



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

MAY 01 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: Focused Early Action Corrective Measures Study/Feasibility Study in Support of Beneficial Reuse of Select Coal Ash and Coal Fines at the A-Area Ash Pile (788-A), A-Area Coal Pile Runoff Basin (788-3A), F-Area Ash Landfill (288-F), H-Area Ash Basin (288-H), K-Area Ash Basin (188-K), and L-Area Ash Basin (188-L) Operable Units (SRNS-RP-2024-00222, Revision 1, May 2025) (Redline Pages) and Savannah River Site's Responses to the Regulatory Comments on the Revision 0 Document, SEMS Numbers: 61, 62, 88, 90, & 91

In accordance with the terms of the Federal Facility Agreement (FFA), the U. S. Department of Energy (DOE) is submitting the subject information for your review. The *Focused Early Action Corrective Measures Study/Feasibility Study in Support of Beneficial Reuse of Select Coal Ash and Coal Fines at the A-Area Ash Pile (788-A), A-Area Coal Pile Runoff Basin (788-3A), F-Area Ash Landfill (288-F), H-Area Ash Basin (288-H), K-Area Ash Basin (188-K), and L-Area Ash Basin (188-L) Operable Units* (SRNS-RP-2024-00222, Revision 0, October 2024) was submitted to the South Carolina Department of Environmental Services (SCDES) and U.S. Environmental Protection Agency (EPA) for review on October 7, 2024. The EPA's and SCDES' comments on the Revision 0 report were received on December 12, 2024, and January 2, 2025, respectively. The draft responses to the regulatory comments were submitted for review via email on April 3, 2025. The EPA and SCDES stated that the draft responses were acceptable via their respective emails dated April 15, 2025. The final responses were incorporated into the Redline Revision 1 pages.

Please review the enclosures and provide your response within thirty (30) days of receipt. The effort and time that the EPA and the SCDES have given on the subject operable unit are greatly appreciated.

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Ms. Susan Fulmer
Mr. Jon Richards

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Questions from you or your staff may be directed to me at (803) 952-6211, or the DOE Program Manager, Khari Bell, at (803) 679-7086.

Sincerely,

MATTHEW
BAKER

Digitally signed by
MATTHEW BAKER
Date: 2025.05.01
10:06:09 -04'00'

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

RDDD-25-133

Enclosures:

1. SRS Responses to the U.S. Environmental Protection Agency's Comments on the Focused Early Action Corrective Measures Study/Feasibility Study in Support of Beneficial Reuse of Select Coal Ash and Coal Fines at the A-Area Ash Pile (788-A), A-Area Coal Pile Runoff Basin (788-3A), F-Area Ash Landfill (288-F), H-Area Ash Basin (288-H), K-Area Ash Basin (188-K), and L-Area Ash Basin (188-L) Operable Units (SRNS-RP-2024-00222, Revision 0, October 2024) SEMS Numbers: 61, 62, 88, 90, & 91
2. SRS Responses to the South Carolina Department of Environmental Services' Comments on the Focused Early Action Corrective Measures Study/Feasibility Study in Support of Beneficial Reuse of Select Coal Ash and Coal Fines at the A-Area Ash Pile (788-A), A-Area Coal Pile Runoff Basin (788-3A), F-Area Ash Landfill (288-F), H-Area Ash Basin (288-H), K-Area Ash Basin (188-K), and L-Area Ash Basin (188-L) Operable Units (SRNS-RP-2024-00222, Revision 0, October 2024) SEMS Numbers: 61, 62, 88, 90, & 91
3. Focused Early Action Corrective Measures Study/Feasibility Study in Support of Beneficial Reuse of Select Coal Ash and Coal Fines at the A-Area Ash Pile (788-A), A-Area Coal Pile Runoff Basin (788-3A), F-Area Ash Landfill (288-F), H-Area Ash Basin (288-H), K-Area Ash Basin (188-K), and L-Area Ash Basin (188-L) Operable Units (SRNS-RP-2024-00222, Revision 1, May 2025) (Redline Pages) SEMS Numbers: 61, 62, 88, 90, & 91

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Ms. Susan Fulmer
Mr. Jon Richards

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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
G. O'Quinn, SCDES-Midlands Aiken Environmental Affairs Office
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:

H. H. Cathcart, SCDES-Columbia
M. McRae, TechLaw, Inc.

**SRS Responses to USEPA Comments on the Focused Early Action Corrective Measures Study/Feasibility Study in Support of Beneficial Reuse of Select Coal Ash and Coal Fines at the A-Area Ash Pile (788-A), A-Area Coal Pile Runoff Basin (788-3A), F-Area Ash Landfill (288-F), H-Area Ash Basin (288-H), K-Area Ash Basin (188-K), and L-Area Ash Basin (188-L) Operable Units, SEMS Numbers: 61, 62, 88, 90 and 91, SRNS RP-2024-00222, Revision 0, Dated October 2024
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GENERAL COMMENTS

1. The CMS/FS does not clearly describe how the extent of the coal ash was determined at each Operable Unit (OU). The symbols designating where ash, soil, or a mixture of soil and ash were found in the transects shown on Figures 3 through 8 are not always consistent with the extent of ash shown. For example, soil markers are shown within the ash extent to the northeast on Figure 3 (A-Area Ash Pile Topography and Ash Observation Transects); however, the ash extent does not include observed ash present in the southeastern transect on Figure 7 (K-Area Ash Basin OU Topography and Ash Observation Transects). In addition, it does not appear that the extent of ash was completely defined, as some of the transects do not have an observation of soil to bound the extent (e.g., Figure 5, the northwestern quadrant of the F-Area Ash Landfill, and Figure 8 to the south at the L-Area Ash Basin) or there is an absence of transects (e.g., Figure 6, to the north at the H-Area Ash Basin). Further, it is unclear how the depths of ash as specified in Section 1.2.2 (Nature and Extent of Contamination) were determined for each OU as only surface samples were collected. It is also noted that Format F-4 in the *Environmental Compliance and Area Completion Projects Regulatory Document Handbook*, dated June 2023 (the EC&ACP Regulatory Document Handbook) indicates that schematic cross sections should be provided. *Please revise the CMS/FS to describe how the lateral and vertical extent of the ash at each OU was determined and correct or explain any discrepancies in the symbols used on Figures 3 through 8. Also, revise the CMS/FS to include cross sections of the OUs as indicated in the EC&ACP Regulatory Document Handbook.*

Response: Agree.

The last sentence of the first paragraph in Section 1.2.1, Operable Unit Description, Operable Unit History subsection, will be revised to include a reference to the Sampling and Analysis Plan as follows:

“In 2020, additional fieldwork was performed for the AAP and ACPRB OU as part of the ash consolidation strategy development (SRNS 2020b) to determine...”

In addition, the following text will be added to the Nature and Extent of Contamination subsection of the operable unit history section of Section 1.2.2 as follows:

“The estimate of the extent of ash is based on a review of historic topographic data, current light detection and ranging (LiDAR) data, historic photographs, and unit records. For units with known/suspected appreciable ash outside the unit boundary (AAP, FAL, HAB, KAB, and LAB), a field walkdown was conducted. Based on the walkdown, transects were established with the purpose of estimating the extent of ash based on visual observation. The transect sampling was conducted by taking step-outs along the transects radiating from the edge of the ash unit boundary where ash was

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either known to exist or was suspected. The transect sampling was based on ash/soil borings taken along the transects advanced vertically up to a maximum depth of 30.5 cm (12 in.). Additional boring locations followed, as needed, with 3-m (10-ft) step-outs. Longer transects included 30-m (100-ft) step-out intervals. The step-outs were employed until an ash-free location was located or an impedance was encountered (road, etc.). Upon finding an ash-free location, the step-out was set at one-half the length of the previous step to bound the ash. Transect sampling began May 13, 2020, and was completed June 8, 2020. The sampling was described in the *Sampling and Analysis Plan for Pre-Characterization of the A-Area Ash Pile (188-0A), F-Area Ash Landfill (288-0F), H-Area Ash Basin (288-0H), L-Area Ash Basin (188-0L), K-Area Ash Basin (188-0K), and D Ash Overflow (SRNS 2020b).*

Depths of ash were estimated from unit records, if available, and current LiDAR data compared to historic topography data. The depth estimates support the volume estimates provided in this CMS/FS.”

A-Area Ash Pile and A-Area Coal Pile Runoff Basin Operable Unit

The area of ash within the boundary of the AAP is approximately (~) 0.65 ha (1.60 ac).”

In addition, the third sentence of the second paragraph of the Data Evaluation subsection of Section 1.2.1 will be revised to state:

“... to analyze the material for geophysical parameters. In addition, the extent of ash outside the basin berms was estimated by visual field observations (presence/absence) from multiple transects extending from the boundary of the units where appreciable ash was known/suspected outside the unit boundary (Figure 3 and Figures 6-8) as discussed in Section 1.2.2 (SRNS 2020b).

Final action determinations have been completed for several ash/ash fines OUs at SRS, and the Early Action Focused CMS/FS for the remaining coal ash and coal fines OUs was developed based on the critical information needed to provide volume estimates and to verify ash material in the various ash units is comparable to other SRS ash/ash fines units. Since these remaining units have similar ash material and are slated for clean closure after removal of ash for beneficial reuse, the information and data required for final deposition of the units to clean closure will be documented in the Corrective Measures Implementation Plan/Remedial Action Implementation Plan (CMIP/RAIP) when the ash material is needed for beneficial reuse as agreed to by the Core Team during project scoping.

Cross sections will be developed for future documentation, as needed, to support the CMIP/RAIP.

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Figures 3 through 8 were developed based on LIDAR data, historic photographs, topography data, and unit records to support the estimated extent of ash. Walk-downs in 2020 and the 2020 transects were established in areas where the extent was not already defined by the aforementioned information to further refine the extent of ash.

Figure 3 and Figures 5-8 were revised and are included with these comment responses. Additional information in support of the revised figures include the following:

- In Figure 3, the surface transect data did find soil within the footprint of ash that was already indicated by the LiDAR data.
- The transect described for the FAL (Figure 5) ended due to a road impedence (northwestern quadrant of FAL), and the recorded description of transect F19 (on revised figure) stated that thick vegetation prevented access to that area beyond the initial ash location.
- For Figure 6 for the HAB, ash to the north is bound by LiDAR data and by the road. The southeastern transect (H3) does not have a terminal soil marker, but the transect data recorded the extent of ash is 520 ft from origin.
- For Figure 7 (KAB), the visual observations indicated by the light blue dots on the southwestern boundary were used for extent on this boundary. Also, the northern transect extent of ash was estimated at 52 ft from the origin based on the transect data recorded.

The revised figures will be included in the Revision 1 CMS/FS document.

Responsible Party: Susan Blas, (803) 952-6904, susan.blas@srs.gov

2. The samples collected for characterization of the coal ash are surface samples only, and the CMS/FS does not discuss whether surrounding (adjacent to and below) soil was impacted by the coal ash due to leaching of coal ash contaminants. It is also unclear if groundwater and surface water may be impacted. Although the purpose of the CMS/FS is to support the early action remedial strategy for the remaining coal ash and coal fines OUs that have been identified as candidates for beneficial reuse of ash material, it is unclear if additional sampling and characterization of the surrounding environmental media will be performed. *Revise the CMS/FS to clarify how the surrounding environmental media will be characterized to determine if it has been impacted by the coal ash.*

Response: Clarification.

The rationale for sampling at the FAL OU, HAB OU, KAB OU, and LAB OU was proposed and approved by the Core Team in the sampling and analysis plan (SAP) for the ash units (SRNS-RP-2019-00798). The plan discussed only collecting surface samples, as it was demonstrated that ash material is consistent throughout SRS ash units. The principal threat source material (PTSM) evaluation and contaminant migration (CM) analysis for

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each OU provide evaluation of the potential for ash material to leach into surrounding soils. In regard to final remedy design and ensuring extent of contamination is complete, the details of excavation and requirements for confirmation sampling will be described in the OU-specific CMIP/RAIP.

The CMS/FS discusses the physical descriptions of the remaining coal ash and coal fines OUs in multiple sections of the document. Descriptions indicate there is no surface water media present on the OUs at this time. Surface water sampling was completed in 2008 at the ACPRB; however, conditions have changed at the unit and there is no longer surface water present. Consistent with the PTSM evaluation, the human health risk assessment, and the ecological risk assessment, there are no surface water pathways for exposure or impact to surface water anticipated for any of the OUs.

Groundwater impact was considered for the remaining coal ash and coal fines OUs and evaluated through the CM analysis for each OU. Although the samples were surface samples only, the CM analysis considered the maximum detected concentrations at the maximum depth of ash for each OU. This is consistent with the agreement that the ash material is consistent throughout each OU. Where CM RCOCs were identified (HAB OU and LAB OU), alternatives include groundwater sampling to monitor for impact to groundwater.

No change to the document is proposed.

Responsible Party: Adam Willey, (803) 646-4944, adam.willey@srs.gov

3. The CMS/FS does not include figures showing the locations of the exceedances of the preliminary remediation goals (PRGs). As noted in Section 2.1.2 (Development of Preliminary Remedial Goals) of Format F-4 in the EC&ACP Regulatory Document Handbook, the CMS/FS should include figures illustrating the locations where the PRGs are exceeded at each OU. *Please revise the CMS/FS to include figures showing the locations where soil samples exceed the PRGs.*

Response: Clarification.

The evaluation of the remaining coal ash and coal fines OU used a combination of representative data from all OUs to complete the assessment, given the comparative uniformity of the ash. Therefore, it is expected that the figures identifying the extent of ash can also be used to represent PRG exceedances.

No change to the document is proposed.

Responsible Party: Justin Steadman, (803) 952-7346, justin.steadman@srs.gov

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4. The CMS/FS does not indicate that coal ash samples were analyzed for dioxins and furans (D/Fs) or per- and polyfluoroalkyl substances (PFAS). It is unknown if D/Fs may be potential constituents of concern in environmental media at the OUs based on the presence of coal ash. In addition, it is unclear if the biomass facility at the K-Area Ash Basin may contain PFAS in the process water. As such, a screening evaluation of the coal ash and the K-Area Ash Basin should include sampling and analysis of D/Fs and PFAS. *Revise the CMS/FS to discuss the potential for D/Fs and PFAS to be present at the coal ash OUs and include additional sampling for these constituents as necessary to address the apparent data gap in site characterization and nature of contamination.*

Response: Clarification.

