



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

May 31, 2019

Mr. Brian T. Hennessey
SRS Remedial Project Manager
Infrastructure and Area Completion Division
U.S. Department of Energy
Savannah River Operations Office
P.O. Box A
Aiken, South Carolina 29802



RE: EPA Comments on the Removal Action Design Plan (RADP) with Effectiveness Monitoring Plan (EMP) for the P-Area Groundwater (PAGW) Operable Unit (OU), SEMS Number: 81, SRNS-RP-2019-00105, Revision 0, April 2019, Savannah River Site, Aiken, South Carolina

Dear Mr. Hennessey,

The U.S. Environmental Protection Agency, Region 4 (EPA), has reviewed the Removal Action Design Plan (RADP) with Effectiveness Monitoring Plan (EMP) for the P-Area Groundwater (PAGW) Operable Unit (OU), SEMS Number: 81, SRNS-RP-2019-00105, Revision 0, April 2019. EPA's comments are attached.

If you have any questions or require additional information, please contact me at (404) 562-8513.

Sincerely,

JENNIFER
TUFTS
Jennifer Tufts
Remedial Project Manager
Superfund Division

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

EPA Comments on the Removal Action Design Plan (RADP) with Effectiveness Monitoring Plan (EMP) for the P-Area Groundwater (PAGW) Operable Unit (OU), SEMS Number: 81, SRNS-RP-2019-00105, Revision 0, April 2019, Savannah River Site, Aiken, South Carolina

GENERAL COMMENTS

1. Insufficient information is provided regarding several design details. For example,
 - a. Section 2.2 (Design Details) indicates that the spacing between the zero-valent iron (ZVI) injection wells (F1-F22) is approximately 12 feet apart; however, information to support this radius of influence (ROI) is not provided and/or referenced.
 - b. Section 2.2 indicates that the proposed ZVI permeable active barrier (PRB) will be 4 inches thick; however, information to support this thickness is not provided and/or referenced.
 - c. Section 2.2 indicates that the rate of injection is expected to be expected 10 tons per day and 18 tons per day yet information to support these rates of injection are not provided and/or referenced.
 - d. Section 4.1 (Construction Strategy) indicates that the resistivity strings will be installed at a 24-foot offset from the ZVI-PRB; however, information to support this offset distance are not provided and/or referenced.

Revise the Removal Action Design Plan (RADP) to provide information which supports the design details presented.

2. Section 4.1 (Construction Strategy) states, "In order to construct the ZVI-PRB as designed, multiple injections will be made in each injection well until the design thickness (10.2-cm [4-in.]) is reached, or all ZVI has been injected;" however, information regarding the additional injections (e.g., schedule, sequence) are not provided and/or referenced. In addition, information regarding how surfacing/daylighting of ZVI will be prevented and addressed, should it occur, are not provided and/or referenced. Revise the RADP to provide information regarding the additional injections and how surfacing/daylighting of ZVI will be prevented and addressed.
3. Based on Table 8 (Sampling Frequency and Analytes for EMP Monitoring Well Stations), geochemical analyses [e.g., total organic carbon (TOC), alkalinity, chloride, nitrate-nitrite as nitrogen, sulfate, methane, ethane, ethylene, phosphate, calcium, iron, potassium, manganese, magnesium, sodium, iron (3+), iron (2+), total dissolved solids (TDS), dissolved organic carbon (DOC), sulfide] will only be sampled at in-wall locations. As such, it is unclear why downgradient wells will not be monitored for geochemical analyses to evaluate the effectiveness of the ZVI-PRB. Revise the RADP to clarify why only the in-wall locations will be monitored for geochemical analyses.

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SPECIFIC COMMENTS

1. **Section 1.2, General Description and History of the PAGW OU, Page 2 of 52:** Section 1.2 states, “Tetrachloroethylene (PCE) and cis-1,2-dichloroethylene (cis-DCE) plumes present in the UAZ and LAZ are contained within the TCE plume area;” however, the RADP does not include a figure showing the locations of the PCE and cis-DCE plumes within the trichloroethylene (TCE) plume areas. For transparency and completeness, revise the RADP to include a figure showing the locations of the PCE and cis-DCE plumes within the TCE plume areas.
2. **Section 2.7, Surveys, Page 12 of 52:** Section 2.7 indicates that a lay-out survey that identifies possible subsurface interferences will be prepared for each injection and monitoring well location; however, additional details regarding this lay-out survey are not provided and/or referenced in the RADP. In addition, it is unclear why the lay-out survey has not already been conducted given that subsurface interferences can directly impact the effectiveness of the ZVI-PRB. Revise Section 2.7 to provide additional details regarding the lay-out survey. In addition, clarify why the lay-out survey has not already been conducted given that subsurface interferences can directly impact the effectiveness of the ZVI-PRB.
3. **Section 4.4, Waste Disposal and Transport, Page 16 of 52:** Section 4.4 states, “Based on process knowledge and TCLP [*Toxicity Characteristic Leaching Procedure*] results provided by the ZVI vendor, no hazardous waste will be generated;” but information to substantiate this statement is not provided and/or referenced. Revise Section 4.4 to provide information to substantiate that no hazardous waste will be generated as part of the ZVI process.
4. **Figure 10, TCE Plume Cross-Section Perpendicular to Groundwater Flow Direction and Figure 11, TCE Plume Cross-Section with ZVI-PRB Injection Wells, Pages 35 and 37 of 52:** The path of the bisects/trend-lines used for the cross-sections presented in Figures 10 and 11 is not shown on Figure 9, Design Data Acquisition Plan Locations. Revise Figure 9 to include the bisects/trend-lines used for the cross-sections presented in Figures 10 and 11.