



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

AUG 14 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: Decommissioning Project Final Report 236-H, By-Product Purification Facility (V-PCOR-H-00016, Revision 1, July 22, 2025) and Savannah River Site's Responses to the Regulatory Comments on the Revision 0 Document

The U. S. Department of Energy (DOE) is submitting the subject information for your review and approval. The Decommissioning Project Final Report (DPFR) 236-H, By-Product Purification Facility (V-PCOR-H-00016, Revision 0, September 9, 2024) was submitted to the South Carolina Department of Environmental Services (SCDES) and U.S. Environmental Protection Agency (EPA) on September 23, 2024, for review and comment. The SCDES and EPA provided comments on the DPFR on November 22, 2024. SRS emailed the draft responses to the regulatory comments to SCDES and EPA for review on January 23, 2025. SCDES and EPA replied on February 5, 2025, and February 13, 2025, respectively, requesting a comment resolution meeting. The Microsoft Teams comment resolution meeting was held on March 27, 2025. Based on the Microsoft Team meeting, SRS revised the comment responses and incorporated them into the final draft Revision 1 DPFR that was emailed for your review on June 24, 2025. SCDES provided an editorial comment on the revised information on July 7, 2025. EPA responded on July 17, 2025 that the revisions were acceptable. SRS incorporated the editorial comment into the final responses to the SCDES' comments and Revision 1 DPFR.

Hard copies and compact disks are enclosed according to the agreed upon distribution. Please review the enclosures with the goal of responding within thirty (30) days of receipt. The effort and time that the SCDES and EPA have given on the subject facility are greatly appreciated.

Ms. Susan Fulmer
Mr. Jon Richards

2

AUG 14 2025

Questions from you or your staff may be directed to me at (803) 952-6211, or Karen D. Morrow, Director Remediation, Deactivation, and Decommissioning Division, at (803) 952-7556.

Sincerely,

**MATTHEW
BAKER**

Digitally signed by
MATTHEW BAKER
Date: 2025.08.13 12:17:00
-04'00'

Matthew R. Baker
Acting FFA Remedial Project Manager
DOE-Savannah River Operations Office
Remediation, Deactivation, and Decommissioning Division

RDDD-25-157

Enclosures:

1. Decommissioning Project Final Report 236-H, By-Product Purification Facility (V-PCOR-H-00016, Revision 1, July 22, 2025)
2. SRS Responses to the South Carolina Department of Environmental Services Comments on the Decommissioning Project Final Report 236-H, By-Product Purification Facility (V-PCOR-H-00016, Revision 0, September 9, 2024)
3. SRS Responses to USEPA Comments on the Decommissioning Project Final Report 236-H, By-Product Purification Facility (V-PCOR-H-00016, Revision 0, September 9, 2024)

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
T. G. Corley, SCDES-Midlands Aiken Environmental Affairs Office
C. L. Robertson, 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:

J. Dawson, EPA-Atlanta
H. H. Cathcart, SCDES-Columbia
G. O'Quinn, SCDES-Midlands Aiken Environmental Affairs Office
M. McRae, TechLaw, Inc.

**SRS Draft Responses to South Carolina Department of Environmental Services
Comments on the
Decommissioning Project Final Report 236-H, By-Product Purification Facility
(V-PCOR-H-00016, Revision 0, September 9, 2024)**

Page 1 of 10

Comments Received 11/22/2024

General Comments

1. Section 1.0, Summary, page 7. Sentence 4 in paragraph 2 states “the Core Team agreed on August 17, 2023, that, in lieu of the final verification survey, the slab shall be protected from cross contamination during decommissioning and a post-decommissioning radiological survey shall be performed”. The last sentence of paragraph 2 states that a post decommissioning radiological survey was conducted and is referenced as 8.02. In the References section, 8.02 is listed as TRIT-M-20240530-6, Rev. 0, dated May 30, 2024, “236-H Monthly Survey”. Additionally, sentence 4 in paragraph 3 states “No final verification survey was required per the previously mentioned Core Team agreement”. Sentence 5 in paragraph 3 references a Final Acceptance Inspection (FAI)-51 as Reference 8.09 that was performed on June 20, 2024. Further, section 6.02, Risk Assessment Summary, sentence 2 reiterates a final radiological survey would be required in lieu of a final verification survey. Sentence 3 states the final radiological survey resulted in <1000 disintegrations per minute (dpm) per 100 squared centimeters (dpm/100 cm²) and <1E-5 microcuries per cubic centimeter (μCi/cc) of tritium remaining. While the Department acknowledges the Core Team agreement of a radiological survey in lieu of a verification survey, it is unclear as to which of these references (8.02, 236-H Monthly Survey or 8.09, FAI-51) is applicable to the radiological survey that was conducted in place of the verification survey. The Department is requesting clarification on the applicable reference as well as the opportunity to review these referenced documents and their associated results.

Response: Clarification.

