Department of Energy
Savannah River Operations Office
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JUL - 8 2021

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 Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Mr. Jon Richards
Savannah River Site Remedial Project Manager
Superfund 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 Treatability Study Data Report for Groundwater Injection and Discharge Canal Neutralization at the D-Area Groundwater (OU) (U) (SRNS-TR-2021-00005, Revision 0, January 2021) SEMS Number: 63

In accordance with the terms of the Federal Facility Agreement, the U. S. Department of Energy (DOE) is submitting the enclosed responses to the regulatory comments on the *Treatability Study Data Report for Groundwater Injection and Discharge Canal Neutralization at the D-Area Groundwater (OU) (U)* (SRNS-TR-2021-00005, Revision 0, January 2021) for your review. The South Carolina Department of Health and Environmental Control (SCDHEC) approved the report on March 25, 2021 and the U. S. Environmental Protection Agency (EPA) provided comments on the report on May 13, 2021. This report will not be revised; however, all comment responses will be addressed in the next report, as applicable. Please review the responses and provide your approval within thirty (30) days of receipt.

The effort and time that the SCDHEC and the EPA have provided on this operable unit are greatly appreciated. Questions from you or your staff may be directed to me at (803) 952-8365.

Sincerely,

Brian T. Hennessey

Digitally signed by Brian T. Hennessey
Date: 2021.07.07 08:29:07 -04'00'

Brian T. Hennessey
SRS Remedial Project Manager
Infrastructure and Area Completion Division

IACD-21-148

Enclosure:
SRS Responses to U. S. Environmental Protection Agency Comments on the Treatability Study Data Report for Groundwater Injection and Discharge Canal Neutralization at the D-Area Groundwater (OU) (U) (SRNS-TR-2021-00005, Revision 0, January 2021) SEMS Number: 63

cc w/o encl:
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SRS Responses to US EPA Comments on the Treatability Study Data Report for Groundwater Injection and Discharge Canal Neutralization at the D-Area Groundwater OU (U)

SRNS-TR-2021-00005, Rev 0, January 2021, SEMS#: 63

Comments Received May 12, 2021

EPA General Comment:

1) It is uncertain whether the treatability study test objective to displace the acidic groundwater out of the upper water table aquifer of the Upper Three Runs Aquifer (UTRA) in the vicinity and downgradient of the D-Area Coal Storage Area (DCSA) and 489-D Coal Pile Runoff Basin (CPRB) can be achieved based on current site conditions. For example, the text in Section 4.2, Injection Well Installation, states although the injection wells were installed in the mid to lower (UTRA) and deeper than originally designed, increases in water elevations measured in nearby lower and upper aquifer zone wells during slug testing indicated there is sufficient communication within the UTRA. However, the text does not discuss if the groundwater communication is sufficient enough to meet the treatability study test objective to displace the acidic groundwater out of the upper water table aquifer of the UTRA in the vicinity and downgradient of the DCSA and 489-D CPRB.
    a. Please revise the Treatability Study Data Report for Groundwater Injection and Discharge Canal Neutralization at the D-Area Groundwater (OU) (U), SEMS Number: 63; SRNS-TR-2021-00005, Revision 0, dated January 2021 (Data Report) to address this concern/issue to ensure that the test objective can be achieved despite injection wells being installed deeper than originally designed.

Response: Clarification

The slug tests were not significant enough to indicate if the actual long-term injections will result in water displacement within the upper water table zone. By definition slug tests are performed to determine aquifer characteristics. The test provided proof that groundwater injection is feasible and was conducted before proceeding with constructing the remaining injection wells and piping system. Water level monitoring conducted in nearby wells during the slug tests measured increases in water elevations up to 0.83 ft which included upper water table wells.

Based on the slug test results and water level increases observed within the upper water table aquifer, it is expected that there is sufficient communication throughout the UTRA to displace the acidic groundwater out of the upper water table aquifer. Once the injection wells are connected to the production wells and the injections begin, water level monitoring and sampling, as identified in the data report, will be used to determine if the test objectives of the treatability study are being met. No changes to the 2021 data report are proposed. Post-injection monitoring data (as outlined in Table 5) will be presented in future data reports as available. Also see response to EPA Specific Comment #3.

