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

MAY 17 2023

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
Acting 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: Sampling and Analysis Plan for the A-Area Burning/Rubble Pits (731-A, -1A) and Rubble Pit (731-2A) and the Miscellaneous Chemical Basin/Metals Burning Pit (731-4A, -5A) Operable Unit to Evaluate the Effectiveness of the Soil Vapor Extraction System at Achieving Remedial Goals (U) (SRNS-RP-2022-01080, Revision 1, May 2023) (Redline and Clean Copies) and Savannah River Site's Responses to Regulatory Comments on the Revision 0 Document, SEMS Number: 28

The U.S. Department of Energy (DOE) is submitting the subject information for your review. The U. S. Environmental Protection Agency's (EPA) comments on and the South Carolina Department of Health and Environmental Control (SCDHEC) approval of the Revision 0 document were received on March 17, 2023 and March 23, 2023, respectively. The draft Savannah River Site's (SRS) responses to EPA's comments were sent electronically on April 25, 2023 for regulatory review, and EPA's concurrence of the draft SRS' responses was received on the same day. The document has been revised to incorporate the responses to comments. Please review the enclosures and provide your approval of the enclosures 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 your staff concerning this matter may be directed to me at (803) 952-8365, or the DOE Operable Unit Manager, Ms. Karen Adams, at (803) 952-7871.

Sincerely,

Brian T. Hennessey Digitally signed by Brian T. Hennessey
Date: 2023.05.15 16:12:08 -04'00'

Brian T. Hennessey
FFA Project Manager, DOE-Savannah River
Remediation and Deactivation & Decommissioning Division

RDDD-23-007

Enclosures:

1. SRS Responses to the U.S. Environmental Protection Agency's Comments on the Sampling and Analysis Plan for the A-Area Burning/Rubble Pits (731-A, -1A) and Rubble Pit (731-2A) and the Miscellaneous Chemical Basin/Metals Burning Pit (731-4A, -5A) Operable Unit to Evaluate the Effectiveness of the Soil Vapor Extraction System at Achieving Remedial Goals (U) (SRNS-RP-2022-01080, Revision 0, January 2023) SEMS Number: 28
2. Sampling and Analysis Plan for the A-Area Burning/Rubble Pits (731-A, -1A) and Rubble Pit (731-2A) and the Miscellaneous Chemical Basin/Metals Burning Pit (731-4A, -5A) Operable Unit to Evaluate the Effectiveness of the Soil Vapor Extraction System at Achieving Remedial Goals (U) (SRNS-RP-2022-01080, Revision 1, April 2023) (Redline and Clean Copies)

cc w/o encl:
J. Blalock, SCDHEC-Columbia
S. French, SCDHEC-Columbia
M. Reece, SCDHEC-Columbia
G. K. Taylor, SCDHEC-Columbia
G. Stewart, SCDHEC-Columbia
T. R. Fuss, SCDHEC-Aiken Environmental Affairs Office
G. O'Quinn, SCDHEC-Aiken Environmental Affairs Office
B. A. Cameron, SCDHEC-Aiken Environmental Affairs Office
K. L. Beatty, SCDHEC-Aiken Environmental Affairs Office
H. L. Herlong, SCDHEC-Aiken Environmental Affairs Office

cc w/ encl:
M. McRae, TechLaw, Inc.

Comments Received: March 17, 2023

EPA General Comments

1) According to Format/Protocol F-14 in the EC&ACP Regulatory Document Handbook, the SAP should include a section that presents the reason/purpose for sampling, relevant background information, the regulatory framework for the operable unit (OU), and any evaluations and decisions made during the scoping process (i.e., Format/Protocol F-14, Section 1.1, Operable Unit/Facility Name and Purpose for Sampling). However, this section is missing from the SAP. *Please revise the SAP to include this information in accordance with Section 1.1 of Format/Protocol F-14.*

   Response: Clarification

   The draft EC&ACP Regulatory Document Handbook (SRNS-RP- 2022-00330, Revision 0a, November 2022) is currently in the review/comment response stage. The formats/protocols contained within the draft handbook, including Protocol F-14, will be implemented in future projects when all regulatory comments are resolved and the handbook is approved. However, the elements of the draft F-14 Sampling and Analysis Plan Format, Section 1.1, are presented in the ACP/MCB/MBP SAP. For example, the reason/purpose for sampling is discussed in SAP Section 1.2, OU-specific background information and operational history is included in SAP Section 2.0, previous investigations/regulatory actions are included in SAP Section 2.3, etc. For this reason, no change is proposed for the ACP/MCB/MBP SAP. SRS looks forward to implementing the Protocol F-14 format in future SAPs once approved.