The post-decommissioning radiological surveys, including the data, are the following 8.02 references: TRIT-M-20240530-6, Rev. 0, May 30, 2024, 236-H Monthly Survey and TRIT-M-20240617-4, Rev. 0, June 17, 2024, 236-H Pad Survey. These two radiological surveys are attached to these responses. The Building 236-H June 17, 2024, post-decommissioning radiological survey divided the concrete slab into 15 equal areas and 5 tritium smears were collected from each area. All 75 tritium smears from the 15 gridded survey areas were individually analyzed and all 75 results were below detection (<1,000 dpm/100 cm²)¹. The Building 236-H May 30, 2024, post-decommissioning radiological survey performed 25 tritium smears on the roll-off pans, concrete slab, and ground around the 236-H concrete slab, and all smears were less than 1,000 dpm/100 cm² for tritium. The Building 236-H May 30, 2024, survey also took three tritium air samples, which were all less than 1E-5 μCi/cc (100 pCi/cc). Reference 8.09, Final Acceptance Inspection, is an SRS internal transfer punch list

**SRS Draft Responses to South Carolina Department of Environmental Services
Comments on the
Decommissioning Project Final Report 236-H, By-Product Purification Facility
(V-PCOR-H-00016, Revision 0, September 9, 2024)**

Page 2 of 10

Comments Received 11/22/2024

form used to transfer a facility (i.e., concrete slab), or equipment, from one SRS organization to another SRS organization.

SRS proposes modifying the last sentence in the second paragraph of section 1.0 as follows:

“The slab was protected from cross contamination during decommissioning and a post-decommissioning radiological surveys (References 8.02 and 8.0x) of the concrete slab was conducted after the decommissioning activities were completed which confirmed that the 236-H remnants did not exceed SRS radiological limits and had no HHRA, PTSM, or CM issues.”

SRS proposes adding the following June 17 radiological survey to the reference section 8.0:

TRIT-M-20240617-4, Rev. 0, June 17, 2024, 236-H Pad Survey.

SRS proposes adding both radiological surveys as Appendix C to the DPFR in Section 9.0.

1. Personal communication between Terry Killeen and Tanner Thompson, SRTE RadCon, January 8, 2025.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

2. Section 3.0 discusses the steps taken regarding the Decommissioning Model Approval. The information within this section begins with the submittal and concurrence of the Facility Decommissioning Evaluation (FDE), continues with a discussion of a Pre-Decommissioning Characterization Scoping Meeting with the Core Team, and references throughout the section any associated walkdowns and Core Team agreements throughout the process. However, the information seems to be out of sequence. The Department is requesting this section be rewritten to outline the respective and appropriate sequence of events beginning with the FDE concurrence through the Scoping Meeting and regarding any applicable requests for walkdowns that were agreed on as part of the FDE concurrence and Core Team agreements.

Response: Agree.

SRS proposes the following chronological revision of Section 3.0 of the report:

“The facility was decommissioned using the ISM as described in Facility Disposition

SRS Draft Responses to South Carolina Department of Environmental Services
Comments on the
Decommissioning Project Final Report 236-H, By-Product Purification Facility
(V-PCOR-H-00016, Revision 0, September 9, 2024)

Page 3 of 10

Comments Received 11/22/2024

Manual 1C. The selection of the model was based on information reported in the Facility Decommissioning Evaluation (FDE) (Reference 8.03 March 21, 2018). Contrary to the typical sequence of events, the FDE was developed and submitted to the regulators prior to the 236-H deactivation completion. Walkdowns were performed by SRTE and Environmental Compliance & Area Completion Projects groups (i.e., Engineering, Project Management, Safety, Industrial Hygiene, Environmental Compliance Authority, etc.). The FDE submittal letter (4/10/18) stated that SCDES and EPA could contact U.S. Department of Energy Savannah River Site Operations Office (DOE-SROO) if the regulatory agencies were interested in an overview and field visit. A facility walkdown, including an overview, was not prescheduled with ~~SCDHEC~~ SCDES and EPA at the time the FDE was provided for regulatory review. However, ~~SCDHEC did perform~~ a walkdown of the facility was conducted on April 30, 2018, as part of their review of the FDE. The FDE received ~~SCDHEC~~ SCDES conditional concurrence on May 9, 2018, and EPA concurrence on May 21, 2018 (References 8.07 and 8.08, respectively). The ~~SCDHEC~~ SCDES letter providing conditional concurrence requested another regulatory walkdown be conducted upon completion of facility deactivation and prior to initiation of any decommissioning activities. ~~Only a representative from SCDHEC attended that second regulatory walkdown held on August 30, 2023.~~

After deactivation was completed, pre-decommissioning characterization scoping material with photos (contained in Reference 8.01 and Appendix B) was provided to ~~SCDHEC~~ SCDES and EPA to determine whether a post-deactivation walkdown was still necessary. ~~SCDESSCDHEC~~ indicated that a second regulatory walkdown was still necessary. ~~A representative from SCDHEC attended that second regulatory walkdown held on August 30, 2023. The pre-decommissioning scoping material also included data to support that there was no human health risk or contaminant migration issues. The regulators were asked whether a final verification survey was necessary after decommissioning in light of the conclusions reached using the pre-decommissioning characterization data.~~

~~On~~ At the August 17, 2023, Core Team meeting, the Core Team accepted the pre-decommissioning characterization and agreed that no final verification survey was required post-decommissioning because the pre-decommissioning data yielded no human health risk or contaminant migration issues. The Core Team requested actions be taken to protect the slab from the potential for cross contamination during decommissioning and to ~~provide~~ conduct a final radiological survey to document that the post-decommissioning contamination levels ~~post-decommissioning~~ were less than the pre-decommissioning contamination levels ~~pre-decommissioning~~.