Based on site investigations at SRS, dibenzofuran detections are typically 1,000 times higher than the results for the other dioxin and furan congeners. Each of the nine ash samples collected for the HAB, KAB, and LAB units, (HASH-001, -002, -003; KASH-001, -004, -005; and LASH-001, -003, -005) were analyzed for dibenzofuran and the results were reported as non-detects. These data are available on the CD accompanying the CSM/FS submittal. Dibenzofuran was also included in the RCRA Facility Investigation/Remedial Investigation (RFI/RI) Work Plan and RFI/RI Report with Baseline Risk Assessment and Corrective Measures Study/ Feasibility Study for the A-Area Ash Pile (788-A), A-Area Coal Pile Runoff Basin (788-3A), and Stormwater Outfall A-013 (NBN) Operable Unit (SRNS-RP-2010-01457, May 2012). No refined COCs were identified for dibenzofuran for the AAP or ACPRB. There was one J-qualified detect out of 29 samples for the ACPRB (all depths).

Regarding PFAS, Savannah River Nuclear Solutions, LLC (SRNS) conducted a screening for historical PFAS substances used at waste units using the *Guide for Investigating Historical and Current Uses of Per- and Polyfluoroalkyl Substances at Department of Energy Sites* (Department of Energy [DOE] 2023). Appendix C of the guidance provides a standardized list of common uses at DOE sites that have the potential for a PFAS release. Based on historical records and the known uses of the ash/coal fines units, PFAS are not expected to be present.

Source: DOE 2023. *Guide for Investigating Historical and Current Uses of Per- and Polyfluoroalkyl Substances at Department of Energy Sites*. February 16. <https://www.energy.gov/pfas/articles/guide-investigating-historical-and-current-uses-and-polyfluoroalkyl-substances>

For these reasons, no additional sampling for dioxins, furans, and PFAS are needed to support beneficial reuse of the ash material. No change to the document is proposed.

Responsible Party: Susan Blas, (803) 952-6904, susan.blas@srs.gov

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5. The human health risk assessment (HHRA) does not consider risks from exposure to the whole soil column by hypothetical residents. **It is EPA’s standard practice to evaluate all soil depths as a potential exposure source to hypothetical future residents in the event that the site is redeveloped.** *Therefore, please recalculate risks to future residents using soil data from all depths.*

Response: Clarification.

Standard exposure scenarios for SRS human receptors were agreed to by the Core Team as documented in the *EC&ACP Regulatory Document Handbook, Protocol HH-2, “Human Health Receptors and Scenarios.”* The human health receptors (future resident and industrial worker) evaluated in SRS risk assessments are assessed for exposure to contaminated surface soils (0 to 0.3 m [0 to 1 ft]) soils or sediments. Exposure to the all depth soil interval, which includes subsurface soils, is evaluated for the industrial worker in the PTSM evaluation according to Protocol HH-7, “Evaluation of Principal Threat Source Material (PTSM) at SRS Waste Units.” The PTSM evaluation determines if there is an unacceptable human health risk to contaminated soils at all depths should exposure occur. Core Team agreement on the receptors and exposure scenarios to be evaluated in the risk assessment is documented in the project specific scoping summary prior to development of the document.

No change to the document is proposed.

Responsible Party: Justin Steadman, (803) 952-7346, justin.steadman@srs.gov

6. There are no details presented in either the HHRA or the ecological risk assessment (ERA) on data sensitivity, with respect to comparisons of non-detected (ND) data with screening levels. *Please revise both risk assessments to discuss the evaluation of ND data.*

Response: Clarification.

A Data Usability Report was developed for the AAP and ACPRB OU and provided in the *RCRA Facility Investigation/Remedial Investigation (RFI/RI) Work Plan and RFI/RI Report with Baseline Risk Assessment and Corrective Measures Study/Feasibility Study (CMS/FS) for the A-Area Ash Pile (788-A), A-Area Coal Pile Runoff Basin (788-3A), and Stormwater Outfall A-013 (NBN) Operable Unit (SRNS-RP-2010-01457).* The DUR provides information about the data and is provided to demonstrate the adequacy, completeness, and quality of the data to support management decisions for the AAP and ACPRB OU. A sensitivity analysis was not formally conducted for the CMS/FS, however, the additional analytical data collected for the Focused Early Action CMS/FS for the FAB OU, HAB OU, and KAB OU was used to compare maximum detected concentrations of arsenic and naturally occurring radionuclide activities (ash-related constituents) to other SRS ash containing

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units and SRS background concentrations. The data and resultant RCOCs for the ash units presented in the CMS/FS are similar to previously investigated/remediated SRS ash units.

No change to the document is proposed.

Responsible Party: Susan Blas, (803) 952-6904, susan.blas@srs.gov

7. The output from ProUCL which is used in the risk assessments is not included in the report; *please revise the report to include the ProUCL output.*

Response: Agree.

The output files for the HAB, KAB, and LAB OU combined data are not included in the report due to the volume of files that are generated for each individual analyte. Rather, the results from the ProUCL software are summarized in the data table in Appendix A. For clarity, the first paragraph in Appendix A will be revised as follows:

“This appendix provides the data used in the human health risk assessment, principal threat source material evaluation, ecological risk assessment, and contaminant migration analysis for the F-Area Ash Landfill (288-F), H-Area Ash Basin (288-H), K-Area Ash Basin (188-K), and L-Area Ash Basin (188-L). Due to volume of files generated for each analyte, the output from the ProUCL software (v 5.2) for each analyte is summarized in Table A.1 presents the data summary for the 0 to 0.3 m (0 to 1 ft) interval. The investigation data is provided under separate cover on the electronic version of this document.”

Responsible Party: Susan Blas, (803) 952-6904, susan.blas@srs.gov

8. The ecological risk assessment mentions threatened and endangered species (TES) surveys conducted in the 1990s that only include plants. *Please include a TES survey for all potential ecological species of concern at SRS, as appropriate.*

Response: Agree.

Threatened, endangered, and sensitive/rare species are included in the TES survey for both flora and fauna. The description of the site is typically described based on flora to provide an overall description of the habitat that indicates fauna that may reside/visit the area.

To address this comment, the second paragraph of Section D-1.3 will be revised as follows:

“Threatened, endangered, and sensitive (TES) species surveys, including rare species, are conducted at the SRS for both flora and fauna. The description of the site is typically described based on flora observations to provide an overall description of the habitat that indicates what fauna that may reside in/visit the area. Any TES species observed

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during the survey are noted, as well as habitats that may support TES or rare species, in describing the results of the TES surveys. A Threatened, endangered, and sensitive (TES) species survey was conducted in 1994 (USFS 1994a) in and around the ACPRB. Longleaf and loblolly pines predominated. Also noted were post and turkey oak, hackberry, a variety of shrubs (including wax myrtle..."

Responsible Party: Susan Blas, (803) 952-6904, susan.blas@srs.gov

9. The uncertainties sections included in Appendix D (Ecological Risk Assessment) do not present a true consideration of uncertainties, as required by the EPA. EPA defines uncertainty as a lack of data or an incomplete understanding of the context of the risk assessment decision. It can be either qualitative or quantitative. This appendix does not discuss whether media samples/data are sufficient to support risk assessment conclusions/recommendations, or whether constituents that are missing from the evaluation(s) due to missing toxicity information might have a significant impact on the risk estimates. This information is important for making appropriate risk management decisions for the site, by placing the risk assessment results in the proper context. Therefore, *please revise the ERA to include a qualitative discussion of how the magnitude of uncertainties affects the conclusions for each constituent of potential ecological concern.*

Response: Agree.

The intent of the ERA is to compile and assess risk based on established regulatory accepted thresholds. As such, there are constituents that do not have a threshold from which to compare, and this is an inherent uncertainty within the established risk assessment process. To address this comment, the following text will be added after the first set of bullets in Section D-2.3:

"There is uncertainty associated with the screening thresholds, ESVs and TRVs, used in this ERA because the toxicity data are not unit specific. There are also limitations in toxicity values from the established sources used that may not include variations in physiological or biochemical factors that may influence the risk among species, behavioral and ecological parameters that may make a species' sensitivity to a contaminant different from that of the test organism, limited information on long-term effects on natural populations, or the exposure of the receptors based on contaminant distribution within the landscape in relation to the receptors' movement/exposure within the landscape. In addition, the ERA estimates the risk to populations of ecological receptors from individual contaminants and although cumulative risk is possible with exposure to multiple contaminants simultaneously, these effects are not addressed and can be antagonistic or synergistic, resulting in differing threats from exposure. Finally, the lack of toxicity thresholds adds to the uncertainty of assessing risk. If an ESV/TRV is not available, there is uncertainty in assessing the risk to

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receptors because of the lack of thresholds from which to compare and is documented in the lines of evidence presented in the uncertainty discussion. These uncertainties may under- or over-represent the risk to receptors, but the ERA presented herein follows the currently accepted approach and methodologies to assessing risk to support informed management decisions for the Remaining Coal Ash/Coal Fines OUs.”

Responsible Party: Susan Blas, (803) 952-6904, susan.blas@srs.gov

SPECIFIC COMMENTS

- 1. Section 1.2.1, Operable Unit Description, Page 1-14 of 1-24:** The text states that ash/soil samples were collected at the A-Area Ash Pile (AAP) and A-Area Coal Pile Runoff Basin (ACPRB) OU in 2008, but a brief summary of the number, locations, and depths of the samples is not provided. *Please revise this section to give an overview of the samples collected at the AAP and ACPRB OU.*

Response: Agree.

The Data Evaluation subsection of Section 1.2.1 Operable Unit Description will be revised to state, (beginning at the first sentence):

“The AAP and ACPRB OU was investigated via the RI/FS process in 2008. The investigation characterization of the AAP was conducted in 2009 and included ash and soil samples from five borehole locations. Ash samples were collected from 0 to 0.3 m (0 to 1 ft), 0.3 to 1.2 m (1 to 4 ft), and 2.4 to 3.0 m (8 to 10 ft) bgs and directly above the ash/soil contact. The soil intervals (native material below the ash) were collected from the 0 to 0.3 m (0 to 1 ft), 0.3 to 1.2 m (1 to 4 ft), 1.8 to 2.4 m (6 to 8 ft), and 3.0 to 3.7 m (10 to 12 ft) bgs. In total 21 ash and 18 soil samples were collected from the AAP.

Characterization of the ACPRB include sampling of sediment/coal fines, soil, surface water, and groundwater. Four locations within the basin were sampled at six depth intervals for a total depth of 6.1 m (20 ft) bgs. In addition, soil was collected from one sample location adjacent to the basin at four depth intervals to a total depth of 3.7 m (12 ft) bgs. In total, 29 sediment/coal fines/soil samples were collected. Ash/soil samples were collected at both units...

Responsible Party: Susan Blas, (803) 952-6904, susan.blas@srs.gov

- 2. Section 2.2, General Response Actions, Pages 2-5 to 2-7 of 2-10:** According to Section 2.2 (General Response Actions) of Format F-4 of the EC&ACP Regulatory Document Handbook, this section should discuss the estimated area or volume where the identified response actions (e.g., treatment, containment, or exposure technologies) may be applied. For example, it is unclear whether excavation may be applied to all areas of the H-Area Ash Basin, such as where

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ash was found in the Carolina Bay and where standing water is present. *Please revise this section to include discussion of the estimated area or volume to which the response actions can be applied.*

Response: Agree.

The intent is for clean closure for all the units associated with the CMS/FS, ash deposits within the Carolina bay and standing water areas included. The intent is also to consider Carolina bay restoration for the HAB OU. A detailed wetland assessment will be required to support both the closure and post-closure activities associated with the HAB OU for the CMIP/RAIP at the time of future beneficial reuse.

The level of detail added with the estimated areas and volumes are more appropriate for inclusion in Section 3.1, Development of Alternatives, rather than Section 2.2, General Response Actions.

The second paragraph in Section 3.1.2 *Alternative A-2: LUCs with Beneficial Reuse* will be revised as follows:

“...Proposed LUC boundaries are provided in Figures 22 – 26. LUCs would be applied to the entire area of ash and coal fines within and outside of the unit boundaries. The estimated area for LUCs includes ~1.03 ha (2.55 ac) for AAP, ~1.06 ha (2.62 ac) for ACPRB, ~7.48 ha (18.48 ac) for FAL OU, ~12.73 ha (31.46 ac) for HAB OU, ~6.06 ha (14.97 ac) for KAB OU, and ~7.80 ha (19.28 ac) for LAB OU. The unit-specific LUCs for the ash sites will be included in the ROD. ...”

The third paragraph in Section 3.1.2 *Alternative A-2: LUCs with Beneficial Reuse* will be revised as follows:

“...Phase 2 of the implementation includes excavation of the ash and its beneficial reuse. Excavation would be applied to the full volumes of ash and coal fines within and outside of the unit boundaries (~53,519 m³ [70,000 yd³] for AAP, ~7,646 m³ [10,000 yd³] for ACPRB, ~163,201 m³ [213,459 yd³] for FAL OU, ~198,105 m³ [259,112 yd³] for HAB OU, ~208,362 m³ [272,527 yd³] for KAB OU, and ~246,971 m³ [323,026 yd³] for LAB OU). Excavation of ash material to allow for unrestricted use is the goal. ...”

The first, second, and third paragraphs in Section 3.1.3 *Alternative A-3: Class III Cover with LUCs* will be revised as follows, respectively:

“...Instead, the ash from AAP would be excavated and hauled to the ACPRB to be placed under a cover system. Containment would apply to the area of the boundary of ACPRB, ~1.06 ha (2.62 ac).”