   Responsible Party: Bryce Garner, (803) 952-7801, bryce.garner@srs.gov

2) The last paragraph in Section 4.0 (Sampling Design and Rationale) indicates that groundwater flows towards the southwest; however, groundwater flow directional arrows are not depicted on any of the SAP figures. *Please revise the SAP to include a figure that shows groundwater flow directional arrows drawn based on groundwater elevations measured in site monitoring wells.*

   Response: Agree

   A figure showing groundwater flow directional arrows drawn based on groundwater elevations measured in site monitoring wells will be included in

Revision 1 of the SAP.

Responsible Party: Bryce Garner, (803) 952-7801, bryce.garner@srs.gov

3) The SAP includes Table 7 (Field Quality Control/Quality Assurance Sampling Requirements) (see Page 30); however, Table 7 is not referenced anywhere in the text, and as such, the significance of Table 7 is unclear. *Please revise the SAP text to include a reference to Table 7.*

Response: Agree

The text in Section 5.2 of the SAP will be revised to state the following: "Field QA/QC will be maintained using QA/QC samples and methods as described below and in Table 7 of this SAP."

Responsible Party: Bryce Garner, (803) 952-7801, bryce.garner@srs.gov

EPA Specific Comments

1) **Section 2.4, Summary of Existing Data Compared to Risk-Based Thresholds, Page 4 of 30:** This section is insufficiently detailed. According to Section 2.4 in Format/Protocol F-14, this section should include a summary of the detected contaminant concentrations by media compared to the remedial goals (RGs), but this information is missing from Section 2.4. While Figure 7 (ABRP Proposed Soil Boring Locations with Maximum 2021 TCE Concentrations [ppmv]) and Figure 8 (MCB Proposed Soil Boring Locations with Maximum 2021 TCE and PCE Concentrations [ppmv]) show the highest concentrations of trichloroethylene (TCE) and/or tetrachloroethylene (PCE) from 2021, these figures are not referenced in Section 2.4. *Please revise Section 2.4 to include a summary of the detected contaminant concentrations by media compared to the RGs*.

Response: Agree with clarification

Please see the response to General Comment 1. The draft EC&ACP Regulatory Document Handbook (SRNS-RP- 2022-00330, Revision 0a, November 2022) is currently in the review/comment response stage. The formats/protocols contained within the draft handbook, including Protocol F-14, will be implemented in future

projects when all regulatory comments are resolved and the handbook is approved.

Section 2.4 of the SAP will be revised to provide a description of the maximum TCE concentration measured in ABRP SVE wells and the maximum TCE and PCE soil vapor concentrations measured in MCB SVE wells in 2021. In addition, a reference to Figures 7 and 8 will be included as follows:

"The summary of the contaminant migration RGs for the ABRP/MCB/MBP OU is provided in Tables 1 for the ABRP Trench subunit (TCE RG = 610 ug/kg) and Table 2 for the MCB Vadose Zone Subunit (TCE and PCE RG = 344 ug/kg). These final cleanup levels are consistent with an industrial land use scenario. The soil RGs were developed based on soil sampling conducted in the mid- to late-1990's. Since then, SVE has removed mass from the source zones at ABRP/MCB/MBP OU. Soil vapor concentrations collected from the SVE wells have declined with time. In 2021, the maximum soil vapor TCE concentration measured within the 610 ug/kg isoconcentration contour at the ABRP Trench subunit was 0.84 ppmv at SVE well ASH-06 (Figure 7). At the MCB Vadose Zone subunit, the maximum soil vapor concentrations measured within the 344 ug/kg isoconcentration contour in 2021 from MCB SVE wells was 0.81 ppmv TCE (MCSV-17) and 1.81 ppmv PCE (MCSV-07) (Figure 8). Soil ~~D~~data obtained as a result of this SAP will be compared to the RG values."