SRS Draft Responses to South Carolina Department of Environmental Services
Comments on the
Decommissioning Project Final Report 236-H, By-Product Purification Facility
(V-PCOR-H-00016, Revision 0, September 9, 2024)

Page 4 of 10

Comments Received 11/22/2024

SCDES indicated that a second regulatory walkdown was still necessary. The second regulatory walkdown was held on August 30, 2023, with DOE and SCDES personnel.

~~Multiple walkdowns were performed by SRTE and Environmental Compliance & Area Completion Projects groups (i.e., Engineering, Project Management, Safety, Industrial Hygiene, Environmental Compliance Authority, etc.). The FDE submittal letter stated that SCDHEC and EPA could contact U.S. Department of Energy Savannah River Site Operations (DOE-SR) if the regulatory agencies were interested in an overview and field visit. A regulatory walkdown was held on April 30, 2018.”~~

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

Specific Comment

1. Table B-1, Chemical Parameters Used, pages 61-63 and Table B-3, Tier I Screening Results, pages 65-67. The following six analytes listed in Appendix B tables on pages 28-30 and also in Table C-1 are not listed in Table B-3 for the CM Evaluation: iron, potassium, sodium, bismuth-212, bismuth-214, and lead-214. Only one of these analytes, iron, is listed in Table B-1. It should be noted that all of these analytes are included in the HH and PTSM evaluation tables (Tables A-1 and A-2). These tables should be revised to include all of these analytes, or else Sections 6.02.02 and Appendix B Section B.1 should be revised to provide an explanation for not including them.

Response: Agree.

Iron is included in the Tier I screen (Table B-3), but iron was not carried through to the Tier II contaminant migration screen (Table B-4), because iron passed the Tier I screen. Table B-4 includes only the constituents that fail the Tier I screen. The major cations (calcium, magnesium, potassium, and sodium) are considered essential nutrients and are excluded from the contaminant migration analysis as they have no drinking water MCLs or tap water RSLs. However, potassium and sodium will also be added to Tables B-1 and B-3 for completeness.

Bismuth-212, bismuth-214, and lead-214 are excluded from the contaminant migration analysis because they do not have drinking water MCLs, because they are not included in the National Bureau of Standards (NBS) Handbook 69, which is used to determine the 4 mrem/yr annual dose equivalents for beta/photon emitters¹. In addition, bismuth-212, bismuth-214, and lead-214 are consistent with concrete levels cited by the IAEA² (considered background levels) and accounted for as part of the

**SRS Draft Responses to South Carolina Department of Environmental Services
Comments on the
Decommissioning Project Final Report 236-H, By-Product Purification Facility
(V-PCOR-H-00016, Revision 0, September 9, 2024)**

Page 5 of 10

Comments Received 11/22/2024

thorium-232 and radium-226 decay chains. Bismuth-212, bismuth-214 and lead-214 will be added to Table B-1 and Table B-3, but there will not be an MCL or SSL for these radionuclides.

1. Environmental Protection Agency, 40 CFR Parts 9, 141, and 142, [FRL-6909-3], RIN 2040-AC98, National Primary Drinking Water, Regulations; Radionuclides; Final Rule, 76708 Federal Register / Vol. 65, No. 236 / Thursday, December 7, 2000 / Rules and Regulations.
2. IAEA, 2003. Extent of Environmental Contamination by Naturally Occurring Radioactive Material (NORM) and Technological Options for Mitigation, Technical Reports Series No. 419, International Atomic Energy Agency (IAEA), December 2003, STI/DOC/010/419, Austria

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

**SRS Draft Responses to South Carolina Department of Environmental Services
Comments on the
Decommissioning Project Final Report 236-H, By-Product Purification Facility
(V-PCOR-H-00016, Revision 0, September 9, 2024)**

Page 6 of 10

Comments Received 11/22/2024

Table B-1. Chemical Parameters Used

Analyte	K_{oc}	K_d	Half-life	H	Solubility	Standard
	(L/kg)		(yr ⁻¹)	(-)	(mg/L)	(µg/L or pCi/L)
<u>Organics</u>						
Bis(2-ethylhexyl) phthalate	1.11E+05	1.11E+01	6.30E-02	4.18E-06	3.40E-01	6.00E+02
Di-n-butyl phthalate	1.57E+03	3.14E-01	6.30E-02	3.85E-08	1.12E+01	9.00E+02
Fluoranthene	4.90E+04	4.90E+00	1.21E+00	6.60E-04	2.06E-01	8.00E+02
Phenanthrene	1.40E+04	1.40E+00	5.48E-01	1.60E-03	1.29E+00	NA
Pyrene	6.80E+04	6.80E+00	5.20E+00	4.51E-04	1.35E-01	1.20E+02
<u>PCBs</u>						
PCB 1260	3.09E+05	6.18E+01	3.42E+04	1.03E-02	1.44E-02	7.80E-03
<u>Metals</u>						
Aluminum	NA	1.50E+03	NA	None	None	2.00E+04
Antimony	NA	4.00E+03	NA	None	None	6.00E+00
Arsenic	NA	3.90E+01	NA	None	None	1.00E+01
Barium	NA	4.10E+01	NA	None	None	2.00E+03
Beryllium	NA	7.90E+02	NA	None	None	4.00E+00
Cadmium	NA	7.50E+01	NA	None	None	5.00E+00
Calcium	NA	5.00E+00	NA	None	None	NA
Chromium	NA	1.80E+06	NA	None	None	1.00E+02
Cobalt	NA	1.00E+01	NA	None	None	6.00E+00
Copper	NA	2.50E+01	NA	None	None	1.30E+03
Iron	NA	2.20E+02	NA	None	None	1.40E+04
Lead	NA	2.70E+02	NA	None	None	1.50E+01