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... LUCs as part of Alternative A-3 would include the posting of warning signs, establishment of administrative controls, and establishment of deed restrictions. LUCs would be applied to the entire area of ash and coal fines within and outside of the unit boundaries (~1.06 ha [2.62 ac] for ACPRB, ~7.48 ha [18.48 ac] for FAL OU, ~12.73 ha [31.46 ac] for HAB OU, ~6.06 ha [14.97 ac] for KAB OU, and ~7.80 ha [19.28 ac] for LAB OU). Proposed LUC boundaries are provided in Figures 22 – 26. ...

...Ash located outside of the OUs would be consolidated as appropriate under the cover system. Containment would be applied to the full area of the unit boundary of FAL OU, ~7.48 ha (18.48 ac). To minimize the cover areas, the ash would be consolidated to one side of each ash basin. Containment would apply to the consolidated areas of ~6.35 ha (15.70 ac) for HAB OU, ~3.04 ha (7.50 ac) for KAB OU, and ~3.88 ha (9.60 ac) for LAB OU. The area where the ash was removed would be clean closed....”

Responsible Party: Erin McCormick, (803) 952-6533, erin.mccormick@srs.gov

3. **Section 3.1.2, Alternative A-2: LUCs with Beneficial Reuse, Pages 3-2 to 3-8:** The description of the Phase II excavations indicates that unrestricted use of the ash units is the goal, but confirmation sampling of the underlying soil is not discussed. The surrounding soil should be sampled after the coal ash has been removed and prior to restoration of the ash units. In addition, “confirmation sampling” is identified in the cost estimate in Appendix H (Detailed Cost Estimates), but it is unclear if this refers to soil sampling or sampling of the ash material for its beneficial reuse as lower fill (i.e., the additional testing discussed in the following paragraph). *Please revise this section and the cost estimate as necessary to include confirmation soil sampling to ensure the ash units are restored to unrestricted use levels.*

Response: Agree.

The cost estimate includes the collection of surface samples at the FAL OU, HAB OU, KAB OU, and LAB OU as approved by the Core Team in the SAP for the ash units (SRNS-RP-2019-00798).

For clarity, the third paragraph in Section 3.1.2 will be revised as follows:

“Phase 2 of the implementation includes excavation of the ash and its beneficial reuse. Excavation of ash material to allow for unrestricted use is the goal. Following completion of the excavation activities, confirmation sampling will be performed. After sampling indicates cleanup levels have been achieved, the ash units will be restored (i.e., contoured for proper drainage and revegetated as necessary).

Responsible Party: Eric Schiefer, (803) 952-6273, eric.schiefer@srs.gov

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4. **Figure 10, Preliminary CSM for the A-Area Ash Pile, Page 5-15 of 5-62; Figure 11, Preliminary CSM for the A-Area Coal Pile Runoff Basin, Page 5-16 of 5-62; Figure 12, Preliminary CSM for F-Area Ash Landfill OU, Page 5-17 of 5-62; Figure 13, Preliminary CSM for H-Area Ash Basin OU, Page 5-18 of 5-62; Figure 14, Preliminary CSM for K-Area Ash Basin OU, Page 5-19 of 5-62; Page 15, Preliminary CSM for L-Area Ash Basin OU, Page 5-20 of 5-62:** None of the conceptual site models (CSMs) in these figures shows a complete exposure pathway for residents exposed to subsurface soil; as discussed previously, the entire soil column may be an exposure unit for future residents. *Please replace the dashes (“incomplete exposure pathway”) in the boxes for future residents with filled circles, indicating complete exposure pathway for quantitative exposure.*

Response: Clarification.

Please refer to the response to General Comment #5. Standard exposure scenarios for SRS human receptors were agreed to by the Core Team as documented in the *EC&ACP Regulatory Document Handbook*, Protocol HH-2, “Human Health Receptors and Scenarios.” The human health receptors (future resident and industrial worker) evaluated in SRS risk assessments are assessed for exposure to contaminated surface soils (0 to 0.3 m [0 to 1 ft]) or sediments. Exposure to the all-depth soil interval, which includes subsurface soils, is evaluated for the industrial worker in the PTSM evaluation according to Protocol HH-7, “Evaluation of Principal Threat Source Material (PTSM) at SRS Waste Units”. In accordance with the approved human health protocols, the CSMs are correct as presented.

No change to the document is proposed.

Responsible Party: Justin Steadman, (803) 952-7346, justin.steadman@srs.gov

5. **Table 6, Summary of the Screening of Technologies for the Remaining Coal Ash and Coal Fines Operable Units, Pages 5-55 to 5-62:** The descriptions of the effectiveness, implementability, and cost are not always discussed in the appropriate columns. For example, the effectiveness of institutional controls is not discussed in the Effectiveness column and instead the text states that it is low cost. *Please revise this table to discuss the effectiveness, implementability, and cost of each general response action in the appropriate columns.*

Response: Agree.

The revised Table 6 is provided at the end of these comment responses and will be included in the Revision 1 document.

Responsible Party: Eric Schiefer, (803) 952-6273, eric.schiefer@srs.gov

6. **Appendix B, Contaminant Migration Model, Section B-2.4, Modeling Parameters for the FAL, HAB, KAB, and LAB OUs, Page B-24 of B-86:** The text states that a more representative
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source thickness was used for the Tier II simulations, but it is unclear what thicknesses were used at each OU as this is not specified in Section B-2.5 (Results of the Tier I and Tier II Analyses). *Revise Appendix B to specify the source thicknesses used for each OU in the Tier II screening and discuss how they were selected as more representative thicknesses.*

Response: Clarification.

The text identified in Section B-2.4 was intended to provide an example of revisions that could be made to the model input parameters when performing subsequent Tier II Simulations. In the contaminant migration assessments for the FAL OU, HAB OU, KAB OU, and the LAB OU, no revisions were made to the source thicknesses in any model simulations. For clarity, the text will be revised to remove this example as provided below:

Section B-2.4, Bullet 5:

“VZCOMML© model was refined for a Tier II Simulation 2 of the Tier II CM COPCs identified in Step 4 to reduce the high level of conservatism, where justified by site specific data (i.e.g., using the average or 95% UCL concentration when the maximum value is not representative of a large OU as a whole; ~~using a more representative source thickness for a constituent only observed in surface soils~~). The Tier II Simulation 2 represents more realistic conditions than the maximally conservative conditions in Step 4. Analytes predicted to adversely impact groundwater in Simulation 2 were retained as CM COCs.”

Responsible Party: Adam Willey, (803) 646-4944, adam.willey@srs.gov

7. **Appendix B, Contaminant Migration Model, Section B-2.6.1, HAB OU Uncertainty Analysis, Page B-29 of B-86:** The discussion for Uranium-235 indicates that it was not retained as a contaminant migration (CM) refined constituent of concern (RCOC) because it was only detected one time out of the nine samples collected. This may indeed be the case, however, the sensitivity of the detection is not discussed. This section states that the detection (0.56 picocurie per gram [pCi/g]) is qualified as estimated and exceeds the maximum SRS background uranium-235 activity concentration of 0.17 pCi/g. It is unclear if the detection limit is sensitive enough to detect uranium-235 at the level of the background concentration. *Revise this section to discuss the sensitivity of the uranium-235 results to support the removal of this CM RCOC based on the frequency of detection.*

Response: Agree.

The estimated uranium-235 (U-235) result had a minimum detectable activity (MDA) of 0.21 pCi/g. MDAs for the nine consolidated samples ranged from 0.21 pCi/g to 0.66 pCi/g. This range is above the maximum SRS background for U-235 (0.17 pCi/g), indicating the results were not sensitive enough to detect U-235 at or below background levels.

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VZCOMML simulations for the CM analysis were performed using the one estimated result of 0.56 pCi/g. The simulation was rerun using the maximum SRS background for U-235 (0.17 pCi/g) and failed the Tier I and Tier II simulations. Because the U-235 MDAs for the consolidated dataset are not sensitive enough to detect U-235 at activity concentrations great enough to be problems warranting action, the uncertainty will be revised to include U-235 as a CM RCOC. The text in Appendix B will be revised as follows:

“Uranium-235 was detected in one of the nine consolidated ash samples with an estimated result (J-qualified) of 0.56 pCi/g. For the estimated result, the minimum detectable activity (MDA) was 0.21 pCi/g and the range of uranium-235 MDAs for all nine consolidated samples was 0.21 pCi/g to 0.66 pCi/g (Table B-13). The detected sample was from the LAB OU. The detected result and the MDAs for all consolidated samples are is greater than the maximum SRS background uranium-235 activity concentration of 0.17 pCi/g (WSRC 2006). For all nine samples in the consolidated dataset, the uranium-235 results were not sensitive enough to detect background levels. The detected result and the maximum SRS background uranium-235 result did not pass the VZCOMML[®] Tier II simulation screen, with predicted groundwater concentrations exceeding screening levels in the aquifer at 845 years. Due to the mentioned lines of evidence, uranium-235 was retained as a CM RCOC for the HAB OU. The Tier II SSL_{T1/2} (i.e., CM PRG) determined for uranium-235 at the HAB OU is 3.36E-02 pCi/g. Uranium is a naturally occurring constituent that is common in the environment. Uranium-235 was not retained as a CM RCOC for the HAB OU based on the following lines of evidence:

- ~~• It was only detected in one of nine consolidated ash/soil samples with an estimated value (J-qualified).~~
- ~~• It is a naturally occurring constituent that is common in SRS background soils.”~~

Text throughout the CMS/FS document and Appendix B will be revised to reflect the change.

Responsible Party: Adam Willey, (803) 646-4944, adam.willey@srs.gov

8. **Appendix C, Human Health Risk Assessment, Section C-1, Introduction, Page C-7 of C-152:** The guidance document(s) used to conduct the HHRA are not stated in the introduction. *Please revise this section accordingly.*

Response: Agree.

The first paragraph in Section C-1 will be revised as follows:

“...problems warranting action from a human health standpoint to support subsequent

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remediation as deemed necessary. The human health risk assessment for the remaining coal ash and coal fines OUs is conducted per the approved protocols outlined in the Environmental Compliance and Area Completion Projects Regulatory Document Handbook (SRNS 2023b).

Responsible Party: Justin Steadman, (803) 952-7346, justin.steadman@srs.gov

9. **Appendix C, Human Health Risk Assessment, Section C-2.1.1, Constituents of Potential Concern, Page C-14 of C-52, and Table C-2, Human Health COPC Screening for HAB, KAB, and LAB OUs Ash/Soil Media (0 to 0.3 m [0 to 1 ft]), Page C-35 of C-52:** This section states that nonradiological constituents were compared to the target hazard quotient of 0.1 residential soil Regional Screening Levels (RSLs); however, Table C-2 shows some constituents being compared to RSL x 0.1 (i.e., THQ = 0.1) and others being compared to the RSL (i.e., THQ = 1), without any rationale presented for this approach. EPA requires that all sites with multiple potential constituents of concern be screened at the THQ = 0.1 level; therefore, *please revise Table C-2 to screen all constituents at THQ = 0.1 and report exceedances accordingly.*

Response: Agree.

Section C-2.1.1 states, “Maximum detected concentrations of nonradiological constituents were compared to the hazard quotient (HQ) = 0.1 residential soil RSLs for noncarcinogens; for carcinogens, the residential soil RSL is used as a screening threshold.” Per the approved EC&ACP Regulatory Document Handbook, Protocol HH-4, Human Health Constituents of Potential Concern, if a substance causes both cancer and noncancer (systemic) effects, the more stringent criteria shall take precedence. This screening methodology was applied to constituents screened in Table C-2. For example, chromium is both a carcinogen (Cr VI Residential RSL = 0.3 mg/kg) and a noncarcinogen (Cr VI Residential RSL = 234 mg/kg). For screening purposes, the more stringent carcinogen RSL was used in place of a noncarcinogen HQ = 0.1 (23.4 mg/kg). Footnote 2 in Table C-2 refers to Attachment C-1 as the source for the RSL default values.

For clarity, the text in Section C-2.1.1 will be revised as follows:

“...Maximum detected concentrations of nonradiological constituents were compared to the hazard quotient (HQ) = 0.1 residential soil RSLs for noncarcinogens; for carcinogens, the residential soil RSL is used as a screening threshold. If a substance causes both cancer and noncancer (systemic) effects, the more stringent criteria shall take precedence. Maximum detected activity concentrations of...”

Responsible Party: Justin Steadman, (803) 952-7346, justin.steadman@srs.gov

10. **Appendix C, Human Health Risk Assessment, Section C-2.1.2, Risk/Hazard Calculation, Page C-14 of C-52:** The equation for carcinogenic risk estimates shown at the bottom of this
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page contains an error; it currently shows multiplication by 1E-0, but should show multiplication by 1E-06. *Please correct this equation.*

Response: Agree.

The equation for carcinogenic risk estimate will be revised to show a multiplication by 1E-06.

Responsible Party: Justin Steadman, (803) 952-7346, justin.steadman@srs.gov

11. **Appendix D, Ecological Risk Assessment, Section D-1, Introduction, Page D-9 of D-112:** The guidance document(s) used to conduct the ERA are not stated in the introduction. *Please revise this section accordingly.*

Response: Agree.

Section D-1 will be revised to include the following text at the beginning of the second paragraph:

“The ERA process is conducted in accordance with the protocols in the *Environmental Compliance Area Completion Projects (EC&ACP) Regulatory Document Handbook (SRNS 2023)* and the preliminary conceptual site model (CSM)...”

Responsible Party: Susan Blas, (803) 952-6904, susan.blas@srs.gov

12. **Appendix D, Ecological Risk Assessment, Section D-2.3.3, Uncertainty Discussion for the Soil Medium for the FAL, HAB, KAB, and LAB OUs, Page D-25, etc. of D-112:** The lack of an ecological screening value for a potential constituent of concern is not an appropriate criterion for recommending no further remedial evaluation. Instead, the magnitude of uncertainty associated with not evaluating one or more constituents should be discussed and weighed to determine whether there is a significant impact to the risk estimates. Therefore, *please revise this section for all constituents where there is no screening value by removing this statement and adding a brief toxicity discussion to justify the recommendation of no further remedial evaluation in conjunction with any other evidence (e.g., non-exceedance of background concentration, etc.).*

Response: Agree.

