Appendix C: **Nonradiological Environmental Monitoring Program Supplemental Information**

Appendix Table C-1 Summary of Metal Results for Soil

The Savannah River Site (SRS) began conducting nonradiological soil sampling around F Area to collect pre-operational Savannah River Plutonium Processing Facility (SRPPF) baseline data. Soil was collected from five onsite locations around F Area and analyzed for various metals.

The table shows the location associated with both the minimum and maximum concentrations for each metal in the soil samples. For the metals shown in the table, all five results were detected. All cadmium and silver results were not detected; therefore, they were not reported in this table.

Analyte	No. of Detected Results	Location of Minimum Concentration	Minimum Concentration (mg/kg)	Location of Maximum Concentration	Maximum Concentration (mg/kg)
Beryllium	5 of 5	FA-2	0.14	FA-4	0.35
Chromium	5 of 5	FA-5	3.80	FA-1	9.00
Copper	5 of 5	FA-3 and FA-5	3.00	FA-2	7.20
Lead	5 of 5	FA-2	3.80	FA-3	7.60
Nickel	5 of 5	FA-2	2.50	FA-4	5.80
Zinc	5 of 5	FA-1	8.40	FA-2	24.00

Appendix Table C-2 River and Stream Water Quality Results Summary

The Savannah River Site (SRS) collected monthly water quality samples at 5 Savannah River locations and 11 stream locations in 2024, totaling 191 samples per analyte or 4,011 records. Locations sampled are as follows: Savannah River locations (RM-118.8, RM 129.1, RM-141.5, and RM-150.4 [Vogtle discharge]) and SRS Stream locations (BFA-1, FM-2B, FM-6, FMC-2, L3R-2, PB-3, SC-4, TB-5, and U3R-4). The control location for the river samples is RM 161.0. The control locations for the stream samples are TC-1 and U3R-1A.

The table compares all results to South Carolina Freshwater Quality Standards (unless otherwise noted) and shows the average and maximum values of each analyte for the river and stream samples. Locations in which analytes are outside standard limits are shown in **red** text. Field duplicates were not included in the generation of these tables.

Notes:

1. The dissolved oxygen (DO) value in the maximum column is a minimum value because the South Carolina Freshwater Quality Standard is based on a minimum value.
2. The pH value in the average column is a minimum value because the South Carolina Freshwater Quality Standard includes minimum and maximum limits.

DL = Detection Limit

DO = Dissolved Oxygen

TOC = Total Organic Carbon

TSS = Total Suspended Solids

Appendix Table C-2 River and Stream Water Quality Results Summary (continued)

