



**Department of Energy**  
Savannah River Operations Office  
P.O. Box A  
Aiken, South Carolina 29802

**MAR 12 2025**

Ms. Susan B. Fulmer, P. G., Manager  
Federal Remediation Section  
Division of Site Assessment, Remediation and Revitalization  
Bureau of Land and Waste Management  
South Carolina Department of Environmental Services  
2600 Bull Street  
Columbia, South Carolina 29201

Mr. Jon Richards  
Savannah River Site Remedial Project Manager  
Superfund and Emergency Management Division  
U. S. Environmental Protection Agency, Region 4  
61 Forsyth Street, SW  
Atlanta, Georgia 30303

Dear Ms. Fulmer and Mr. Richards:

**SUBJECT:** Savannah River Site's Responses to the Regulatory Comments on the 2023 Groundwater Mixing Zone Report for the D-Area Oil Seepage Basin (631-G) (U) (SRNS-RP-2024-01008, Revision 0, July 2024) SEMS Number: 27

The U.S. Department of Energy (DOE) is submitting the subject comment responses for your review. The South Carolina Department of Environmental Services (SCDES) and U.S. Environmental Protection Agency's (EPA) comments were received on November 22, 2024, and November 25, 2024, respectively. This report will not be revised; however, all comment responses will be included in the next report, as applicable. Please review the enclosures and provide your approval within thirty (30) days from receipt. The effort and time that the EPA and the SCDES have provided on this operable unit are appreciated.

Questions from you or your staff may be directed to me at (803) 952-6211, or the DOE Program Manager, Khari Bell, at (803) 952-5085.

Sincerely,

**MATTHEW  
BAKER**

Digitally signed by  
MATTHEW BAKER  
Date: 2025.03.12  
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Matthew R. Baker  
Acting FFA Remedial Project Manager  
DOE-Savannah River Operations Office  
Remediation, Deactivation, and Decommissioning Division

RDDD-25-128

Ms. Susan Fulmer  
Mr. Jon Richards

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**MAR 12 2025**

Enclosures:

1. SRS Responses to the South Carolina Department of Environmental Services' Comments 2023 Groundwater Mixing Zone Report for the D-Area Oil Seepage Basin (631-G) (U) (SRNS-RP-2024-01008, Revision 0, July 2024) SEMS Number: 27
2. SRS Responses to the U.S. Environmental Protection Agency's Comments on the Comments 2023 Groundwater Mixing Zone Report for the D-Area Oil Seepage Basin (631-G) (U) (SRNS-RP-2024-01008, Revision 0, July 2024) SEMS Number: 27

cc w/o encl:

M. Reece, SCDES-Columbia  
H. J. Porter, SCDES-Columbia  
J. Blalock, SCDES-Columbia  
S. French, SCDES-Columbia  
R. G. Stewart, SCDES-Columbia  
M. Mehta, SCDES-Columbia  
G. O'Quinn, SCDES-Midlands Aiken Environmental Affairs Office  
T. G. Corley, SCDES-Midlands Aiken Environmental Affairs Office  
E. G. Downing, SCDES-Midlands Aiken Environmental Affairs Office  
H. L. Herlong, SCDES-Midlands Aiken Environmental Affairs Office

cc w/encl:

B. Martin, EPA-Atlanta  
H. H. Cathcart, SCDES-Columbia  
M. McRae, TechLaw, Inc.

**SRS Responses to the South Carolina Department of Environmental Services (SCDES) Comments  
on the  
2023 Groundwater Mixing Zone Report for the D-Area Oil Seepage Basin (631-G)(U), SRNS-RP-  
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**SPECIFIC COMMENTS:**

1. Section 1.2, Regulatory History, page 2. The last sentence on this page indicates that there were eight VOCs identified as final COCs in the 1997 RFI/RI/BRA, including 1,2-dichloroethylene. This constituent is not discussed in Section 4, nor is it listed among the other final COCs in Tables 1 and A1. *The absence of 1,2-dichloroethylene from the remainder of the report should be discussed.*