It is the intent of the ERA to compile and assess risk based on regulatory accepted established thresholds. As such, there are constituents that do not have an ERA threshold from which to compare, and this is an inherent uncertainty within the established risk assessment process. It is important to identify constituents that do not have a screening value.

To address this comment, the discussion in Section D-2.3.2 will be expanded as follows:

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“Using EPC values (i.e., 95% UCL on the mean), Table D-2 identifies the following constituents as COPCs based on RSV screening in the 0 to 0.3 m (0 to 1 ft) soil interval: arsenic, selenium, and vanadium. The following constituents are also considered COPCs since RSV thresholds are not available: aluminum, di-n-butylphthalate, iron, actinium-228 bismuth-212, bismuth-214, lead-212, lead-214, potassium-40, and thallium-208.

It is the intent of the ERA to compile and assess risk based on regulatory accepted established thresholds. However, there are constituents that do not have an ERA threshold from which to compare, and this is an inherent uncertainty within the established risk assessment process.”

Responsible Party: Susan Blas, (803) 952-6904, susan.blas@srs.gov

13. **Appendix D, Ecological Risk Assessment, Section D-2.3.4, AAP and ACPRB OU – Soil Medium, Page D-31 of D-112:** It is uncertain why sediment and surface water results are included in this section. Based on the CSMs, there are no complete aquatic exposure pathways on the site. Section D-1.3, Habitats/Receptors/Preliminary Assessment and Measurement Endpoints, mentions that there was marginal aquatic habitat present in this part of the site at one time, but it has become much less appreciable through secondary succession. *Please either revise this section by removing all discussions of risk results based on aquatic exposure pathways, or add a new symbol to the appropriate CSM, indicating that the aquatic exposure pathways were once considered complete but are not currently operating.*

Response: Agree.

The CSMs will be revised to shade the boxes for the aquatic receptor in gray. A footnote will be added to define the gray shaded boxes as, “indicates that the receptor and media scenarios were considered but are not applicable to the unit.”

Responsible Party: Susan Blas, (803) 952-6904, susan.blas@srs.gov

14. **Appendix E, Principal Threat Source Material Evaluation, Attachment 1, Default Regional Screening Levels (RSLs) for Composite Worker (i.e., Industrial Worker) Scenario, Page E-27 of E-32:** Screening against RSLs was conducted using THQ = 1; however, as discussed previously, screening should be conducted using THQ = 0.1. *Please rescreen the soil data used in the Principal Threat Source Material (PTSM) Evaluation using RSLs THQ = 0.1.*

Response: Clarification.

The PTSM evaluation is based on the approved *EC&ACP Regulatory Document Handbook, Protocol HH-7, Evaluation of PTSM at SRS Waste Units*. The purpose of the PTSM evaluation is to identify source materials present at a waste unit considered to be highly

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toxic or mobile. USEPA guidance states that treatment alternatives for source materials should generally be evaluated when the combined toxicity and mobility pose a potential risk of 1E-03 (i.e., Hazard Index [HI] = 10 equivalency for noncarcinogens) or greater.

Unlike the COPC screen, constituents are not screened from further consideration based on an RSL or PRG screen. Rather, a toxicity or risk calculation is performed for every detected constituent from all depth intervals. For noncarcinogens, the toxicity calculation is the ratio of the EPC over the RSL to determine the hazard quotient (HQ). These HQs are summed to derive the cumulative HI. Constituents that exceed an HQ of 1 (i.e., exceed the toxicity threshold) with a cumulative HI = 10 are further evaluated to help the project-specific core team make a determination as to the presence of PTSM at the unit. For these reasons, screening against the RSL based on a hazard quotient equal to 0.1 is not appropriate for the PTSM evaluation.

No change to the document is proposed.

Responsible Party: Justin Steadman, (803) 952-7346, justin.steadman@srs.gov

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(Specific Comment #5)

Table 6. Summary of the Screening of Technologies for the Remaining Coal Ash and Coal Fines Operable Units

General Response Action	Remedial Technology	Effectiveness	Implementability	Cost	Technology Status
No Action	None	No action is required by National Hazardous Substances Pollution Contingency Plan (NCP) to serve as a baseline against other technologies and alternatives. Not effective in meeting RAOs; readily implementable. Low cost.	Requires no implementation. No efforts would be taken to monitor, remove, treat, or otherwise mitigate the potential spread of contaminants	None	Retained
Land Use Controls	Institutional Controls (i.e., Administrative Controls)	Administrative controls provided by SRS Site Use/Site Clearance procedures; work controls; mandatory worker use of health and safety plans; SRS access controls including security procedures; 24-hour surveillance; controlled entry systems; and warning signs at SRS boundary. <u>Effective in restricting land use.</u> Low cost.	Readily implemented. Compliance with the various controls and programs must be enforced for this technology to effectively deter site entry.	Low	Retained
	Engineering Controls (i.e., Access Controls)	Engineering controls - Installation of barriers and signs for access control. Effective in restricting land use. Readily implemented. Low cost.	Readily implemented. Regular inspections, monitoring, and maintenance of access controls must be implemented for this technology to effectively deter site entry	Low	Retained

**SRS Responses to USEPA Comments on the Focused Early Action Corrective Measures Study/Feasibility Study in Support of Beneficial Reuse of Select Coal Ash and Coal Fines at the A-Area Ash Pile (788-A), A-Area Coal Pile Runoff Basin (788-3A), F-Area Ash Landfill (288-F), H-Area Ash Basin (288-H), K-Area Ash Basin (188-K), and L-Area Ash Basin (188-L) Operable Units, SEMS Numbers: 61, 62, 88, 90 and 91, SRNS RP-2024-00222, Revision 0, Dated October 2024
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Table 6. Summary of the Screening of Technologies for the Remaining Coal Ash and Coal Fines Operable Units (Continued/End)

General Response Action	Remedial Technology	Effectiveness	Implementability	Cost	Technology Status
Containment	Low permeability soil cover system or capping	The effectiveness of containment technologies depends upon the materials used and the design and effectiveness of the soil cover. Cover integrity must be maintained for as long as contaminants will persist or until degradation or decay of the contaminants renders them harmless. Maintenance activities include inspections and monitoring for settlement and erosion. Land use controls would be required in conjunction with a containment remedy.	Readily implementable but would require a planned design and confirmation of placement of the soil layer followed by long term O&M of the cover system.	High	Retained
Excavation and offsite disposal	Excavation	Removing contaminated ash media would eliminate exposure of human receptors to contaminants in soil. Short-term exposure is limited to worker construction and implementation. Effective in Long term. e Exposure is eliminated by removal of contaminated ash/ sediments.	Readily implementable by excavating contaminated ash media and disposing in an approved disposal facility. The earthwork required for excavating the contaminated media is a standard construction practice and readily accomplished.	High	Retained for beneficial reuse.

SRS Responses to USEPA Comments on the Focused Early Action Corrective Measures Study/Feasibility Study in Support of Beneficial Reuse of Select Coal Ash and Coal Fines at the A-Area Ash Pile (788-A), A-Area Coal Pile Runoff Basin (788-3A), F-Area Ash Landfill (288-F), H-Area Ash Basin (288-H), K-Area Ash Basin (188-K), and L-Area Ash Basin (188-L) Operable Units, SEMS Numbers: 61, 62, 88, 90 and 91, SRNS RP-2024-00222,

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(General Comment #1)

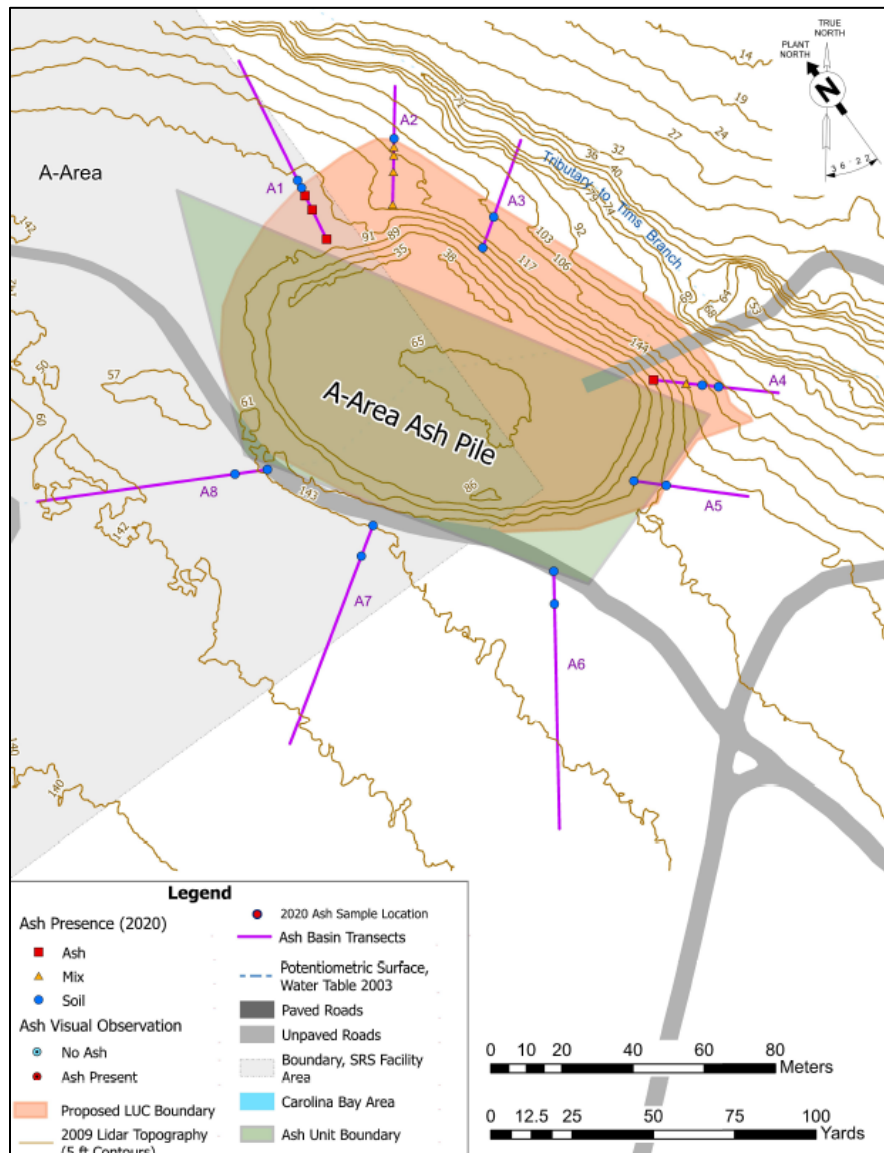


Figure 3. A-Area Ash Pile Topography and Ash Observation Transects

**SRS Responses to USEPA Comments on the Focused Early Action Corrective Measures Study/Feasibility Study in Support of Beneficial Reuse of Select Coal Ash and Coal Fines at the A-Area Ash Pile (788-A), A-Area Coal Pile Runoff Basin (788-3A), F-Area Ash Landfill (288-F), H-Area Ash Basin (288-H), K-Area Ash Basin (188-K), and L-Area Ash Basin (188-L) Operable Units, SEMS Numbers: 61, 62, 88, 90 and 91, SRNS RP-2024-00222, Revision 0, Dated October 2024
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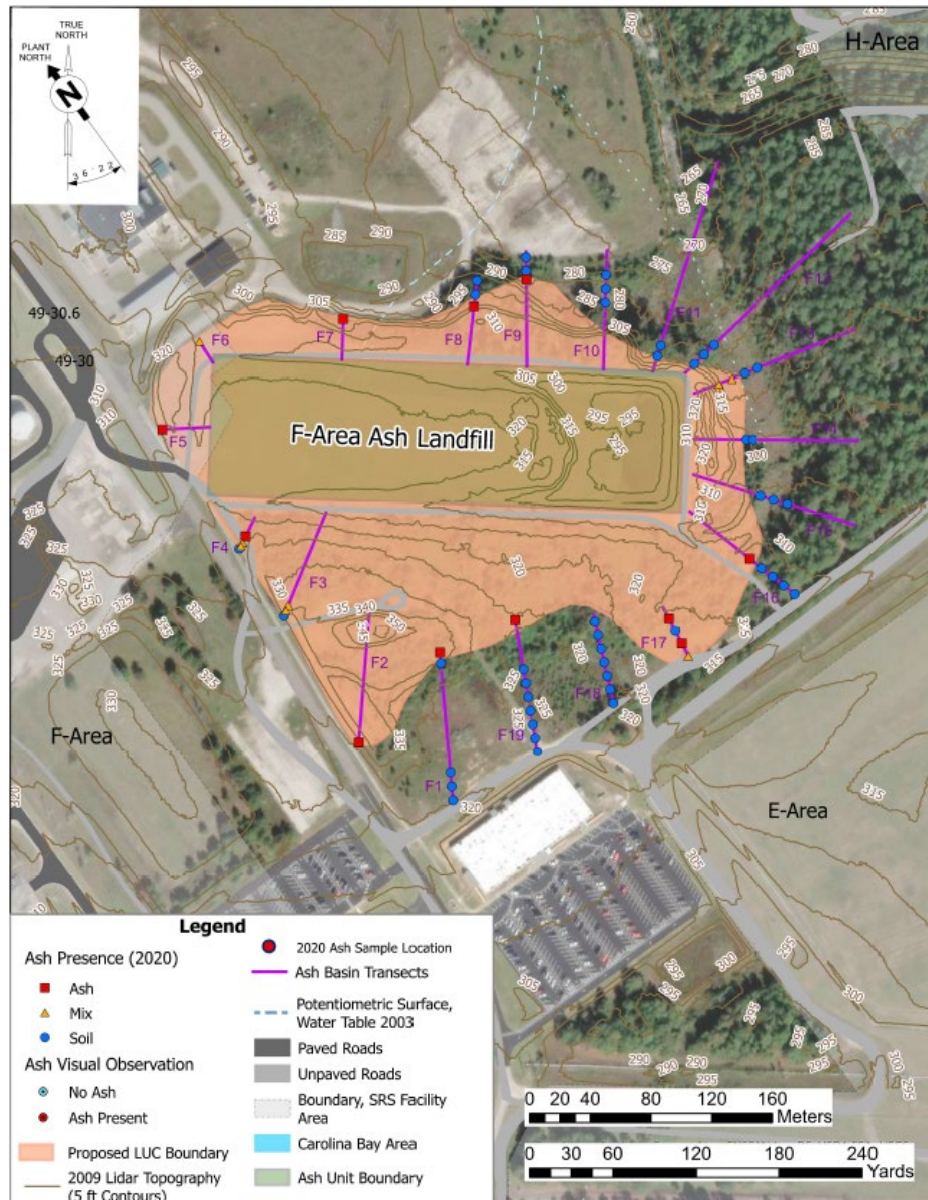