Responsible Party: Bryce Garner, (803) 952-7801, bryce.garner@srs.gov

2) **Section 3.1.1, State the Problem, Page 5 of 30:** The first sentence in the second paragraph states, "Analysis of 2021 soil gas data indicated PCE and TCE vapor concentrations demonstrated generally decreasing values;" however, according to Figure 6 (MCB Soil-Gas Vapor Concentration Over Time Trend Diagram), the total TCE and PCE maximum concentrations increased from 2020 to 2021. *Please revise Section 3.1.1 to clarify that total TCE and PCE maximum concentrations increased from 2020 to 2021.*

Response: Agree

The text in Section 3.1.1 will be revised to state the following: "Historical PCE and TCE concentrations have decreased significantly at MCB since 2004 (37 ppmv PCE maximum and 3 ppmv TCE maximum) to 2 ppmv PCE maximum

and 1 ppmv TCE maximum in 2021 (Figure 6). Although the historical data demonstrates generally decreasing values, the PCE and TCE concentrations slightly increased from 2020 to 2021 (Figure 6)."

Responsible Party: Bryce Garner, (803) 952-7801, bryce.garner@srs.gov

3) **Section 3.1.4, Define the Boundaries of the Study, Page 7 of 30:** This section does not discuss temporal boundaries. According to Chapter 4 (Step 4: Define the Boundaries of the Study) in EPA's *Guidance on Systematic Planning Using the Data Quality Objectives Process*, QA/G-4, EPA/240/B-06/001, dated February 2006 (DQO Guidance), this section should specify temporal boundaries (i.e., the period of time the study should represent with consideration of time-related conditions, such as high humidity and/or elevated temperatures) and other practical constraints (e.g., obstacles, such as fences, property access, water bodies) associated with sample collection. *Please revise Section 3.1.4 to discuss temporal boundaries*.

Response: Agree with clarification

There will not be any temporal boundaries (i.e., the period of time the study should represent with consideration of time-related conditions, such as high humidity and/or elevated temperatures) associated with sample collection, as a single round of soil samples is proposed. Underground interferences and existing above ground infrastructure are potential practical constraints in the sampling area.

The text in Section 3.1.4 will be revised to state the following: "Sampling will be conducted within the boundaries of the ABRP/MCB/MBP OU. Sampling will occur throughout the vadose zone downward to the water table. The proposed soil borings at ABRP and MCB are located proximal to the distribution of the existing SVE wells which were principally placed in the zone of contamination above RGs. The locations of the existing SVE wells at ABRP and MCB in relation to the zones of contamination above RGs are provided respectively in Figures 3 and 4. There will not be any temporal boundaries (i.e., the period of time the study should represent with consideration of time-related conditions, such as high humidity and/or elevated temperatures) associated with sample collection, as a single round of soil samples is proposed. Underground interferences and existing above ground infrastructure are potential practical

constraints in the sampling area. To eliminate any practical constraints, the sampling locations will be relocated to a safe distance away."

Responsible Party: Bryce Garner, (803) 952-7801, bryce.garner@srs.gov

4) **Section 3.1.5, Develop the Analytical Approach, Page 7 of 30:** This section includes decision statements (i.e., "If…, then…" statements) for TCE and PCE results that are all or mostly less than their respective RGs; however, there are no decision statements for TCE and PCE results that are all or mostly greater than their respective RGs. Also, it is unclear what is meant by "mostly" (e.g., a certain percentage of results, the location of samples with results that exceed RGs, etc.). *Please revise Section 3.1.5 to provide decision statements for TCE and PCE results that are all or mostly greater than their respective RGs and to clarify what is meant by "mostly."*

Response: Agree with clarification

The text in Section 3.1.5 will be revised to state the following: "If ~~all~~ greater than 95% of the TCE and PCE results are less than the RGs, then operation of the SVE systems can be discontinued. If 50% or more of the TCE and PCE results are greater than the RGs, then passive SVE operations will continue. If ~~most~~ between 50-95% of the TCE and PCE results are less than the RGs, then an evaluation of the data distribution and concentrations will be conducted that may support a refined fate and transport model, shutdown of some of the wells, or conversion of MicroBlower™ SVE wells to BaroBall™ SVE wells."