Four River Locations Plus One Control

Analyte	SC Freshwater Quality Standard	Unit	Number of Results Outside Standard	Number of Results > DL	Control RM-161.0		Highest River Location				Comments
					Avg.[a]	Max.[b]	Avg.[a]		Max.[b]		
DO[c]	min. 4.0	mg/L	0 of 59		8.8	6.9	RM-129.1	8.1	RM-118.8	6.1	All samples met standard
pH[d]	6.0-8.5	SU	4 of 59		**5.8**	7.1	RM-141.5	**6.0**	RM-129.1	7.4	All maximums met standard
Temperature	< 5°F (2.8°C) above nat. cond. and not > 90°F (32.2°C)	°C	0 of 59		17.2	25.7	RM-118.8	19.0	RM-129.1	27.6	All samples met standard
Aluminum	87[e]	µg/L	55 of 59	59 of 59	**363**	**1,120**	RM-118.8	**428**	RM-150.4	**1,460**	
Beryllium	4[f]	µg/L	0 of 59	0 of 59	<DL	<DL	< DL	< DL	< DL	< DL	All samples met standard
Cadmium	0.26	µg/L	0 of 59	13 of 59	0.10	0.13	RM-118.8	0.13	RM-118.8	0.21	All samples met standard
Chromium	11	µg/L	0 of 59	7 of 59	< DL	< DL	RM-118.8	2.9	RM-118.8	4.4	All samples met standard
Copper	2.9	µg/L	4 of 59	25 of 59	2.0	3.0	RM-141.5	2.0	RM-141.5	3.5	All averages met standard
Hardness (total)	none	mg/L	no standard	59 of 59	15	30	RM-129.1	21	RM-129.1	36	
Iron	1,000[g]	µg/L	12 of 59	59 of 59	664	**1,730**	RM-141.5	875	RM-141.5	**1,310**	All averages met standard
Lead	0.54	µg/L	2 of 59	4 of 59	0.52	**0.75**	RM-118.8	0.50	RM-118.8	**0.54**	
Manganese	none	µg/L	no standard	59 of 59	93	129	RM-141.5	93	RM-141.5	158	
Mercury	0.05	µg/L	0 of 59	3 of 59	0.02	0.02	RM-118.8	0.02	RM-118.8	0.03	All samples met standard
Nickel	16	µg/L	0 of 59	11 of 59	1.70	< DL	RM-141.5	1.74	< DL	< DL	All samples met standard
Nitrate-Nitrogen	1[h]	mg/L	0 of 59	59 of 59	0.3	0.4	RM-150.4	0.3	RM-141.5	0.5	All samples met standard
Nitrite-Nitrogen	1[h]	mg/L	0 of 59	56 of 59	0.005	0.007	RM-150.4	0.006	RM-150.4	0.01	All samples met standard
Thallium	0.24[f]	µg/L	0 of 59	0 of 59	< DL	< DL	< DL	< DL	< DL	< DL	All samples met standard
TOC	none	mg/L	no standard	59 of 59	4	5	RM-129.1	5	RM-129.1	9	
Phosphorus	0.06	mg/L	50 of 59	58 of 59	0.09	0.23	RM-150.4	0.12	RM-118.8 & RM-150.4	0.18	
TSS	none	mg/L	no standard	58 of 59	7	20	RM-118.8	11	RM-129.1	16	
Zinc	37	µg/L	0 of 59	54 of 59	4.4	7.0	RM-150.4	6.3	RM-150.4	35	All samples met standard

Appendix Table C-2 River and Stream Water Quality Results Summary (continued)