**SRS Draft Responses to South Carolina Department of Environmental Services
Comments on the
Decommissioning Project Final Report 236-H, By-Product Purification Facility
(V-PCOR-H-00016, Revision 0, September 9, 2024)**

Page 7 of 10

Comments Received 11/22/2024

Analyte	K _{oc}	K _d	Half-life	H	Solubility	Standard
	(L/kg)		(yr ⁻¹)	(-)	(mg/L)	(µg/L or pCi/L)
Magnesium	NA	No K _d available	NA	None	None	NA
Manganese	NA	5.00E+01	NA	None	None	4.30E+02
Mercury	NA	5.20E+01	NA	0.467	None	2.00E+00
Nickel	NA	6.50E+01	NA	None	None	3.90E+02
<u>Potassium</u>	<u>NA</u>	<u>5.00E+00</u>	<u>NA</u>	<u>None</u>	<u>None</u>	<u>NA</u>
Selenium	NA	5.50E+01	NA	None	None	5.00E+01
Silver	NA	9.00E+01	NA	None	None	9.40E+01
<u>Sodium</u>	<u>NA</u>	<u>5.00E+00</u>	<u>NA</u>	<u>None</u>	<u>None</u>	<u>NA</u>
Vanadium	NA	1.00E+03	NA	None	None	8.60E+01
Zinc	NA	6.20E+01	NA	None	None	6.00E+03
<u>Radionuclides</u>						
Actinium-228	NA	4.50E+02	7.00E-04	None	None	2.66E+01
<u>Bismuth-212</u>	<u>NA</u>	<u>1.00E+03</u>	<u>1.15E-04</u>	<u>None</u>	<u>None</u>	<u>NA</u>
<u>Bismuth-214</u>	<u>NA</u>	<u>1.00E+03</u>	<u>3.78E-05</u>	<u>None</u>	<u>None</u>	<u>NA</u>
Carbon-14	NA	5.50E+01	5.73E+03	None	None	2.00E+03
Lead-212	NA	2.70E+02	1.20E-03	None	None	2.12E+00
<u>Lead-214</u>	<u>NA</u>	<u>2.70E+02</u>	<u>5.13E-05</u>	<u>None</u>	<u>None</u>	<u>NA</u>
Potassium-40	NA	7.50E+01	1.28E+09	None	None	2.14E+00
Radium-226	NA	1.00E+02	1.60E+03	None	None	5.00E+00
Radium-228	NA	1.00E+02	5.75E+00	None	None	5.00E+00
Thorium-228	NA	1.00E+02	1.91E+00	None	None	1.50E+01
Thorium-230	NA	1.00E+02	7.70E+04	None	None	1.50E+01
Thorium-232	NA	1.00E+02	1.41E+10	None	None	1.50E+01

**SRS Draft Responses to South Carolina Department of Environmental Services
Comments on the
Decommissioning Project Final Report 236-H, By-Product Purification Facility
(V-PCOR-H-00016, Revision 0, September 9, 2024)**

Page 8 of 10

Comments Received 11/22/2024

Analyte	K _{oc}	K _d	Half-life	H	Solubility	Standard
	(L/kg)		(yr ⁻¹)	(-)	(mg/L)	(µg/L or pCi/L)
Uranium-233/234	NA	4.00E+01	2.45E+05	None	None	1.00E+01
Tritium	NA	0.00E00	1.23E+01	None	None	2.00E+04
Uranium-238	NA	4.00E+01	4.47E+09	None	None	1.00E+01

Table B-3. Tier I Screening Results

Analyte	Source Zone Concentration	Tier I Source-Specific SSL	Tier I Mass Limit SSL	Failing Analytes
	(mg/kg or pCi/g)			
<u>Organics</u>				
Bis(2-ethylhexyl) phthalate	4.21E+01	2.07E+00	2.16E+00	Bis(2-ethylhexyl) phthalate
Di-n-butyl phthalate	6.32E-01	5.73E+00	3.24E+02	
Fluoranthene	8.15E-02	1.23E+02	2.88E+02	
Phenanthrene*	9.34E-02	NA	NA	
Pyrene	7.47E-02	2.55E+01	4.32E+01	
<u>PCBs</u>				
PCB 1260	2.41E-02	7.48E-03	2.81E-03	PCB 1260
<u>Metals</u>				
Aluminum	8.70E+03	4.65E+05	7.20E+03	
Antimony	5.71E+00	3.72E+02	2.16E+00	
Arsenic	1.82E+00	6.06E+00	3.60E+00	
Barium	6.29E+01	1.27E+03	7.20E+02	
Beryllium	8.04E-01	4.89E+01	1.44E+00	
Cadmium	4.67E-01	5.82E+00	1.80E+00	
Calcium*	6.44E+04	NA	NA	
Chromium	1.83E+02	2.79E+06	3.60E+01	