**Response: Agree.**

**Removal of 1,2-dichloroethylene from the list of GWMZ constituents to be monitored was recommended in the Revision 1.5 GWMZ Application. Monitoring for this constituent was discontinued in 2010 as documented in the Fourth Five Year Remedy for the Savannah River Site. The second paragraph in Section 1.2 Regulatory History will be revised in future reports similar to the following:**

**“The RFI/RI Report and Baseline Risk Assessment for the DOSB OU (WSRC 1997) identified eight VOCs as final constituents of concern (COCs): benzene, 1,1-dichloroethylene (1,1-DCE), 1,2-dichloroethylene (1,2-DCE), cis-1,2-dichloroethylene(cis-1,2-DCE), dichloromethane (methylene chloride) (DCM), tetra-chloroethylene (PCE), trichloroethylene (TCE), and chloroethene (vinyl chloride) (VC). Removal of 1,2-DCE from the list of GWMZ constituents to be monitored was recommended in the Revision 1.5 GWMZ Application (SRNS 2009). Monitoring for 1,2-DCE was discontinued in 2010 as documented in the Fourth Five Year Remedy for the Savannah River Site (SRNS 2013).”**

**In addition, the Fourth Five Year Remedy Review will be added to Section 7.0 References in future reports as follows:**

**“SRNS, 2013. Fourth Five-Year Remedy Review Report for the Savannah River site, SRNS-RP-2012-00011, Revision 1.1, November 2013, Savannah River Nuclear Solutions, LLC, Savannah River Site, Aiken, SC”**

**No changes are proposed for the 2023 report.**

**Contact: Rohit Goswami, (803) 989-5383, rohit.goswami@srs.gov**

2. Appendix A, Figure A-1 DOSB Groundwater Monitoring Results 2Q23, page A-11 of A-12. In the table, monitoring wells (DOB 11, DOB 12, DOB 20A, DOB 20A, DOB 15, and DOB 16) have “NS” listed in a shaded box for the field parameters. Per the Color and Other Codes legend on page A-10 of A-12, this correlates to “Requested to be sampled but was not. See comments as to why not.” *It is unclear if or where these comments are provided. Please explain.*

**Response: Clarification**

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**The coding index was inadvertently omitted from Figure A-1. Figure A-1 with the updated index is attached herewith. As stated in the updated index, the 'NS' values in blue text were not required to be sampled. Please note in Table 2 of the report, that wells DOB 9 and DOL 1 are sampled every other year and were last sampled in 2022. Surface water sample DOBSW1 was not taken due to dry conditions. No changes are proposed for the 2023 report.**

**Contact: Rohit Goswami, (803) 989-5383, [rohit.goswami@srs.gov](mailto:rohit.goswami@srs.gov)**



**SRS Responses to United States Environmental Protection Agency  
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**GENERAL COMMENTS**

1. The Report should discuss the implementation of additional source control actions to address the potential source material remaining near well DOB 15 and reduce cleanup timeframes. The monitoring data for well DOB 15 indicates constituents of concern (COC) concentrations are consistently higher than surrounding wells. The time-series trend graphs prepared for tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (DCE) and vinyl chloride (VC) concentrations over time in DOB 15 (see Figures 1-4) show steady trends greater than the respective maximum contaminant levels (MCLs). This suggests source material may be present that continues to be a source of contamination to the groundwater near well DOB 15 with no clear cleanup timeframe for groundwater restoration. The Report states that the 2Q2023 results for pH, alkalinity, oxygen reduction potential (ORP) and dissolved oxygen (DO) indicate that the groundwater conditions are too aerobic to support reductive dechlorination. As such, natural attenuation at the D-Area Oil Seepage Basin (DOSB) Operable Unit (OU) relies mainly on physical processes (dispersion/dilution), which appear to be insufficient for degradation of contaminants and cleanup of groundwater within a reasonable timeframe based on the stable COC concentration trends. *Please revise the Report to provide a discussion of additional source control actions that could be implemented to address the potential source material remaining near well DOB 15 and reduce cleanup timeframes.*