Nine Stream Locations Plus Two Controls

Analyte	SC Freshwater Quality Standard	Unit	Number of Results Outside Standard	Number of Results > DL	Control TC-1		Control U3R-1A		Highest Stream Location				Comments
					Avg.[a]	Max.[b]	Avg.[a]	Max.[b]	Avg.[a]		Max.[b]		
DO [c]	min. 4.0	mg/L	7 of 132		8.6	7.1	8.4	7.6	FMC-2	4.9	FMC-2	**1.4**	All averages met standard
pH [d]	6.0-8.5	SU	45 of 132		**5.7**	7.2	**4.8**	6.9	FMC-2	**4.8**	L3R-2	7.3	All maximums met standard
Temperature	< 5° F (2.8° C) above nat. cond. & not > 90° F (32.2° C)	° C	0 of 132		20.5	27.7	18.6	27.9	SC-4	19.2	SC-4	29.8	All samples met standard
Aluminum	87 [e]	µg/L	100 of 132	121 of 132	**111**	**364**	**150**	**439**	FM-2B	**377**	FM-2B	**2,380**	
Beryllium	4 [f]	µg/L	0 of 132	7 of 132	< DL	< DL	0.2	< DL	FMC-2	0.2	FMC-2	0.3	All samples met standard
Cadmium	0.26	µg/L	0 of 132	2 of 132	< DL	< DL	< DL	< DL	FM-2B	0.10	FM-2B	0.10	All samples met standard
Chromium	11	µg/L	0 of 132	5 of 132	< DL	< DL	< DL	< DL	FM-2B	3.4	FM-2B	9.1	All samples met standard
Copper	2.9	µg/L	7 of 132	22 of 132	< DL	< DL	< DL	< DL	BFA-1	2.5	BFA-1	**9.2**	All averages met standard
Hardness (total)	none	mg/L	no standard	132 of 132	12	21	5	8	L3R-2	27	L3R-2	41	
Iron	1,000 [g]	µg/L	49 of 132	132 of 132	595	**1,210**	424	635	FMC-2	**3,742**	FM-2B	**9,590**	
Lead	0.54	µg/L	17 of 132	19 of 132	**0.57**	**1.15**	0.51	**0.57**	FM-2B	**0.83**	FM-2B	**3.69**	
Manganese	none	µg/L	no standard	132 of 132	30	150	11	19	FMC-2	173	FM-2B	863	
Mercury	0.05	µg/L	0 of 132	9 of 132	0.02	0.03	< DL	< DL	FM-2B	0.02	FM-2B	0.05	All samples met standard
Nickel	16	µg/L	1 of 132	41 of 132	1.7	3.0	1.8	2.4	TB-5	6.8	TB-5	**18.2**	All averages met standard
Nitrate-Nitrogen	1 [h]	mg/L	8 of 132	131 of 132	0.1	0.2	0.4	0.5	BFA-1	0.7	TB-5	**4**	All averages met standard
Nitrite-Nitrogen	1 [h]	mg/L	0 of 132	44 of 132	0.003	0.006	0.004	0.01	FM-6	0.01	<DL	<DL	All samples met standard
Thallium	0.24 [f]	µg/L	1 of 132	2 of 132	< DL	< DL	< DL	< DL	FMC-2	0.11	FMC-2	**0.29**	All averages met standard
TOC	none	mg/L	no standard	129 of 132	5	7	3	9	FMC-2	8	FMC-2	15	
Phosphorus	0.06	mg/L	34 of 132	100 of 132	**0.07**	**0.14**	0.02	0.04	FM-6	**0.11**	BFA-1	**0.18**	
TSS	none	mg/L	no standard	129 of 132	10	55	4	8	FM-2B	20	FM-2B	127	
Zinc	37	µg/L	1 of 132	117 of 132	4.7	14	4.6	8.1	FM-2B	11	FMC-2	**38**	All averages met standard

[a] If analyte is non-detect, detection limit is used in averaging calculation.
[b] Maximum detected value
[c] Minimum was reported in the maximum (Max.) value reported columns for DO.
[d] Minimum was reported in the average (Avg.) value columns for pH.
[e] Environmental Protection Agency (EPA) Region 4 Ecological Risk Assessment Supplemental Guidance, March 2018 Update
[f] Standard from Human Health vs. Freshwater Aquatic Life, which has no standard
[g] EPA National Recommended Water Quality Criteria—Aquatic Life
[h] Per South Carolina Department of Environmental Services Environmental Surveillance and Oversight Program 2022 Data Report (CR-004111 12/23)

Appendix Table C-3 Summary of Nonradiological Results for Sediments Collected from the Savannah River, SRS Streams, and Stormwater Basins

SRS collected annual sediment samples at 24 locations in 2024: 8 Savannah River locations, 13 stream locations (regular stream sampling locations plus BFA-1 location), and 3 stormwater basin locations, totaling 385 analytes. The control location for the river samples is RM-161.0. The control locations for the stream and stormwater basin sediment samples are TC-1 and U3R-1A, respectively.

The table compares all results to Environmental Protection Agency Region 4 Refinement Screening Values (RSVs) for sediment and shows the maximum detected value of each analyte for the river, stream, and stormwater basin samples. Locations in which detected analytes exceed RSVs are shown in **red** text and are counted in the number of results greater than the RSV. Analytes not detected are not counted in the number of results greater than the RSV.