**SRS Draft Responses to South Carolina Department of Environmental Services
Comments on the
Decommissioning Project Final Report 236-H, By-Product Purification Facility
(V-PCOR-H-00016, Revision 0, September 9, 2024)**

Page 9 of 10

Comments Received 11/22/2024

Analyte	Source Zone Concentration	Tier I Source-Specific SSL	Tier I Mass Limit SSL	Failing Analytes
	(mg/kg or pCi/g)			
Cobalt	1.13E+01	9.38E-01	2.16E+00	Cobalt
Copper	6.69E+01	5.05E+02	4.68E+02	
Iron	1.42E+04	4.77E+04	5.04E+03	
Lead	6.00E+00	6.28E+01	5.40E+00	
Magnesium*	4.75E+03	NA	NA	
Manganese	4.53E+02	3.34E+02	1.55E+02	Manganese
Mercury	2.03E+00	1.61E+00	7.20E-01	Mercury
Nickel	3.92E+02	3.93E+02	1.40E+02	
<u>Potassium*</u>	<u>3.86E+03</u>	<u>NA</u>	<u>NA</u>	
Selenium	1.35E+01	4.27E+01	1.80E+01	
Silver	1.84E+00	1.31E+02	3.38E+01	
<u>Sodium*</u>	<u>1.31E+03</u>	<u>NA</u>	<u>NA</u>	
Vanadium	2.52E+01	1.33E+03	3.09E+01	
Zinc	4.40E+02	5.77E+03	2.16E+03	
<u>Radionuclides</u>				
Actinium-228	2.02E+00	5.51E+06	2.84E+05	
<u>Bismuth-212</u>	<u>2.53E+00</u>	<u>NA</u>	<u>NA</u>	
<u>Bismuth-214</u>	<u>1.18E+00</u>	<u>NA</u>	<u>NA</u>	
Carbon-14	1.64E+01	1.71E+03	7.21E+02	
Lead-212	2.18E+00	1.54E+05	1.32E+04	
<u>Lead-214</u>	<u>1.30E+00</u>	<u>NA</u>	<u>NA</u>	
Potassium-40	2.05E+01	2.49E+00	7.70E-01	Potassium-40
Radium-226	1.53E+00	7.80E+00	1.81E+00	
Radium-228	3.26E+00	2.88E+01	6.69E+00	
Thorium-228	2.43E+00	2.53E+02	5.88E+01	
Thorium-230	1.68E+00	2.33E+01	5.40E+00	
Thorium-232	2.13E+00	2.33E+01	5.40E+00	
Uranium-233/234	1.51E+00	6.21E+00	3.60E+00	

**SRS Draft Responses to South Carolina Department of Environmental Services
Comments on the
Decommissioning Project Final Report 236-H, By-Product Purification Facility
(V-PCOR-H-00016, Revision 0, September 9, 2024)**

Page 10 of 10

Comments Received 11/22/2024

Analyte	Source Zone Concentration	Tier I Source-Specific SSL	Tier I Mass Limit SSL	Failing Analytes
	<i>(mg/kg or pCi/g)</i>			
Tritium	6.23E+04	7.20E+03	6.24E+01	Tritium
Uranium-238	1.65E+00	6.21E+00	3.60E+00	

* Constituents did not undergo SSL calculations. These constituents lacked both MCLs and USEPA RSLs. These analytes did not undergo CM COC evaluation and were listed as "NA".

**SRS Draft Responses to USEPA Comments on the Decommissioning Project Final Report
236-H, By-Product Purification Facility (V-PCOR-H-00016, Revision 0, September 9, 2024)**

Page 1 of 8

Comments Received 11/22/2024

GENERAL COMMENTS

1. The human health risk assessment (HHRA) presented for the DPFR is wholly deficient and does not support the decommissioning of the facility. For example:
 - a. The date that the preliminary HHRA was performed is not mentioned, so it is not possible to determine if the appropriate Regional Screening Levels (RSLs) were used. The text cites May 2021 as the date of the RSLs, but if this assessment was performed in 2024 (as noted on the tables in Appendix A of Appendix B), then these criteria are several iterations out of date. Additionally, neither the text nor tables mention which RSLs were used with respect to target hazard quotient (THQ) (i.e., THQ = 0.1 or 1);

Response: Clarification.

The HHRA, PTSM evaluation, and CM evaluation presented in Appendix B of the DPFR were developed to support Core Team scoping for decommissioning of the 236-H facility. As documented in the Scoping Summary for the 236-H By-Product Purification Facility (SRNS-RP-2022-00084, August 2023, Final), Table 1-Record of Core Team Agreements, the Core Team agreed on August 17, 2023, to include the HHRA, PTSM evaluation, and CM evaluation presented in the scoping summary in the 236-H DPFR. Based on this agreement, the scoping evaluations presented in the scoping summary were included as Appendix B in the 236-H DPFR and cited the correct toxicity screening criteria used at the time of the evaluation. SRS proposes citing the time period for the HHRA and PTSM evaluations as the first sentence in Section A.1 of Appendix B as follows:

“The HHRA and PTSM evaluations were conducted from June to October in 2021 and are summarized in this section.”

Similarly, SRS proposes citing the time period for the CM evaluation in the first sentence of Section B.1 in Appendix B as follows:

“Preliminary contaminant migration modeling was performed in 2021 using VZCOMML (Rucker 2001) for the contaminants within the 236-H slab.”