**Response: Clarification**

**Figures 1-4 referenced in the comment show stable or decreasing values for PCE, TCE, cis-1,2-DCE, and VC at well DOB 15 for the past few years. This is true even when average recharge values have been observed to increase creating the potential for additional source material to reach groundwater. However, no such increase in groundwater concentrations have been observed indicating that the probability of additional source is highly unlikely. Back diffusion of VOCs from saturated low permeability zones within the aquifer are a more likely cause for low level VOC detections. The existing GWMZ boundaries remain appropriate for the DOSB OU plume.**

**VOCs in DOSB OU groundwater will continue to be monitored and reported in the DOSB OU annual mixing zone reports and in the Five-Year Remedy Review for Savannah River Site Operable Units with Groundwater Remedies. Any significant changes in contaminant levels that would require a recommendation for additional remedial action will be evaluated in the Five-Year remedy reviews including Core Team discussions as needed. The most recent Five-Year Remedy Review for Savannah River Site Operable Units with Groundwater Remedies was submitted in December 2024.**

**No changes are proposed for the 2023 report.**

**Contact: Rohit Goswami, (803) 989-5383, rohit.goswami@srs.gov**

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2. The text in Section 1.2 (Regulatory History) states that, “The RFI/RI [RCRA Facility Investigation/Remedial Action] Report and Baseline Risk Assessment for the DOSB [D-Area Oil Seepage Basin] OU [Operable Unit] (WSRC 1997) identified eight VOCs [Volatile Organic Compounds] as final constituents of concern (COCs): benzene, 1,1-dichloroethylene (1,1-DCE), 1,2-dichloroethylene, cis-1,2-dichloroethylene (cis-1,2-DCE), dichloromethane (methylene chloride) (DCM), tetrachloroethylene (PCE), trichloroethylene (TCE), and chloroethene (vinyl chloride) (VC)”; however, there is no evidence in the Report that 1,2-dichloroethene was sampled or analyzed for. *Please revise the Report to explain the missing sample, analysis, and discussion of 1,2-dichloroethene results.*

**Response: Clarification**

**Removal of 1,2-dichloroethylene from the list of GWMZ constituents to be monitored was recommended in the Revision 1.5 GWMZ Application. Monitoring for this constituent was discontinued in 2010 as documented in the Fourth Five Year Remedy for the Savannah River Site. The second paragraph in Section 1.2 Regulatory History will be revised in future reports similar to the following:**

**“The RFI/RI Report and Baseline Risk Assessment for the DOSB OU (WSRC 1997) identified eight VOCs as final constituents of concern (COCs): benzene, 1,1-dichloroethylene (1,1-DCE), 1,2-dichloroethylene (1,2-DCE), cis-1,2-dichloroethylene(cis-1,2-DCE), dichloromethane (methylene chloride) (DCM), tetra-chloroethylene (PCE), trichloroethylene (TCE), and chloroethene (vinyl chloride) (VC). Removal of 1,2-DCE from the list of GWMZ constituents to be monitored was recommended in the Revision 1.5 GWMZ Application (SRNS 2009). Monitoring for 1,2-DCE was discontinued in 2010 as documented in the Fourth Five Year Remedy for the Savannah River Site (SRNS 2013).”**

**In addition, the Fourth Five Year Remedy Review will be added to Section 7.0 References in future reports as follows:**

**“SRNS, 2013. Fourth Five-Year Remedy Review Report for the Savannah River site, SRNS-RP-2012-00011, Revision 1.1, November 2013, Savannah River Nuclear Solutions, LLC, Savannah River Site, Aiken, SC”**

**No changes are proposed for the 2023 report.**

**Contact: Rohit Goswami, (803) 989-5383, rohit.goswami@srs.gov**

**SPECIFIC COMMENTS:**

**SRS Responses to United States Environmental Protection Agency  
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1. **Appendix B, Figure B-5. DOSB Potentiometric Data – AQ1/2, 3 and GAU AQ1, 2023, Page B-12 of B-24:** The groundwater elevation for well DOB 15A is incorrectly shown as 142.15 feet (ft) mean sea level (msl). Table A-1 (DOSB Groundwater Monitoring Results, 2023) shows that the groundwater elevation at this well is 142.54 ft msl. *Please revise Figure B-5 to reflect the correct groundwater elevation at well DOB 15A.*