Figure 5. F-Area Ash Landfill OU Topography and Ash Observation Transects

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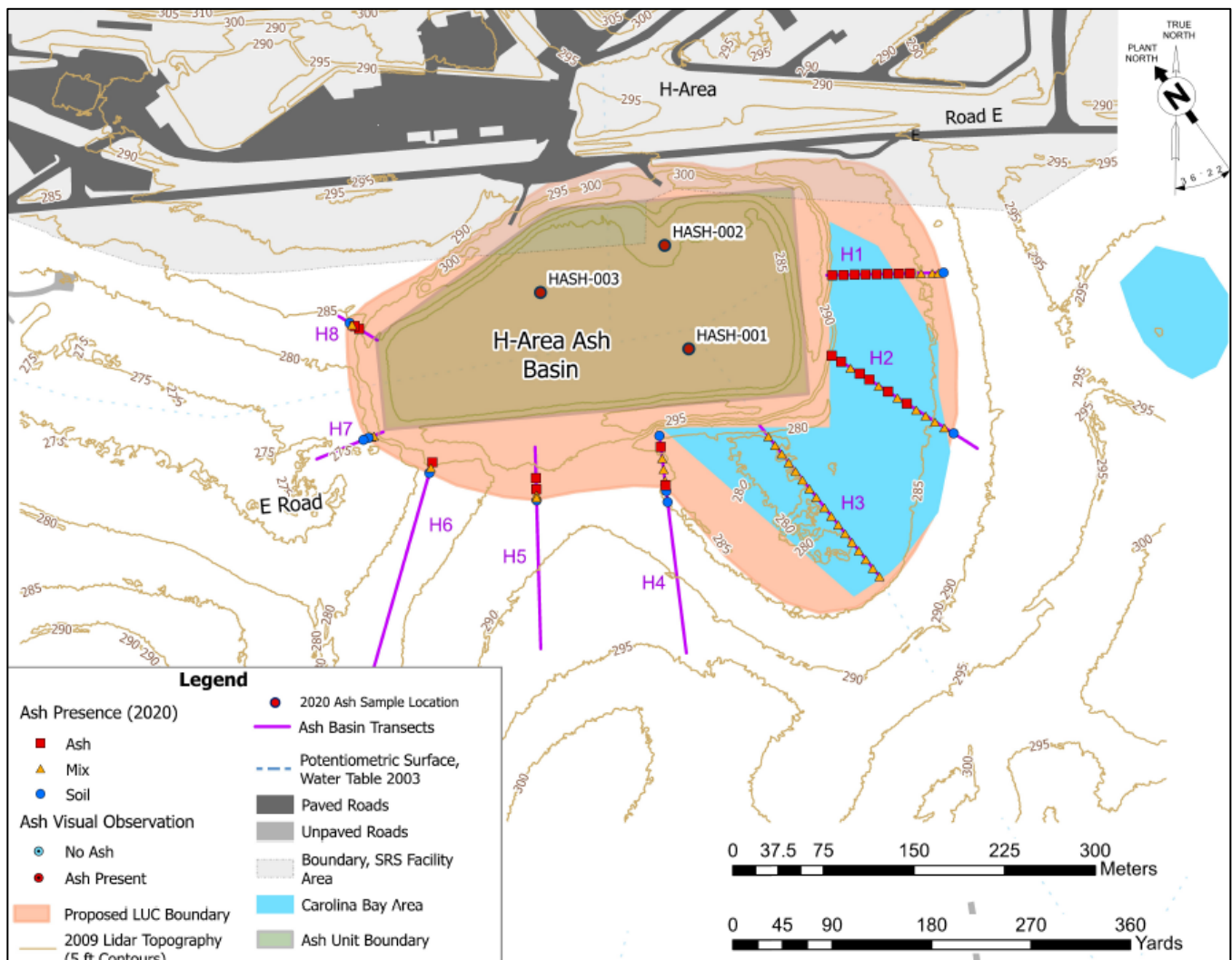


Figure 6. H-Area Ash Basin OU Topography and Ash Observation Transects

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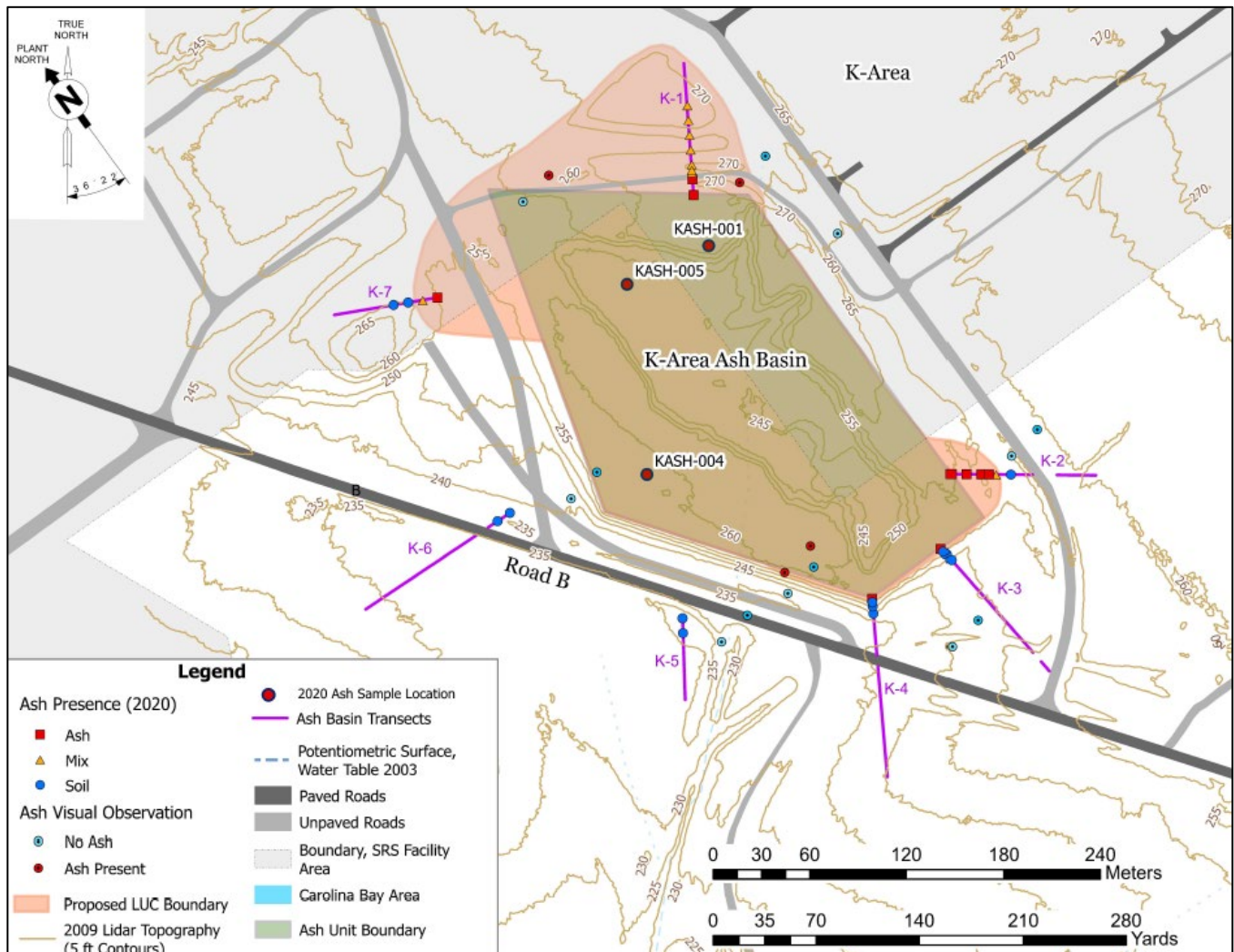


Figure 7. K-Area Ash Basin OU Topography and Ash Observation Transects

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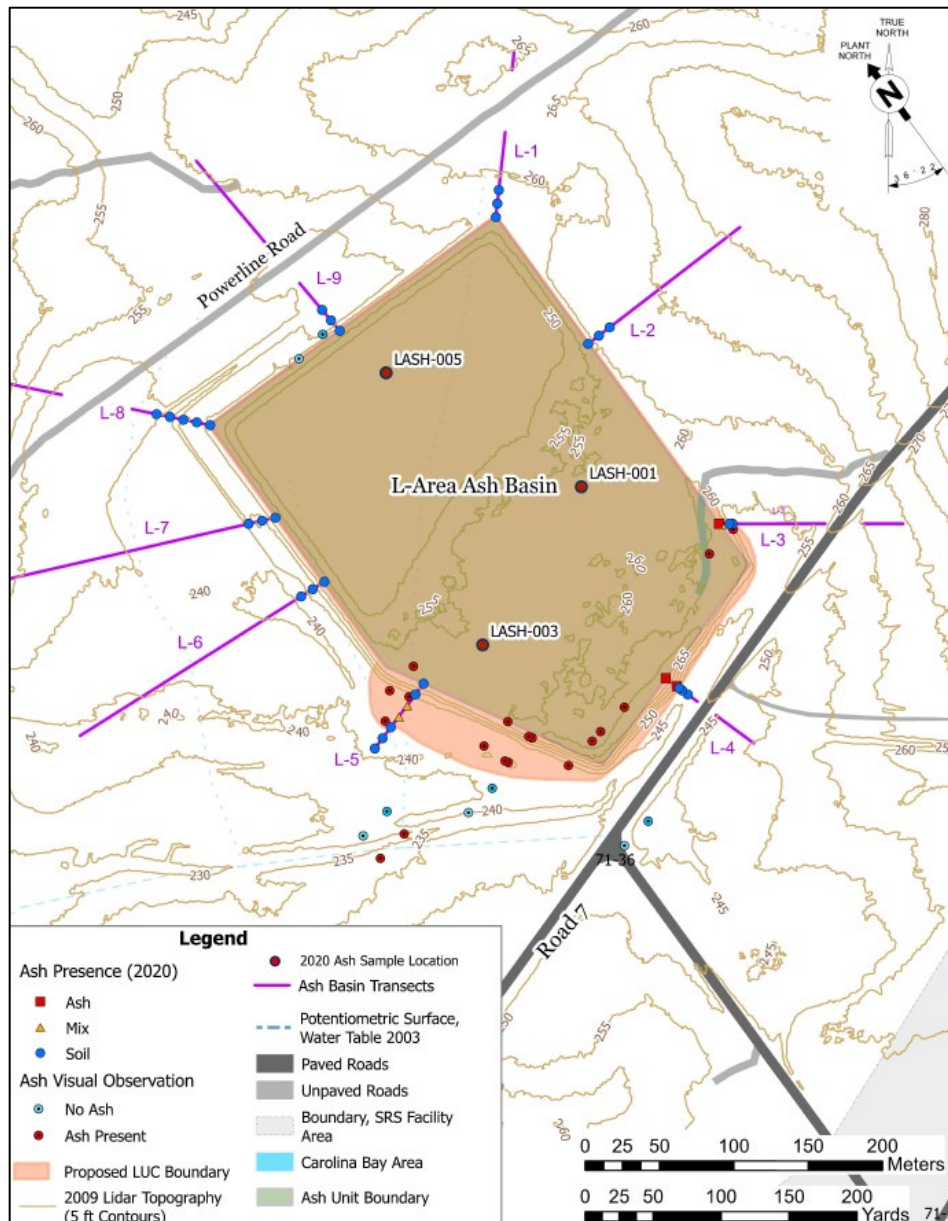


Figure 8. L-Area Ash Basin OU Topography and Ash Observation Transects

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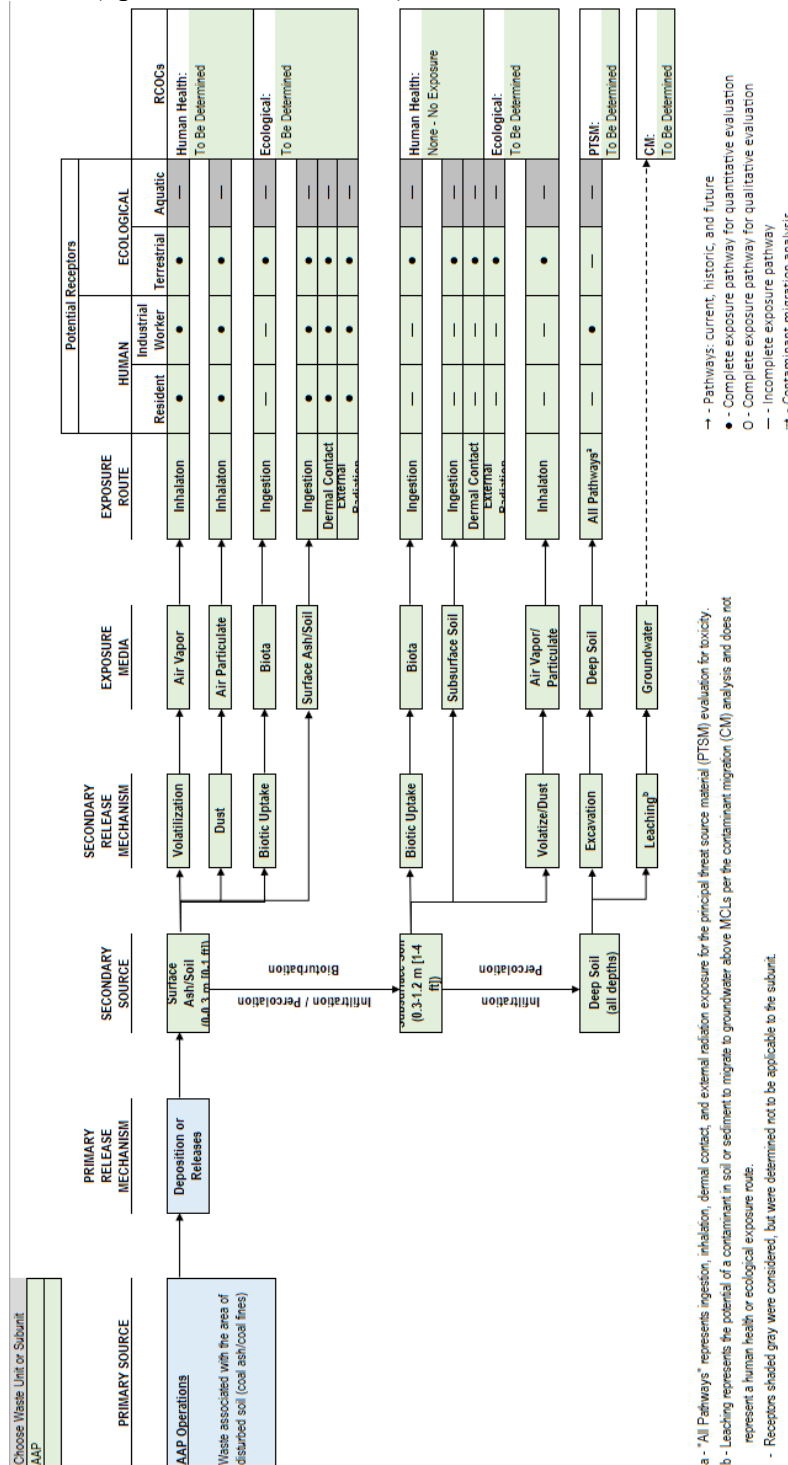
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Revised Preliminary CSMs (Specific Comment #13)