With respect to the noncarcinogen hazard estimate, the RSLs were based on a HQ of 1.0. For clarity, the footnote in Table A-1 and Table A-2 will be revised as follows:

“4 - Hazard Estimate (HQ) = maximum concentration / RSL concentration (USEPA RSL based on HQ=1)”

**SRS Draft Responses to USEPA Comments on the Decommissioning Project Final Report
236-H, By-Product Purification Facility (V-PCOR-H-00016, Revision 0, September 9, 2024)**

Page 2 of 8

Comments Received 11/22/2024

No other change to the current report is proposed.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

- b. The guidance document(s) and the HHRA approach/methodology used are not cited;

Response: Agree.

The HHRA approach/methodology were based on the approved technical protocols in the EC&ACP Regulatory Document Handbook in place at the time of the risk assessment evaluation. For clarity, the reference to the HHRA protocols will be included in the Building 236-H DPF Appendix B, Section A.1 as follows:

“Preliminary human health risk calculations for Building 236-H are presented in the attached Excel spreadsheet and are based on the HHRA protocols in the EC&ACP Regulatory Document Handbook (ERD-AG-003, Revision 17, June 2012).”

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

- c. The relevant exposure routes for the receptor populations of interest are not discussed;

Response: Clarification.

The HHRA conceptual site model is based on external exposure to both a residential receptor and an industrial worker receptor, as indicated in Section A.2, and in Table A-1 and Table A-2. No change to the current report is proposed.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

- d. Risks were calculated based on maximum detections of constituents of potential concern (COPCs) in soil; however, there are no soil data presented, and there is no indication of the number of soil samples collected, or the frequency of detections so that an understanding of the statistical representativeness of the data may be understood; and

Response: Clarification.

The HHRA was conducted on concrete media data as presented in Appendix B and includes the sample location, number of samples collected, frequency of detects, etc. The sampling methodology was biased as described in Section 4.0 Characterization Summary. No change to the current report is proposed.

**SRS Draft Responses to USEPA Comments on the Decommissioning Project Final Report
236-H, By-Product Purification Facility (V-PCOR-H-00016, Revision 0, September 9, 2024)**

Page 3 of 8

Comments Received 11/22/2024

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

- e. The results of the HHRA are above EPA's target acceptable carcinogenic risk range of 1E-06 to 1E-04 for both individual constituents (Potassium-40; Thorium-232; Uranium-238) and on a cumulative basis; however, the results are deemed acceptable and dismissed as being naturally occurring and consistent with uncontaminated concrete media, without adequate support.

Response: Clarification.

Section 4.0 discusses the concentration ranges of naturally-occurring radionuclides (i.e., K-40, Th-232 and U-238) in uncontaminated concrete media based on International Atomic Energy Agency (IAEA) and Federal Office for Radiation Protection (BfS) reports. The levels of naturally-occurring radionuclide material (NORM) observed in Building 236-H concrete media are consistent with the activity levels in these reports and considered within background levels. This is further corroborated by the data, which indicates that the daughters are in secular equilibrium with the long half-life naturally occurring parent radioisotopes. This is also consistent with the operation history of Building 236-H, which never processed uranium or thorium products. In contrast, tritium is not expected in concrete and any detectable levels of tritium in concrete indicates tritium contamination. The operational history of Building 236-H also identifies the removal of tritium from the He gas at this facility, which contaminated the concrete slab, as discussed in this DPFR and the 236-H scoping summary document. No change to the current report is proposed.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

As a result, comprehensive edits are required, which should include: 1) additional details on the risk assessment approach taken, including relevant guidance documents, identification of specific RSLs used for comparative purposes (and use of the most recent RSLs), and a discussion of the current/future land use which dictates the evaluation of the receptors of interest; 2) presentation of the soil dataset, including the number and quality of samples; and 3) a thorough evaluation of background concentrations of COPCs and uncontaminated concrete data so that the HHRA may be placed in the proper context and constituents can be confidently eliminated from further consideration. Please revise the DPFR accordingly.

**SRS Draft Responses to USEPA Comments on the Decommissioning Project Final Report
236-H, By-Product Purification Facility (V-PCOR-H-00016, Revision 0, September 9, 2024)**

Page 4 of 8

Comments Received 11/22/2024

Response: Clarification.

Please see the responses to General Comment 1. a-e above.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

2. Section 4.0, Characterization Summary states “Samples were primarily collected at locations where the radiological survey identified tritium contamination areas (CAs), or areas of elevated activity.” The text also states the 2023 radiological survey was similar to the 2017 survey and bounded the findings of the 2017 survey. While this section provides figures of where the elevated tritium was located, it does not appear figures showing where the areas of elevated activity from other radionuclides (naturally occurring or site-related) remain currently, or which radionuclides listed in the data summary tables contributed to the areas of elevated activity. It is also requested that this section provide a narrative explanation of whether the areas of elevated radioactivity were determined to strictly be as a result of the concrete material itself (naturally occurring) or if any radioactivity was thought to be due to contamination. Please revise the DPFR to provide this information.

Response: Clarification.