Contact: Ashley Shull (ashley.shull@srs.gov) (803-952-7090)

EPA Specific Comments:

1. **Section 1.0, Introduction, Page 1 of 54:** The text discusses the presence of a metals plume and a sulfate plume in the UTRA due to acidic conditions. However, the location of the sulfate plume was not presented on Figure 2, D-Area Groundwater 2Q2020 pH and Beryllium Plume, as suggested in the text. Please revise the Data Report to ensure the location of the sulfate plume relative to the treatability study area is clearly documented and understood.

Response: Agree

The sulfate plume mimics the presented beryllium plume in orientation and size. The sulfate plume will be presented in a figure in subsequent data reports. No changes to the 2021 data report are proposed.

Contact: Ashley Shull (ashley.shull@srs.gov) (803-952-7090)

2. **Section 2.0, Project Description, Injection of Production Well Water, Page 2 of 54:** The text states the pH of the production well groundwater is approximately 6.0 to 6.5. However, according to Table 2, D-Area Production Wells Sample Results – December 6, 2018, Page 17 of 54, the pH of groundwater samples collected from production wells PW 3D and PW 136D was 6.7 and 5.8, respectively. Please revise the text to address the discrepancy in the reported pH levels measured in samples collected from production wells PW 3D and PW 136D.

Response: Clarification

The statement was a general approximation of the local pH levels. Future data reports will list exact measurements of pH instead of approximations. No changes to the 2021 data report are proposed.

Contact: Ashley Shull (ashley.shull@srs.gov) (803-952-7090)

3. **Section 4.2, Injection Well Installation, Pages 7-8 of 54:** The second paragraph states water levels in nearby wells, when available, were also measured during the slug tests. Furthermore, the text asserts that although the injection wells were installed deeper than originally designed, both lower aquifer zone and upper aquifer zone wells showed an increase in water elevations indicating that there is sufficient communication within the UTRA. However, water level data measured in nearby wells during the slug tests was not presented. As such, the assertion that there is sufficient communication within the UTRA based on increased water elevations in the lower and upper aquifer zone wells, respectively, could not be adequately assessed. Please revise the Data Report to include the water level data measured during the slug tests to support the assertion that there is sufficient communication within the UTRA based on increased water elevation.

Response: Agree/Clarification

The slug tests were performed to help determine if groundwater injection is feasible before constructing the remaining injection wells and piping system. It is expected that there will be sufficient communication throughout the UTRA as water level monitoring conducted in nearby wells during the slug tests measured increases in water elevations up to 0.83 ft which included upper water table wells. Once the wells are connected to the production wells and the injections begin, water level monitoring and sampling, as identified in the data report (as outlined in Table 5), will be used to determine if the test objectives of the treatability study are being met. Detailed post-injection water elevation data will be presented in future data reports as available. Also see response to EPA General Comment #1.

Contact: Ashley Shull (ashley.shull@srs.gov) (803-952-7090)

4. **Figure 2, D-Area Groundwater 2Q2020 pH and Beryllium Plume, Page 25 of 54:** An isolated beryllium plume defined south of the D-Area Discharge Canal and the 488-1D Ash Basin at well cluster DCB085A, DCB085C and DCB085D is shown on the figure. However, the laboratory results for beryllium detected in these wells was not presented in the Data Report. Wells DCB085A and DCB085C are screened within the UTRA unit, and well DCB085D is screened in the deeper Gordon Aquifer unit. As such, without the beryllium results it is currently unknown if beryllium contamination has been detected in the UTRA and/or the deeper Gordon Aquifer unit. Please revise the Data Report to include the beryllium results for wells DCB085A, DCB085C and DCB085D.

   Response: Clarification

   Figure 2 shows all the DAG OU monitoring wells and the pH values. Well cluster DCB085 is not part of the monitoring network for the treatability study (Table 5) and therefore is not included in the data tables. The 2020 data for this well cluster will be presented in the July 2021 DAG OU Groundwater Monitoring Report. Additionally, the 2Q2021 sampling results at all wells at the DCB085 well cluster were non-detect for beryllium. No changes to the 2021 treatability study data report are proposed.

   Contact: Ashley Shull (ashley.shull@srs.gov) (803-952-7090)