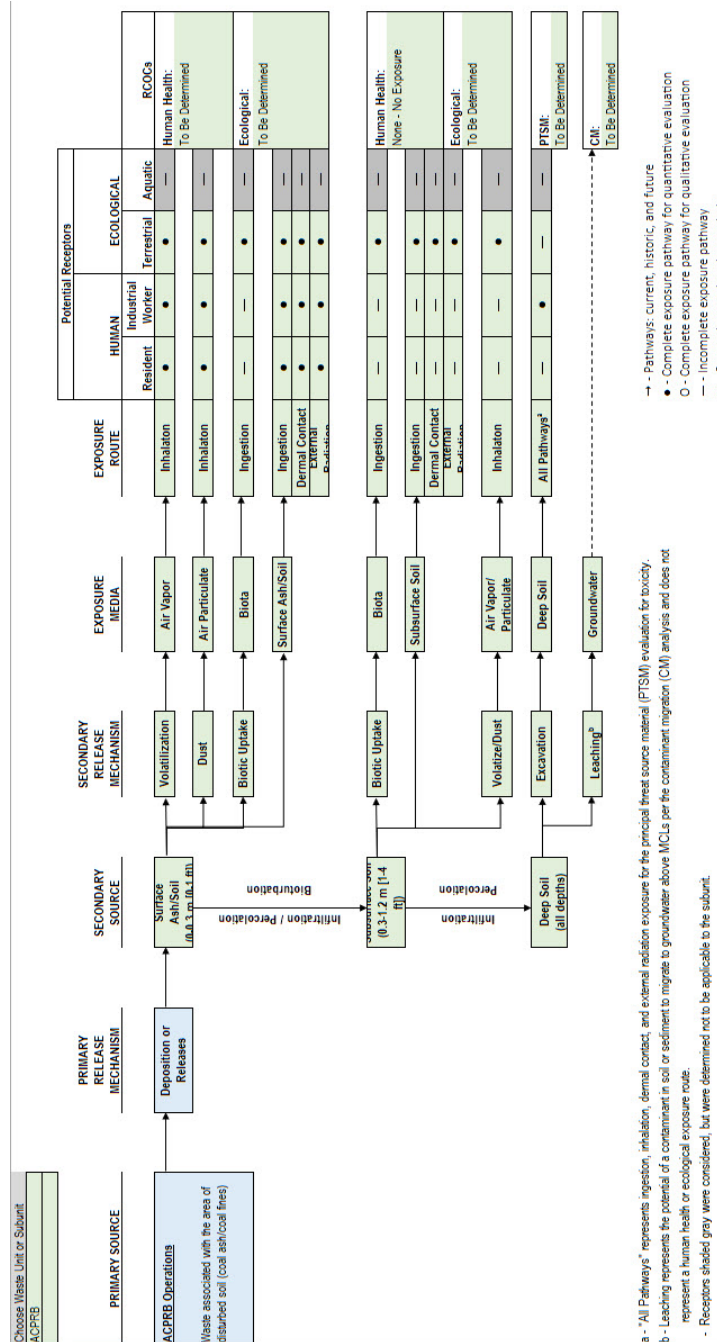
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 b - Leaching represents the potential of a contaminant in soil or sediment to migrate to groundwater above MCLs per the contaminant migration (CM) analysis and does not represent a human health or ecological exposure route.
 - Receptors shaded gray were considered, but were determined not to be applicable to the substance.

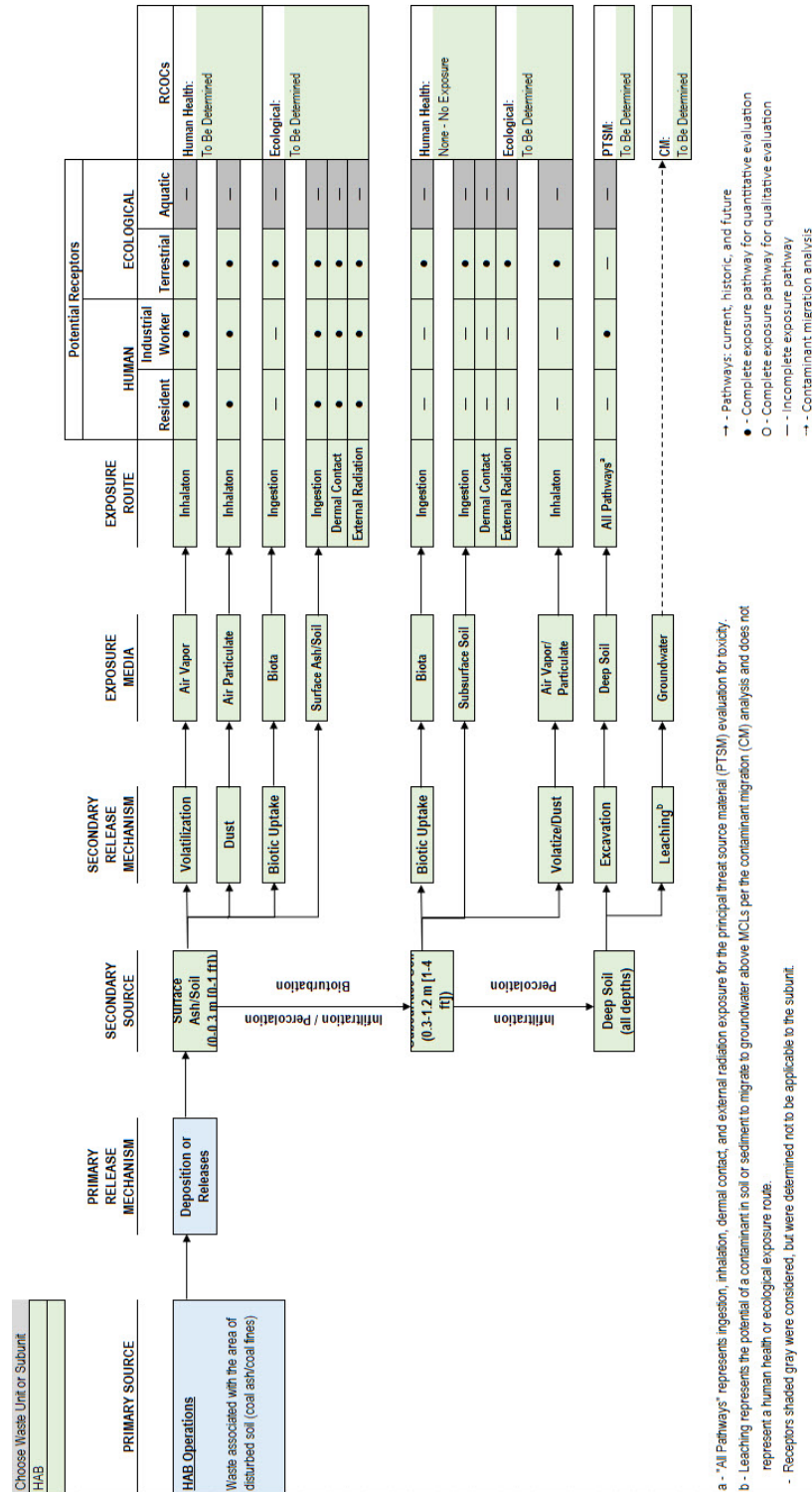
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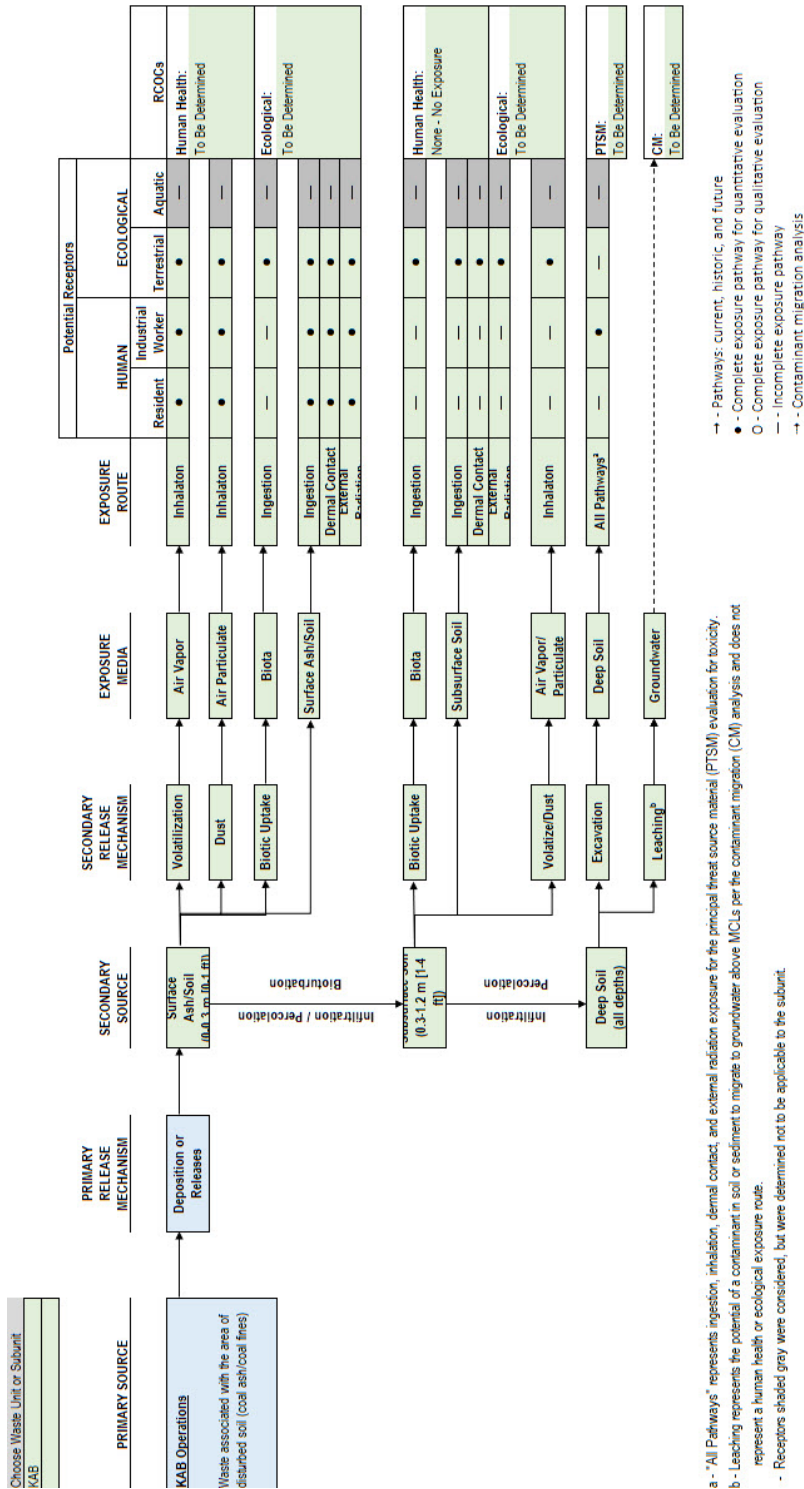
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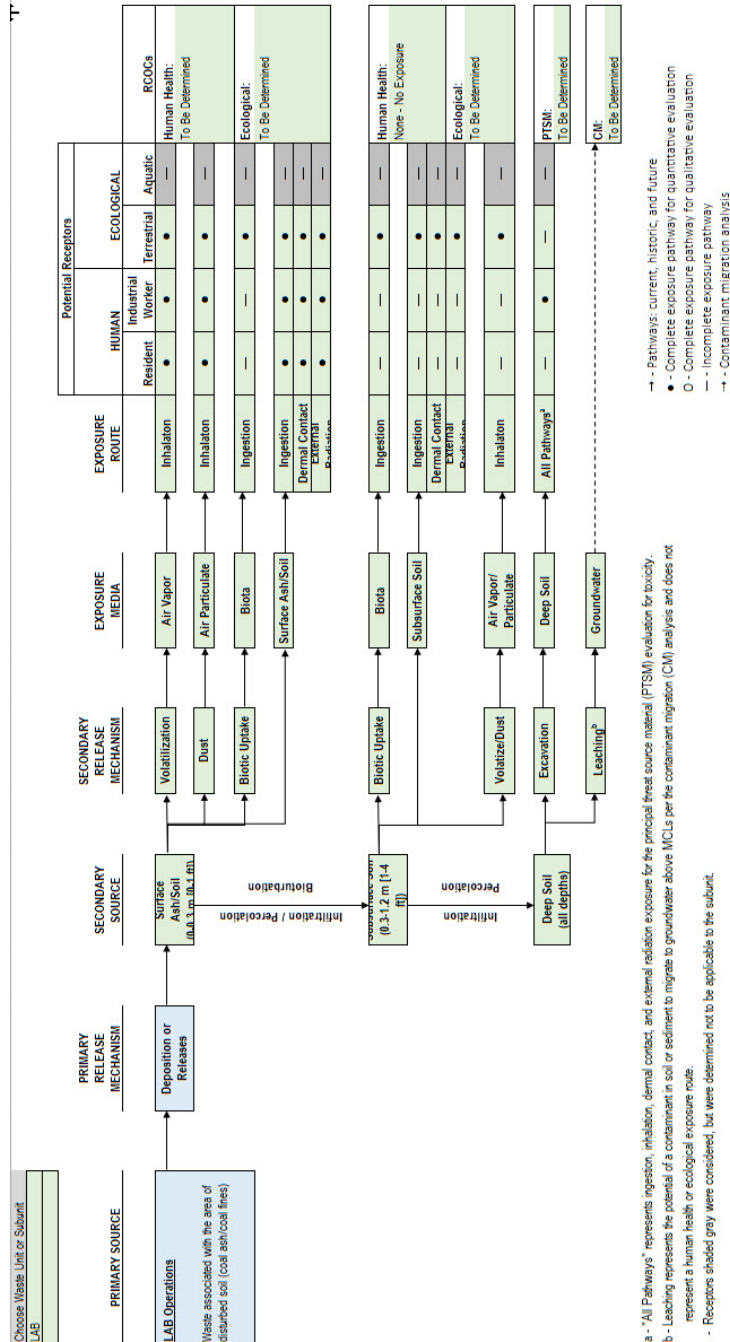
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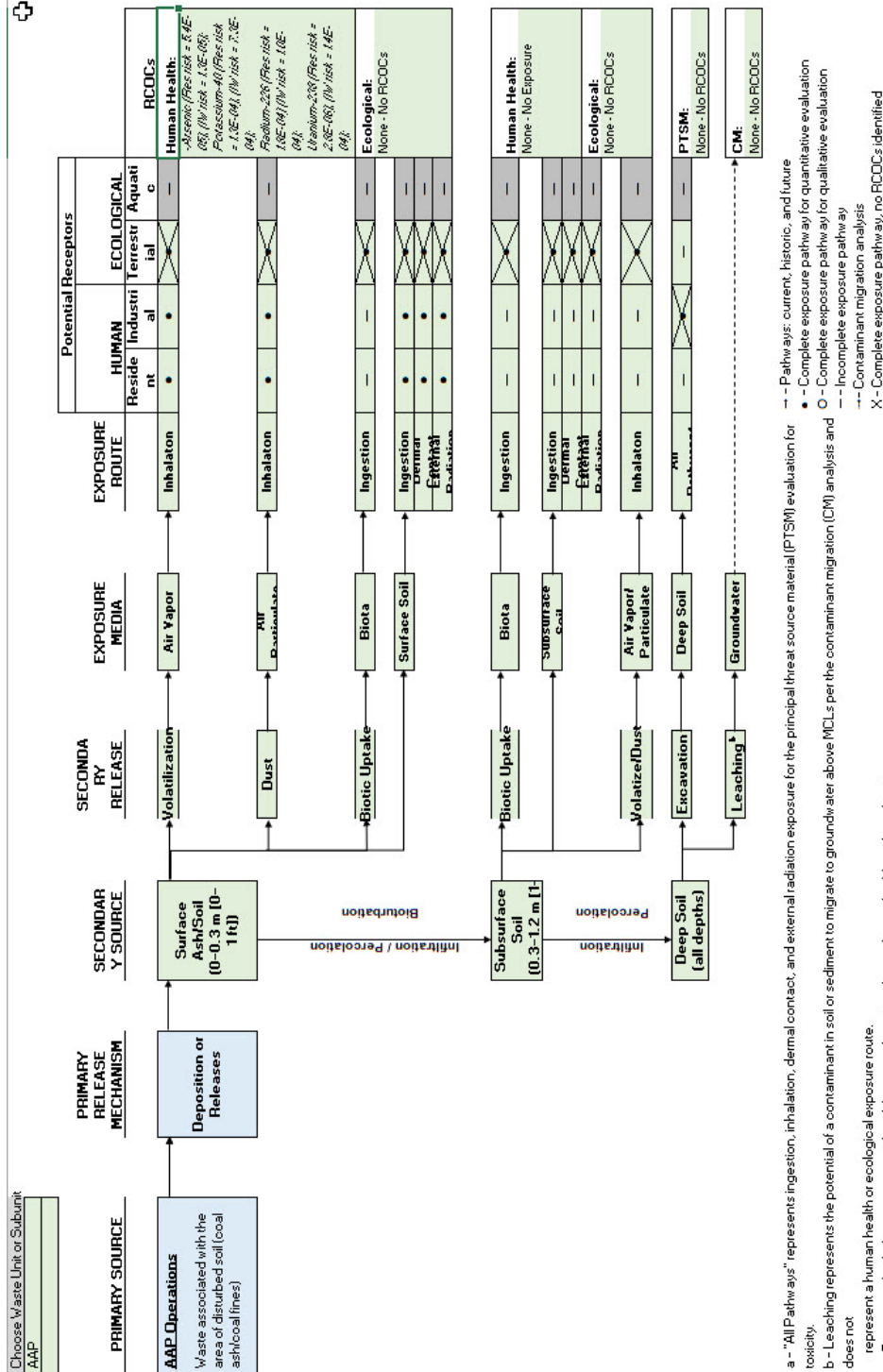
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 - Receptors shaded gray were considered, but were determined not to be applicable to the subunit.
 - Pathways: current, historic, and future
 • Complete exposure pathway for quantitative evaluation
 O - Complete exposure pathway for qualitative evaluation
 - Incomplete exposure pathway
 - Contaminant migration analysis