The areas of elevated activity were all due to tritium contamination, based on the initial radiological surveys and concrete samples. The radionuclides attributed to NORM were all identified from the concrete sample locations. NORM (e.g., K-40) is considered to be fairly uniform throughout the concrete slab and does not correlate with areas of tritium contamination (see attached figure titled “Tritium to K-40 Sample Correlation”). The final radiological survey indicates there are no areas of elevated tritium remaining on the concrete slab, and D&D efforts were successful. No change to the current report is proposed.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

3. The DPFR does not appear to contain a figure showing the area of coverage of the radiological survey, therefore it is unclear if the slab received 100% gamma walkover survey or whether a smaller percentage was surveyed. Please revise the DPFR to include a figure that depicts the area that received the gamma walkover survey.

Response: Agree.

The radiological survey was for tritium only as it was the only radionuclide identified as a contaminant by previous surveys and concrete samples. The Building 236-H concrete slab was gridded into 15 equal areas and 5 tritium smears were collected from each area (see attached figure titled “Building 236-H Radiological Survey: Tritium

SRS Draft Responses to USEPA Comments on the Decommissioning Project Final Report
236-H, By-Product Purification Facility (V-PCOR-H-00016, Revision 0, September 9, 2024)

Page 5 of 8

Comments Received 11/22/2024

Smear Areas”). All 75 tritium smears from the 15 grided survey areas were below detection (<1,000 dpm/100 cm²). SRS proposes adding the attached radiological survey figure to the revised DPFR.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

SPECIFIC COMMENTS

1. **Section 6.0.2.01, Human Health Risk Assessment, Page 12 of 152:** It is inappropriate to state that there is no human health risk when the presented calculated risks are greater than the EPA’s target carcinogenic risk range of 1E-06 to 1E-04 for both residential and industrial populations. This section should discuss whether calculated risks are acceptable or unacceptable (“no risks” is incorrect); and in this case, whether risks are considered acceptable as the result of comparison to background or uncontaminated media. Please revise this section to present a more detailed argument for the acceptability of the risk assessment results.

Response: Agree.

The preliminary HHRA, PTSM evaluation, and CM Evaluation performed on the 2021 concrete data demonstrates that there are no constituents of concern for the resident (unrestricted use) or industrial worker scenarios, no PTSM, and no CM issues. This is in comparison to concrete data from uncontaminated sources, effectively background samples. For clarity SRS proposes revising these sentences using the following language in Section 6.02.01:

“The 236-H Building has been decommissioned, including demolition and removal down to the existing concrete slab. ~~In the current configuration, there is no human health risk. The preliminary HHRA, PTSM evaluation, and preliminary CM Evaluation performed on the 2021 concrete data demonstrates that there are no constituents of concern for the resident (unrestricted use) or industrial worker scenarios, no PTSM, and no CM issues.~~ The remaining slab is free of physical, chemical, and radiological hazard and poses no threat to human health or the environment.”

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

2. **Appendix B, Pre-Decommissioning Characterization, Appendix A, Preliminary Risk Assessment Results, Section A.1, Building 236-H, Human Health Risk Evaluation Summary, Page 49 of 152:** This section states that the USEPA Preliminary Remediation Goals for Radionuclides on Outdoor Surfaces (SPRGs) website was used to obtain the SPRGs for the risk estimates (USEPA March 2020); however, the calculators linked to this website

**SRS Draft Responses to USEPA Comments on the Decommissioning Project Final Report
236-H, By-Product Purification Facility (V-PCOR-H-00016, Revision 0, September 9, 2024)**

Page 6 of 8

Comments Received 11/22/2024

have been updated since 2020. Please revise this section to cite the most recent iteration of the website and calculators.

Response: Clarification.

