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

August 8, 2024

Ms. Avery G. 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 **EFFECTIVENESS MONITORING REPORT (EMR) FOR THE P-AREA GROUNDWATER (PAGW) OPERABLE UNIT (OU) ZERO VALENT IRON PERMEABLE REACTIVE BARRIER (ZVI-PRB) REMOVAL ACTION (U), APRIL 2022 THROUGH MARCH 2023, SEMS NUMBER: 81, SRNS-RP-2023-01281, REVISION 0, MARCH 2024, SAVANNAH RIVER SITE AIKEN, SOUTH CAROLINA**

Dear Ms. Hammett,

The U.S. Environmental Protection Agency, Region 4 (EPA), has reviewed the EMR Report for the P-Area Groundwater (PAGW) for the ZVI-PRB, Operable Unit (OU)(81), April 2022 through March 2023 Data, SEMS Number: 81, April 2024 . EPA has the following attached comments.

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: 2024.08.08 13:15:16 -04'00'

Jon Richards
FFA Remedial Project Manager
Superfund & Emergency Management Division

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

GENERAL COMMENTS

1. The EMR does not state that verification and validation of the laboratory data occurred for this report. In addition, the EMR does not contain data qualifiers issued during the data validation process, data validation reports, discussion of the validated data or data validation procedures. *Please provide a discussion on the data validation process and include data validation reports, data qualifiers and validation procedures.*

2. The EMR does not contain the reports issued by the laboratory for the analysis of the samples. *Please attach the laboratory data reports issued by the lab as an attachment.*

3. The EMR does not discuss how the investigation derived waste (IDW) was managed during the sampling event. Due to the elevated level of groundwater contamination, *please provide text in the EMR that discusses how the IDW was collected, containerized, characterized and disposed.*

4. The EMR states in multiple locations in the body of the report that pH has increased in the monitoring wells but does not discuss the increasing trend. *Please provide text that discusses potential reasons for the increasing trend of pH in the monitoring well network and whether contaminant concentrations are being impacted.*

5. The EMR does not describe the method used to collect groundwater samples from the monitoring wells. In addition, the EMR does not contain field notes (logbook scans) or critical information like groundwater purging techniques and stabilization criteria. *Please provide text describing the general sampling protocol and provide field notes/logbook scans and sample collection logs (if completed) as attachments.*

SPECIFIC COMMENTS

1. **Section 5.0, Summary and Recommendations, Page 31:** The summary section does not discuss the increasing trends of trichloroethylene (TCE) concentrations observed in wells PRW004DU, PRW002DL and PRW006C over the last four sampling events. Also, the first quarter 2023 (1Q23) TCE results in wells PRW001DU, PRW003DL, PRW003DU and P003U located east of the ZVI-PRB are greater than baseline results (see Figure 11, TCE Results for ZVI-PRB UAZ Monitoring Wells in 1Q23) and exhibit an increasing trend since completion of the ZVI-PRB. *Please provide a discussion of the increasing TCE trends observed in wells PRW004DU, PRW002DL, and PRW006C, PRW001DU, PRW003DL, PRW003DU and P003U.*

2. **Table 1, Maximum 1Q19 Concentrations of PCE, TCE, and cis-DCE in the Three Plume Areas, Page 57:** Table 1 provides useful information for maximum 1Q19 concentrations and the report would benefit if there was an additional table with the same information from the latest sampling event for comparison. *Please provide a table similar to Table 1 that contains maximum concentration data from the 2023 sampling event to facilitate comparison of results.*

3. **Table 4, Baseline Concentration Comparison with Most Recent Results for UAZ (1Q23), Page 60:** Table 4 provides ranges of baseline and 1Q23 TCE results for wells located East of ZVI-PRB, but it is unclear why the maximum value of the baseline range of 1.65 micrograms per liter (µg/L) – 686 ug/L is less than the maximum value of the 1Q23 range of 1.40 µg/L – 1000 ug/L. *Please revise the table with the correct range values or provide an explanation in the text of the document as to why the maximum value of the range for TCE increased from baseline results.*

4. **Appendix A, PAGW OU RA EMR Analytical Data 2022-2023, Table A, PAGW RA EMR Monitoring Well Data 2Q22 – 1Q23, PDF Page 65:** The EMR states that reducing conditions are occurring as a result of the ZVI-PRB as indicated by the negative oxidation/reduction potential, however Table A indicates elevated oxygen results with an increasing trend observed from previous sampling events. Reducing conditions usually have oxygen results at or below 0.5 milligrams per liter (mg/L). Suspect oxygen results have been highlighted and the legend for Table A states that "Suspect erroneous oxygen results, ≤ 0 mg/L or ≥ 10 mg/L. Possibly misreported units (i.e., % verse mg/L)." *Please provide the correct oxygen data in the table or provide an explanation for the errors in misreporting the oxygen results.*

MINOR COMMENTS

1. **Figure 7, Effectiveness Monitoring Plan Locations, Page 44:** A red oval and a larger blue oval shape are depicted in the figure, however, their meaning is not defined in the figure legend. *Please revise the figure to define the red and blue oval shapes.*

2. **Figures 12, Time-Series Plot for TCE at UAZ Monitoring Well Clusters for P002U, PRW002, and PRW004, Page 49; Figure 13, Time-Series Plot for TCE at UAZ Monitoring Well Clusters for PRW005, PRW006, and PRW007, Page 50; Figure 15, Time-Series Plot for TCE at LAZ Monitoring Wells of the PAGW OU NTC RA EMP, Page 52; Figure 17, Cis-DCE Concentration Over Time for LAZ Monitoring Wells, Page 54; and Figure 18, CVOC Degradation at P002U, Page 55:** The figures contain colored circles in the time-series plot graphs that are not defined. It appears that the colored circles represent detected concentrations. *Please revise the legend of the figures to include a definition of what is represented by the colored circles.*

3. *The EMR would benefit if bookmarks were included for quick reference to specific sections of the report.*