SRS Responses to USEPA Comments on the Focused Early Action Corrective Measures Study/Feasibility Study in Support of Beneficial Reuse of Select Coal Ash and Coal Fines at the A-Area Ash Pile (788-A), A-Area Coal Pile Runoff Basin (788-3A), F-Area Ash Landfill (288-F), H-Area Ash Basin (288-H), K-Area Ash Basin (188-K), and L-Area Ash Basin (188-L) Operable Units, SEMS Numbers: 61, 62, 88, 90 and 91, SRNS RP-2024-00222,

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Refined CSMs (Specific Comment #13)

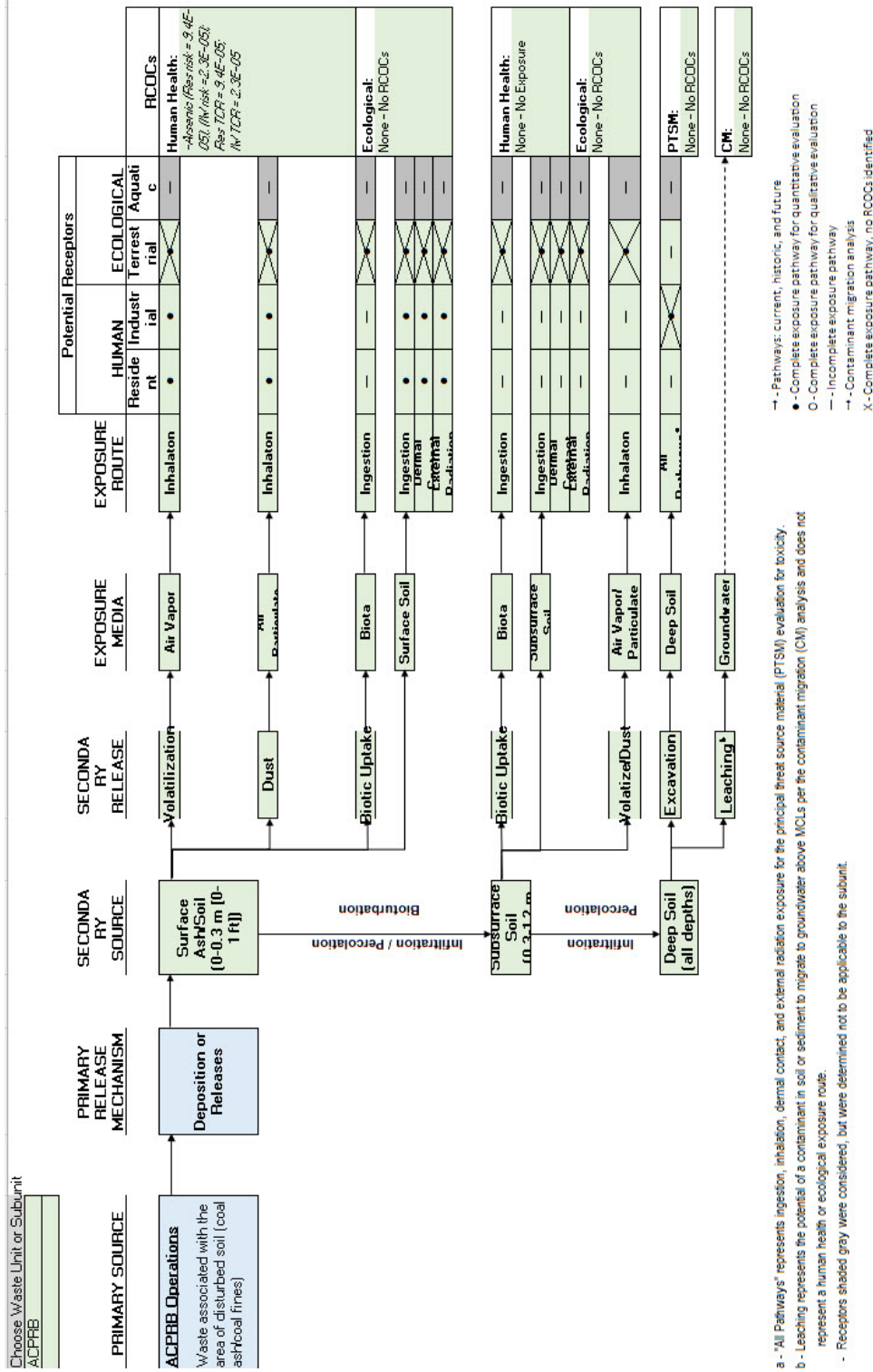


SRS Responses to USEPA Comments on the Focused Early Action Corrective Measures Study/Feasibility Study in Support of Beneficial Reuse of Select Coal Ash and Coal Fines at the A-Area Ash Pile (788-A), A-Area Coal Pile Runoff Basin (788-3A), F-Area Ash Landfill (288-F), H-Area Ash Basin (288-H), K-Area Ash Basin (188-K), and L-Area Ash Basin (188-L) Operable Units, SEMS Numbers: 61, 62, 88, 90 and 91, SRNS RP-2024-00222,

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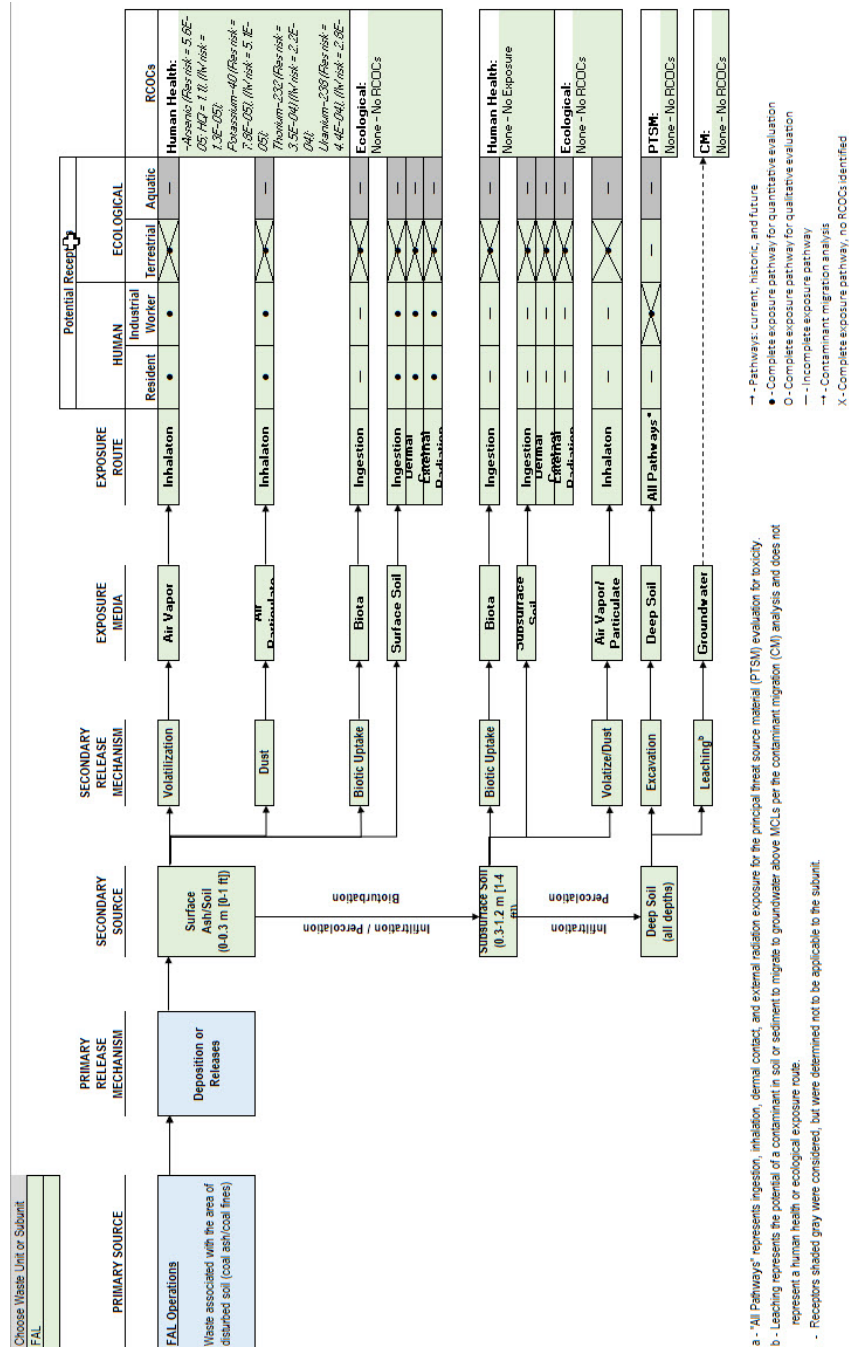