**Response: Agree/Clarification**

Please note that the groundwater elevations used to create the maps are from the synchronous water elevation data. Even then, the correct value for DOB 15A should be 141.76 ft, as noted in Table A-1, and the figure does have a typographical error. However, no changes are required for the potentiometric surface since the correct water level value of 141.76 ft for DOB 15A is downgradient of the 142 ft contour. In future submittals of the report, SRS will take care to avoid such typographical mistakes. No changes are proposed for the 2023 report.

Contact: Rohit Goswami, (803) 989-5383, rohit.goswami@srs.gov

2. **Appendix B, Figure B-9, DOSB Vinyl Chloride in AQ1/2, 3 and GA AQ1, 2023, Page B-16 of B-24:** The 1.08 micrograms per liter ( $\mu\text{g/L}$ ) VC concentration at well DOL 2 does not match the result of 2.0  $\mu\text{g/L}$  shown in Table A-1 (DOSB Groundwater Monitoring Results, 2023). *Please revise Figure B-9 to reflect the correct VC concentration at well DOL 2.*

**Response: Agree**

The VC concentration at well DOL 2 is correctly identified to be 2.0  $\mu\text{g/L}$  as presented in Table A-1 and not 1.08  $\mu\text{g/L}$  as shown in Figure B-9 for AQ 3/AQ Unnamed. In future submittals of the report, SRS will take care to avoid such typographical mistakes. No changes are proposed for the 2023 report.

Contact: Rohit Goswami, (803) 989-5383, rohit.goswami@srs.gov

**EPA MINOR COMMENTS:**

1. **List of Appendices, Page iv of vi:** The year listed in the titles for each appendix is incorrectly stated as 2021. *Please revise the title for each appendix to state the year 2023.*

**Response: Agree**

The stated year is a typographical error. In future submittals of the report, SRNS will take care to avoid such errors. No changes are proposed for the 2023 report.

Contact: Rohit Goswami, (803) 989-5383, rohit.goswami@srs.gov

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2. **Section 4.4.2, Plume Compliance Wells, Page 13 of 32:** The text states that low-level detections of VOCs were also observed at well DOL 1; however, DOL 1 was not sampled in 2023. *Please revise the sentence to correctly state that low-level detections of VOCs were observed at well DOL 2.*

**Response: Agree**

**The stated well name (DOL 1) is a typographical error and is correctly identified in the comment to be well DOL 2. In future submittals of the report, SRNS will take care to avoid such errors. No changes are proposed for the 2023 report.**

**Contact: Rohit Goswami, (803) 989-5383, rohit.goswami@srs.gov**

3. **Section 4.4.6, Trend Analysis, Page 13 of 32:** The text states that Figures B-6 through B-12 show 2023 monitoring results; however, monitoring results are shown on Figure B-6 through Figure B-13. *Please revise the text to reflect that 2023 monitoring results are shown on Figures B-6 through B-13.*

**Response: Agree**

**The figure range is incorrectly identified in the report as Figures B-6 through B-12 and should be Figures B-6 through B-13. The cross-section for TCE was a repeated mislabel of Figure B-10 and should have been Figure B-11. This created an error in the figure count resulting in an error in the text. In future submittals of the report, SRNS will take care to avoid such errors. No changes are proposed for the 2023 report.**