River Sediment Results

Seven River Locations Plus One Control

Analyte	No. of Detected Results	Control RM 161.0 (mg/kg)	Location of Maximum Result	Maximum Conc. (mg/kg)	EPA Region 4 RSV for Sediment (mg/kg)	No. of Results > RSV	Comments
Aluminum	8 of 8	16,000	RM-157.2	38,000	58,000	0	All samples met RSV
Antimony	0 of 8	< DL	All < DL	All < DL	25	0	All samples met RSV
Arsenic	8 of 8	2.7	RM-157.2	6.9	33	0	All samples met RSV
Barium	8 of 8	**150**	SC-RM	**190**	60	7	Control exceededs RSV
Cadmium	3 of 8	< DL	RM-157.2	0.35	5	0	All samples met RSV
Chromium	8 of 8	22	RM-157.2	42	111	0	All samples met RSV
Copper	8 of 8	12	RM-157.2	27	149	0	All samples met RSV
Iron	8 of 8	21,000	RM-157.2	33,000	40,000	0	All samples met RSV
Lead	8 of 8	11	RM-157.2	46	128	0	All samples met RSV
Manganese	8 of 8	**2,200**	RM-150.4	**1,800**	1,100	2	Control exceededs RSV
Mercury	2 of 8	< DL	RM-157.2	0.12	1.1	0	All samples met RSV
Nickel	7 of 8	9.2	RM-157.2	17	48.6	0	All samples met RSV
Selenium	3 of 8	< DL	RM-150.4	< DL	2.9	0	All samples met RSV
Silver	0 of 8	< DL	All < DL	< DL	2.2	0	All samples met RSV
Uranium	0 of 8	< DL	All < DL	< DL	1,000	0	All samples met RSV
Zinc	8 of 8	47	RM-157.2	75	459	0	All samples met RSV

Note:
DL = Detection Limit
EPA = U.S. Environmental Protection Agency
RM = River Mile
RSV = Refinement Screening Values

Appendix Table C-3 Summary of Nonradiological Results for Sediments Collected from the Savannah River, SRS Streams, and Stormwater Basins (continued)

Stream Sediment Results

Ten Stream Locations Plus Two Controls

Analyte	No. of Detected Results	Control TC-1 (mg/kg)	Control U3R-1A (mg/kg)	Location of Maximum Result	Maximum Conc. (mg/kg)	EPA Region 4 RSV for Sediment (mg/kg)	No. of Results > RSV	Comments
Aluminum	12 of 12	3,900	14,000	McQB @ MO	30,000	58,000	0	All samples met RSV
Antimony	1 of 12	< DL	< DL	L3R-2	1.45	25	0	All samples met RSV
Arsenic	11 of 12	1.5	3.1	McQB @ MO	6.7	33	0	All samples met RSV
Barium	12 of 12	59	**120**	McQB @ MO	**180**	60	4	One control exceeded RSV
Cadmium	7 of 12	0.19	0.35	McQB @ MO	0.67	5	0	All samples met RSV
Chromium	12 of 12	8.4	24	McQB @ MO	43	111	0	All samples met RSV
Copper	12 of 12	12	12	McQB @ MO	32	149	0	All samples met RSV
Iron	12 of 12	3,000	6,900	McQB @ MO	27,000	40,000	0	All samples met RSV
Lead	12 of 12	6.7	23	McQB @ MO	23	128	0	All samples met RSV
Manganese	12 of 12	180	43	L3R-2	475	1,100	0	All samples met RSV
Mercury	7 of 12	< DL	< DL	McQB @ MO	0.23	1.1	0	All samples met RSV
Nickel	12 of 12	4.5	9.7	McQB @ MO	16	48.6	0	All samples met RSV
Selenium	2 of 12	< DL	< DL	L3R-2	2.01	2.9	0	All samples met RSV
Silver	0 of 12	< DL	< DL	All < DL	< DL	2.2	0	All samples met RSV
Uranium	0 of 12	< DL	< DL	All < DL	< DL	1,000	0	All samples met RSV
Zinc	12 of 12	22	44	McQB @ MO	85	459	0	All samples met RSV