Soil data will be used from all, not most, of the borings to determine if RGs have been met, so "mostly" will be removed from the text in Section 3.1.5 of the SAP.

Responsible Party: Bryce Garner, (803) 952-7801, bryce.garner@srs.gov

5) **Section 5.1, Data Quality Levels for the ABRP/MCB/MBP OU, Pages 10 and 11 of 30, and Table 6, Preservatives, Holding Times, and Sample Containers, Page 30 of 30:** Section 5.1 indicates that 100 percent (%) Definitive level (D) data meets the following aspects of EPA National Functional Guidelines criteria: quantitation limits, surrogate recoveries, blanks, laboratory control sample (LCS) recoveries, matrix spike/matrix spike duplicate (MS/MSD) recoveries, lab and field replicates, cooler temperatures, preservation, and holding times, and that requirements for 100%

D data are provided in Table 6. However, Table 6 only provides sample container, preservation, and hold time requirements, and it is unclear where the remaining criteria can be found. *Please revise the SAP to indicate where the remaining aspects of EPA National Functional Guidelines criteria can be found (i.e., quantitation limits, surrogate recoveries, blanks, LCS and MS/MSD recoveries, lab and field replicates, and cooler temperatures).*

Response: Agree

The text in Section 5.1 will be revised to state the following: "Soil characterization samples will be 100% Definitive level (D) data. 100% Definitive level (D) data is verified data which has achieved the USEPA's Screening level Validation category (USEPA 1993) and meet the following selected aspects of USEPA Functional Guideline criteria: Quantitation Limits, Surrogate or Tracer Recoveries, Blanks (Method/Lab/Prep, Trip, Field, Equipment/Rinsate), Laboratory Control Samples Recoveries, Matrix Spike Recoveries/ Duplicates, Lab Replicates, Field Replicates, Cooler Temps, Chemical Preservation, Holding Times. Quantitation limits are specified in Table 5. Preservative, holding time, and container ~~R~~requirements for D data are listed in Table 6. Field Quality Control/Quality Assurance sampling requirements are listed in Table 7. The remaining aspects of EPA National Functional Guidelines criteria can be found in the *Area Completion Projects Programmatic Quality Assurance Project Plan for Environmental Data Collection and Management* (SRNS 2012)."

Responsible Party: Bryce Garner, (803) 952-7801, bryce.garner@srs.gov

6) **Section 6.1, List of Sampling/Collection Equipment, Page 12 of 30:** It is unclear why this section only lists examples of sampling equipment that may be used, rather than the actual equipment. For example, Section 3.1.3.1 (Soil Samples) indicates that a photoionization detector (PID) will be used continuously as soil cores are retrieved, but the PID is not listed in Section 6.1. *Please revise Section 6.1 to list all sampling equipment that will be used during this investigation.*

Response: Agree

The text in Section 6.1 will be revised to state the following: "This section provides ~~examples of~~ the type of sampling/collection equipment needed to execute the sampling. All samples will be taken with the appropriate/ approved

equipment as noted within the QAPP and sampling protocol procedures referenced within the SAP.

~~Examples of sampling~~Sampling/collection equipment include the following:

- **Rotosonic soil core in plastic bags**
- **Disposable plastic soil plug syringes**
- **Scale**
- **Sample bottles with preservatives**
- **Coolers**
- **PID"**

Responsible Party: Bryce Garner, (803) 952-7801, bryce.garner@srs.gov

7) **Figure 8, MCB Proposed Soil Boring Locations with Maximum 2021 TCE and PCE Concentrations, Page 26 of 30:** Figure 8 shows maximum concentrations of TCE and PCE in red and green font, but it is unclear which color represents each contaminant. *Please revise the figure legend to indicate which color, red or green, represents TCE and which color represents PCE.*

Response: Agree

The legend for Figure 8 will be revised to indicate which color, red or green, represents TCE and which color represents PCE. The revised Figure 8 will be included in Revision 1 of the SAP.

Responsible Party: Bryce Garner, (803) 952-7801, bryce.garner@srs.gov