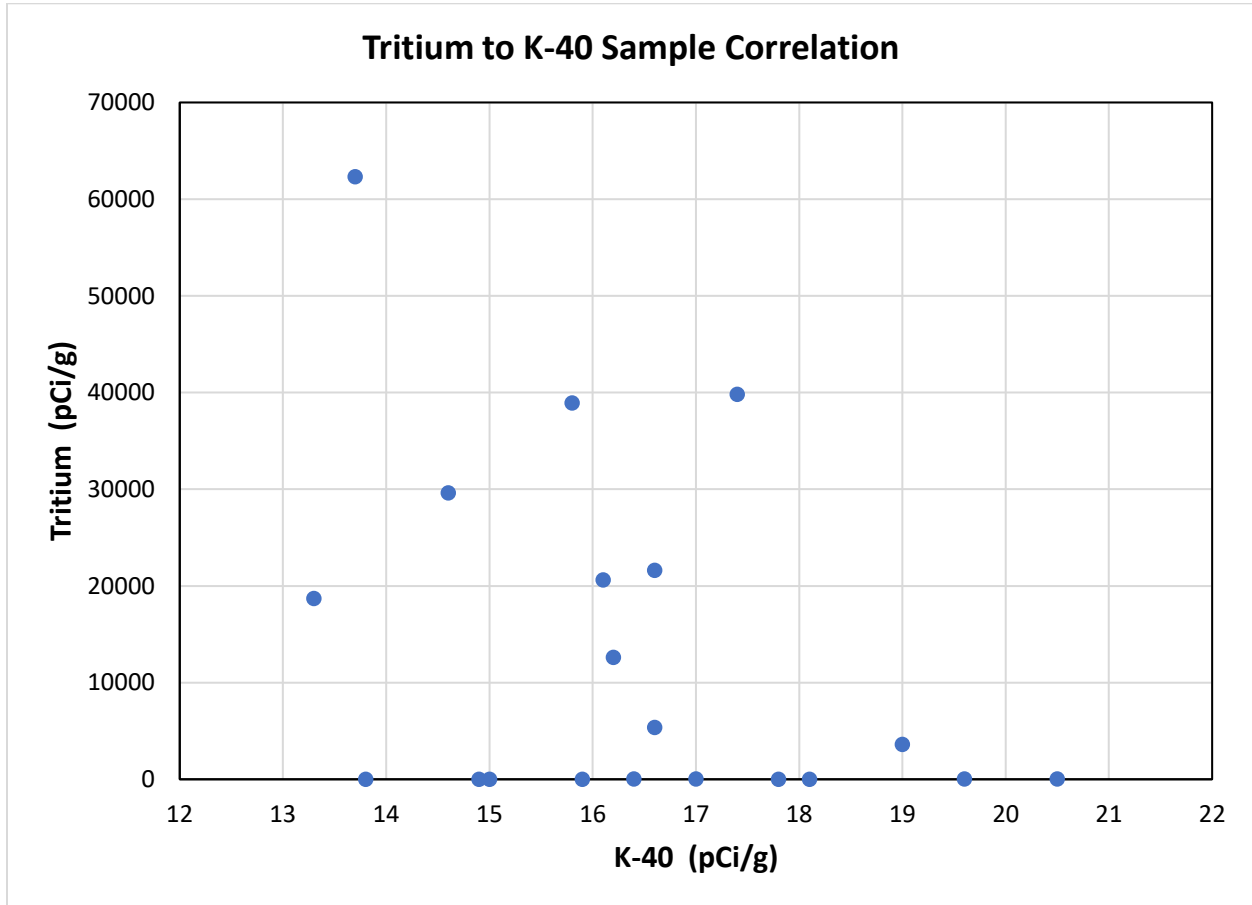
As discussed in the response to General Comment 1a, the Core Team agreed on August 17, 2023 to include the HHRA evaluation presented in the 2023 scoping summary in the 236-H DPFR. The USEPA Preliminary Remediation Goals for Radionuclides on Outdoor Surfaces (SPRGs) website was used to obtain the SPRGs for the risk estimates (USEPA March 2020). The correct SPRG calculator was used at the time of the HHRA evaluation. No change to the current report is proposed.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

**SRS Draft Responses to USEPA Comments on the Decommissioning Project Final Report
236-H, By-Product Purification Facility (V-PCOR-H-00016, Revision 0, September 9, 2024)
SRS Index Number: 2274**

Page 7 of 8

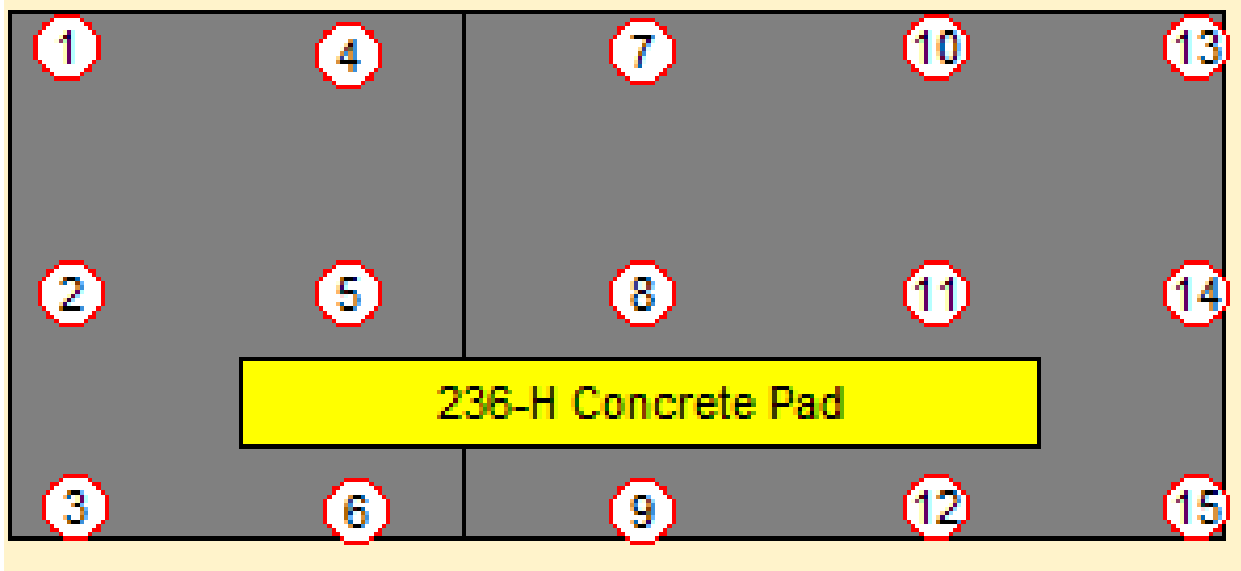
Comments Received 11/22/2024



**SRS Draft Responses to USEPA Comments on the Decommissioning Project Final Report
236-H, By-Product Purification Facility (V-PCOR-H-00016, Revision 0, September 9, 2024)
SRS Index Number: 2274**

Page 8 of 8

Comments Received 11/22/2024



Building 236-H Radiological Survey: Tritium Smear Areas