Note:
The two stream and stormwater basin control locations, TC-1 and U3R-1A, are included in the number of results greater than the detection limit and the number of results greater than the RSV for the stream, stormwater basin, and BFA sediment results tables.
DL = Detection Limit
EPA = U.S. Environmental Protection Agency
RSV = Refinement Screening Values

Appendix Table C-3 Summary of Nonradiological Results for Sediments Collected from the Savannah River, SRS Streams, and Stormwater Basins (continued)

Stormwater Basin Sediment Results

Three Basin Locations Plus Two Stream Controls

Analyte	No. of Detected Results	Control TC-1 (mg/kg)	Control U3R-1A (mg/kg)	Location of Maximum Result	Maximum Conc. (mg/kg)	EPA Region 4 RSV for Sediment (mg/kg)	No. of Results > RSV	Comments
Aluminum	5 of 5	3,900	14,000	E-002	15,000	58,000	0	All samples met RSV
Antimony	0 of 5	< DL	< DL	All < DL	< DL	25	0	All samples met RSV
Arsenic	5 of 5	1.5	3.1	E-002	4	33	0	All samples met RSV
Barium	5 of 5	59	**120**	E-001	21	60	1	One control exceeded RSV
Cadmium	4 of 5	0.19	0.35	E-003	0.092	5	0	All samples met RSV
Chromium	5 of 5	8.4	24	E-002	28	111	0	All samples met RSV
Copper	5 of 5	12	12	E-002	6	149	0	All samples met RSV
Iron	5 of 5	3,000	6,900	E-002	14,000	40,000	0	All samples met RSV
Lead	5 of 5	6.7	23	E-003	6.7	128	0	All samples met RSV
Manganese	5 of 5	180	43	E-003	47	1,100	0	All samples met RSV
Mercury	2 of 5	< DL	< DL	E-003	0.039	1.1	0	All samples met RSV
Nickel	5 of 5	4.5	9.7	E-002	4.1	48.6	0	All samples met RSV
Selenium	1 of 5	< DL	< DL	E-002	0.91	2.9	0	All samples met RSV
Silver	0 of 5	< DL	< DL	All < DL	< DL	2.2	0	All samples met RSV
Uranium	0 of 5	< DL	< DL	All < DL	< DL	1,000	0	All samples met RSV
Zinc	5 of 5	22	44	E-001	22	459	0	All samples met RSV

Note:
The two stream and stormwater basin control locations, TC-1 and U3R-1A, are included in the number of results greater than the detection limit and the number of results greater than the RSV for the stream, stormwater basin, and BFA sediment results tables.
DL = Detection Limit
EPA = U.S. Environmental Protection Agency
RSV = Refinement Screening Values

Appendix Table C-3 Summary of Nonradiological Results for Sediments Collected from the Savannah River, SRS Streams, and Stormwater Basins (continued)

