluated in the 6th FYR for or SRS OUs with Native Soil Covers and/or LUCs (remedy implementation for this OU was not complete during that review cycle**). Recommend changing both the protectiveness determination and statement entries to read "NA" and add a superscript "a" to the Operable Unit description, to reference footnote "a" to the table.**

4. Table A2, p. A-9 of A-30. The years listed under "Submittal Date" and "Issuance Year" on p. A-9 do not match the years under those categories on the continuation page for the table, p. A-10. **Recommend changing the years on p. A-10 to match those on p. A-9.**

5. The bookmarks for App. H and J only state the title of the Appendix without the corresponding Appendix letter. See the screenshot below. **Recommend updating the bookmark labels to include "Appendix H" and "Appendix J."**



6. Page K-8 of K-40. In the "Remedy Selection" section, **recommend adding a bullet before the RAO to distinguish it from the paragraph, and to be consistent with the RAO descriptions in other Appendices.**

7. Page L-6 of L-22. **Recommend deleting the word "slightly" from the first line, to match language used in Table 4 on p. 33 of 40.**