**Contact: Rohit Goswami, (803) 989-5383, rohit.goswami@srs.gov**

4. **Section 4.4.6, Trend Analysis, Page 14 of 32:** The text states, “The maximum concentrations of PCE (5.8 µg/L), TCE (13 µg/L), cis-1,2-DCE (72 µg/L), and VC (10 µg/L) were detected in well DOB 15 (plume compliance well), but below the specific MZCLs [Mixing Zone Concentration Limits] (78 µg/L, 200 µg/L, 147 µg/L, and 1,164 µg/L, respectively)”; however, the MZCLs shown for cis-1,2-DCE and VC should be switched as they do not respectively align with the order of COCs shown. *Please switch the order listed of cis-1,2-DCE and VC MZCLs.*

**Response: Agree**

**The stated MZCL were switched in a typographical error which is correctly identified in the comment. In future submittals of the report, SRNS will take care to avoid such errors. No changes are proposed for the 2023 report.**

**Contact: Rohit Goswami, (803) 989-5383, rohit.goswami@srs.gov**

5. **Section 5.2, Horizontal and Vertical Flow Rates, Page 18 of 32:** The text states that, “The estimated horizontal gradients and groundwater flow rates are shown in Table 4”; however,

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estimated horizontal gradients and groundwater flow rates are shown in Table 4A (Horizontal Groundwater Flow Rate Summary). *Please revise the text to state that estimated horizontal gradients and groundwater flow rates are shown in Table 4A.*

**Response: Agree**

The text will reference the correct table that depicts the estimated horizontal gradients and groundwater flow rates in future reports. No changes are proposed for the 2023 report.

Contact: Rohit Goswami, (803) 989-5383, rohit.goswami@srs.gov

6. **Appendix A, Table A-1, DOSB Groundwater Monitoring Results, 2023, Page A-11 of A-12:** The estimated quantitation limit (EQL) values in the PCE, TCE, and cis-1,2-DCE columns are cut off. *Please expand the columns so that the EQL values are visible.*

**Response: Agree**

There were some formatting issues with Table A-1, Appendix A and the reformatted table is attached herewith. No changes are proposed for the 2023 report.

Contact: Rohit Goswami, (803) 989-5383, rohit.goswami@srs.gov

7. **Appendix A, Table A-1, DOSB Groundwater Monitoring Results, 2023, Page A-11 of A-12:** The title of Table A-1 does not match the title provided on page A-3 of A-12, which identifies Table A-1 as Figure A-1. *Please verify the title of Table A-1 and revise the title of Table A-1 or the title and page provided on page A-3 accordingly.*

**Response: Agree**

Table A-1, Appendix A is incorrectly identified as Figure A-1 in the listing page within Appendix A. The updated Table A-1 is attached herewith. In future submittals of the report, SRNS will take care to avoid such errors. No changes are proposed for the 2023 report.

Contact: Rohit Goswami, (803) 989-5383, rohit.goswami@srs.gov

8. **Appendix B, List of Figures, Page B-3 of B-24:** The year listed in the titles for Figures B-5 through B-13 is incorrectly stated as 2021. *Please revise the titles for Figures B-5 through B-13 to state the year 2023.*

**Response: Agree**

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**The stated years for Figures B-5 through B-15 are incorrectly stated as 2021 as identified in the comment and should be stated as 2023. In future submittals of the report, SRNS will take care to avoid such errors. No changes are proposed for the 2023 report.**

**Contact: Rohit Goswami, (803) 989-5383, rohit.goswami@srs.gov**

- 9. Appendix B, DOSB 2023 Figures, Figures B-10 through B-13, Pages B-19 through B-23: The titles of Figures B-10 through B-13 do not match the titles in the List of Figures on page B-3 of B-24. Please revise the titles of Figures B-10 through B-13 to match the titles shown in the List of Figures.**

**Response: Agree**

**The cross-section for TCE was a repeated mislabel of Figure B-10 and should have been Figure B-11. This created an error in the figure count for the last three figures. TCE cross-section figure should be Figure B-11. Figure B-11 (cis-1,2-DCE) in the Appendix should be Figure B-12 and Figure B-12 (VC) should be Figure B-13. In future submittals of the report, SRNS will take care to avoid such errors. No changes are proposed for the 2023 report.**

**Contact: Rohit Goswami, (803) 989-5383, rohit.goswami@srs.gov**