BFA Sediment Results

BFA-1 Plus Two Stream Controls

Analyte	No. of Detected Results	Control TC-1 (mg/kg)	Control U3R-1A (mg/kg)	Location of Maximum Result	Maximum Conc. (mg/kg)	EPA Region 4 RSV for Sediment or Soil (mg/kg)	No. of Results > RSV	Comments
Aluminum	3 of 3	3,900	14,000	BFA-1	5,600	58,000	0	All samples met RSV
Beryllium	0 of 1	N/A	N/A	All < DL	< DL	2.5	0	All samples met RSV
Cadmium	0 of 3	0.19	0.35	All < DL	< DL	5	0	All samples met RSV
Calcium	1 of 1	N/A	N/A	BFA-1	160	N/A	N/A	No RSV established
Chromium	3 of 3	8.4	24	BFA-1	7.6	111	0	All samples met RSV
Copper	3 of 3	12	12	BFA-1	3.2	149	0	All samples met RSV
Iron	3 of 3	3,000	6,900	BFA-1	4,600	40,000	0	All samples met RSV
Lead	3 of 3	6.7	23	BFA-1	5.1	128	0	All samples met RSV
Magnesium	1 of 1	N/A	N/A	BFA-1	150	N/A	N/A	No RSV established
Manganese	3 of 3	180	43	BFA-1	24	1,100	0	All samples met RSV
Mercury	0 of 3	< DL	<DL	All < DL	< DL	1.1	0	All samples met RSV
Nickel	3 of 3	4.5	9.7	BFA-1	1.9	48.6	0	All samples met RSV
Selenium	0 of 3	< DL	<DL	All < DL	< DL	2.9	0	All samples met RSV
Silver	0 of 3	< DL	<DL	All < DL	< DL	2.2	0	All samples met RSV
Thallium	0 of 1	N/A	N/A	BFA-1	< DL	0.05	1	DL is greater than RSV
Uranium	0 of 3	< DL	<DL	All < DL	< DL	1000	0	All samples met RSV
Zinc	3 of 3	22	44	BFA-1	7	459	0	All samples met RSV

Note:
The two stream and stormwater basin control locations, TC-1 and U3R-1A, are included in the number of results greater than the detection limit and the number of results greater than the RSV for the stream, stormwater basin, and BFA sediment results tables.
Thallium and Beryllium do not have established RSV values for sediment. The RSV for soil was used instead.
DL = Detection Limit
EPA = U.S. Environmental Protection Agency
RSV = Refinement Screening Values

Appendix Table C-4 Summary of Detected Metal Results for Freshwater Fish Tissue Collected from the Savannah River

All lead and nickel results were not detected; therefore, they were not reported in this table.

Analyte	Number of Detected Values (greater than or equal to the MDC)	Number of Estimated Values (greater than or equal to the MDC, below the SQL)	Maximum Detected Concentration (µg/g)	MDC (µg/g)	SQL (µg/g)	Fish Type with Maximum Concentration	Location of Maximum Concentration
Antimony	7	7	2.4	1.48	14.8	Flathead	Upper Three Runs Creek River Mouth
Arsenic	14	14	2.73	1.81	18.1	Bass	Augusta Lock and Dam 614
Cadmium	1	1	0.251	0.196	1.96	Catfish	Upper Three Runs Creek River Mouth
Chromium	3	3	0.724	0.197	1.97	Flathead Catfish	Upper Three Runs Creek River Mouth
Copper	137	137	0.956	0.0986	0.986	Panfish	Highway 301 Bridge Area
Manganese	15	14	6.19	0.2	2	Flathead Catfish	Augusta Lock and Dam 614
Mercury	167	72	0.969	0.02	0.2	Bass	Upper Three Runs Creek River Mouth
Zinc	168	30	16.4	0.401	4.01	Flathead Catfish	Fourmile Creek River Mouth

Note:
168 freshwater tissue samples were collected and analyzed for metals and mercury.
MDC = Minimum Detectable Concentration
SQL = Sample Quantification Limit

Appendix Table C-5 Summary of Detected Metal Results for Saltwater Fish Tissue Collected from the Savannah River between River Miles 0–8, Near Savannah, Georgia

Antimony, lead, manganese, mercury, and nickel results were not detected; therefore, they were not reported in this table. All results are for mullet.

Analyte	Number of Detected Values (greater than or equal to the MDC)	Number of Estimated Values (greater than or equal to the MDC, below the SQL)	Maximum Detected Concentration (µg/g)	MDC (µg/g)	SQL (µg/g)
Arsenic	5	5	2.64	1.78	17.8
Cadmium	1	1	0.306	0.201	2.01
Chromium	1	1	0.204	0.201	2.01
Copper	5	5	0.383	0.101	1.01
Zinc	7	7	3.91	0.403	4.03

Note:
Seven freshwater tissue samples were collected and analyzed for metals and mercury.
MDC = Minimum Detectable Concentration
SQL = Standard Quantitation Limit