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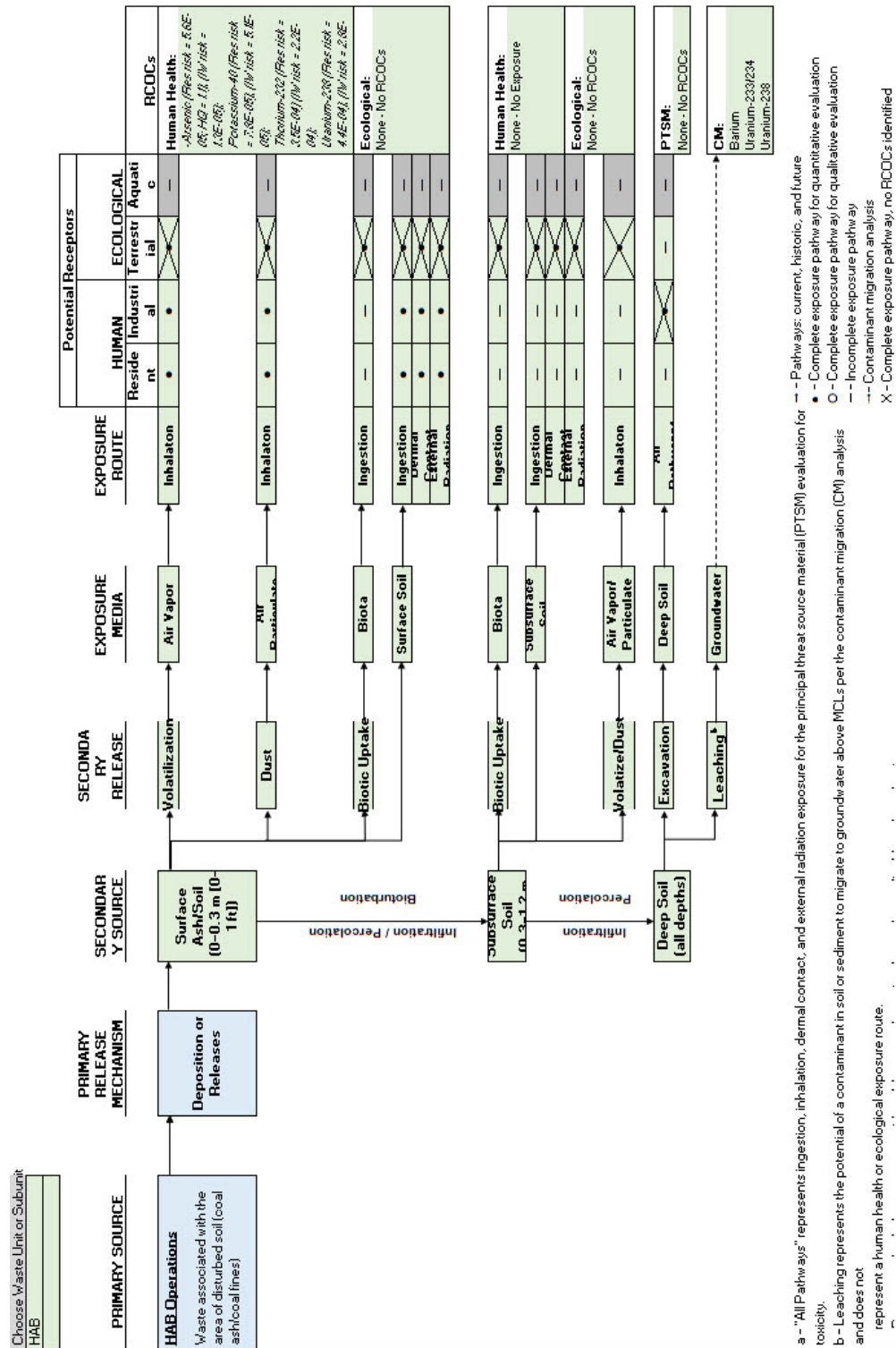


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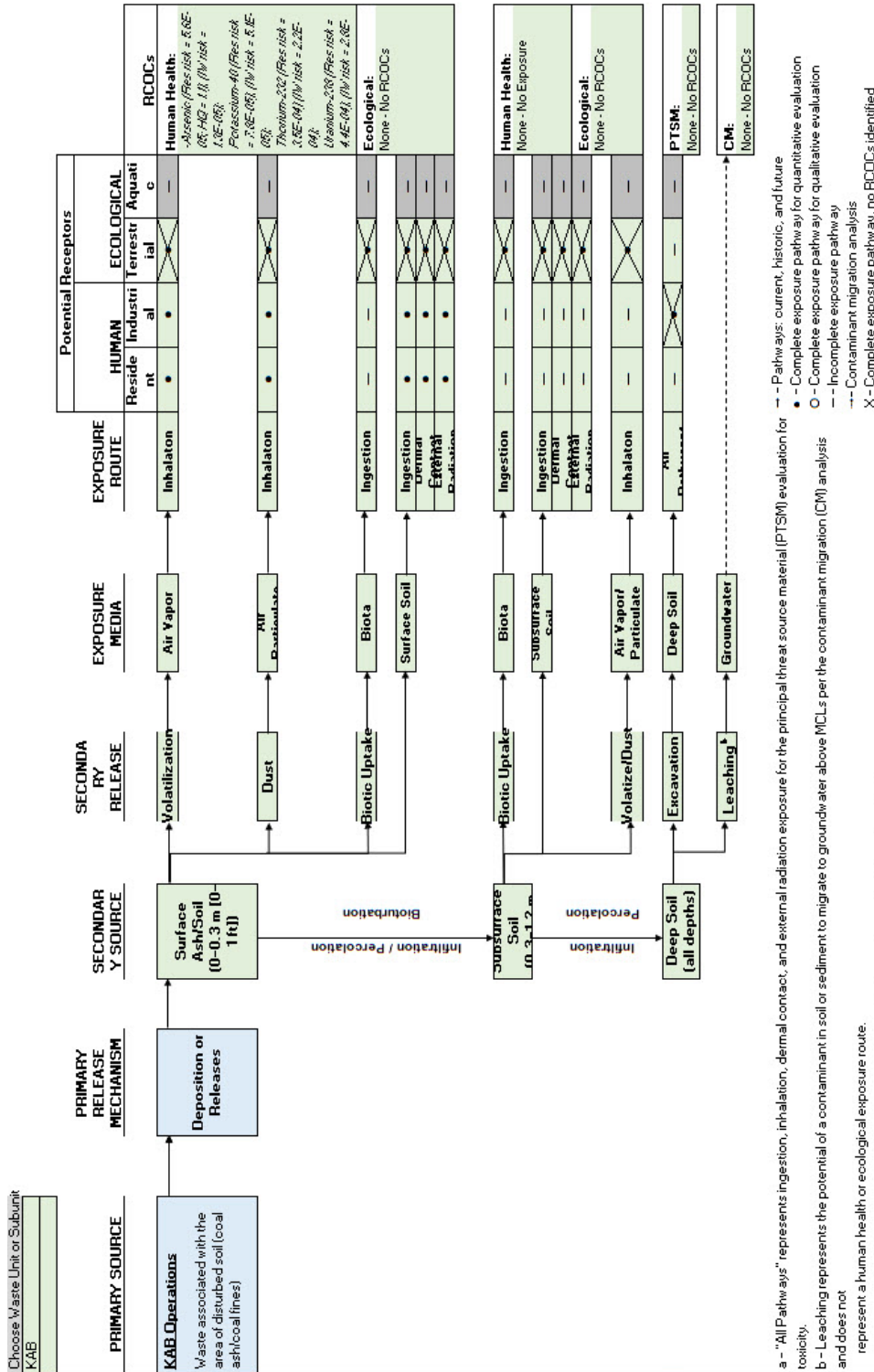
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SRS Responses to USEPA Comments on the Focused Early Action Corrective Measures Study/Feasibility Study in Support of Beneficial Reuse of Select Coal Ash and Coal Fines at the A-Area Ash Pile (788-A), A-Area Coal Pile Runoff Basin (788-3A), F-Area Ash Landfill (288-F), H-Area Ash Basin (288-H), K-Area Ash Basin (188-K), and L-Area Ash Basin (188-L) Operable Units, SEMS Numbers: 61, 62, 88, 90 and 91, SRNS RP-2024-00222,

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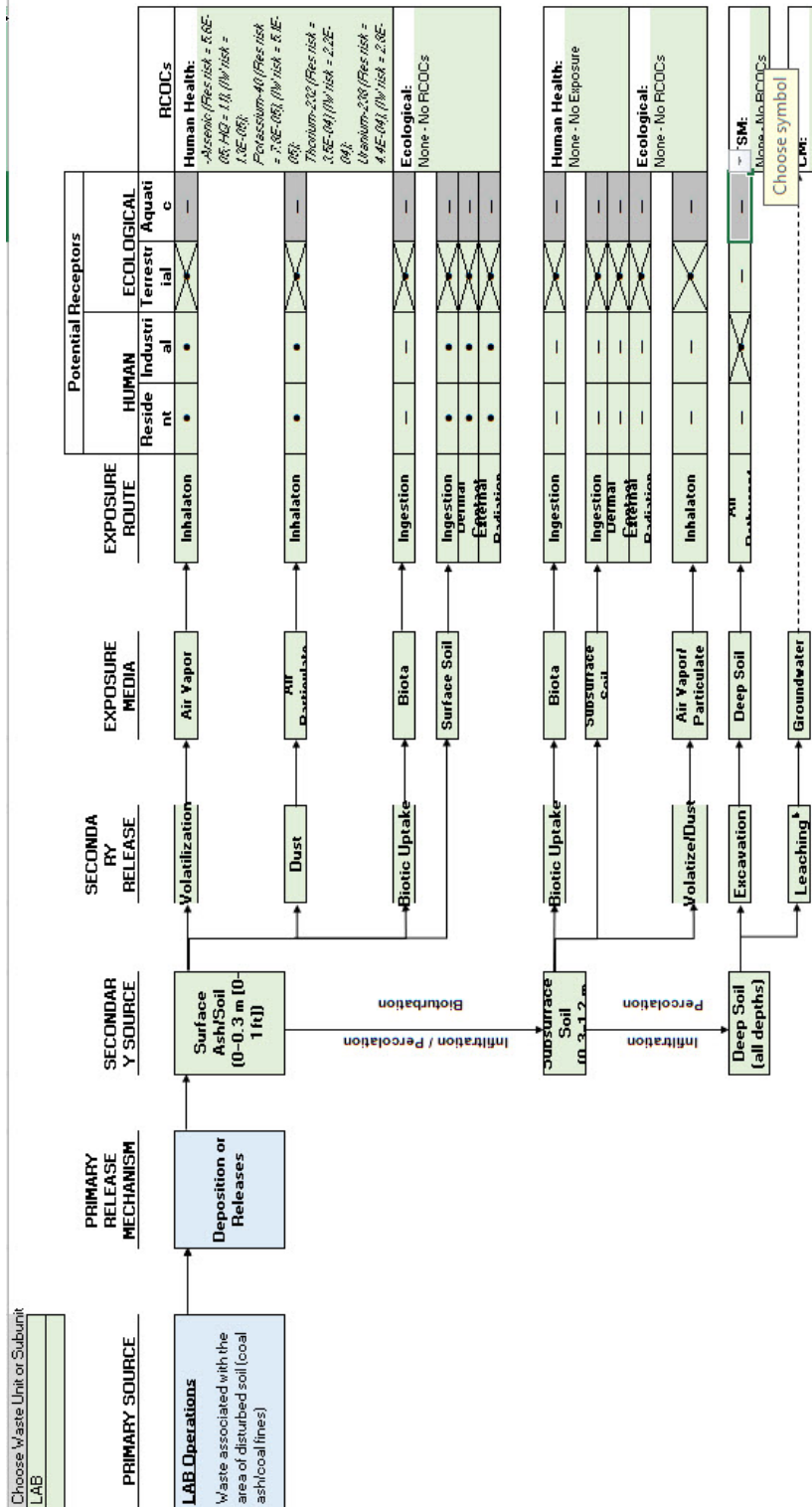
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SRS Responses to USEPA Comments on the Focused Early Action Corrective Measures Study/Feasibility Study in Support of Beneficial Reuse of Select Coal Ash and Coal Fines at the A-Area Ash Pile (788-A), A-Area Coal Pile Runoff Basin (788-3A), F-Area Ash Landfill (288-F), H-Area Ash Basin (288-H), K-Area Ash Basin (188-K), and L-Area Ash Basin (188-L) Operable Units, SEMS Numbers: 61, 62, 88, 90 and 91, SRNS RP-2024-00222,

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- Pathways: current, historic, and future
 • Complete exposure pathway for quantitative evaluation
 ○ Complete exposure pathway for qualitative evaluation
 - Incomplete exposure pathway
 - Contaminant migration analysis
 X - Complete exposure pathway, no RCOCs identified

**SRS Responses to USEPA Comments on the Focused Early Action Corrective Measures Study/Feasibility Study in Support of Beneficial Reuse of Select Coal Ash and Coal Fines at the A-Area Ash Pile (788-A), A-Area Coal Pile Runoff Basin (788-3A), F-Area Ash Landfill (288-F), H-Area Ash Basin (288-H), K-Area Ash Basin (188-K), and L-Area Ash Basin (188-L) Operable Units, SEMS Numbers: 61, 62, 88, 90 and 91, SRNS RP-2024-00222, Revision 0, Dated October 2024
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SPECIFIC COMMENTS

1. **Section 3.1.2, Alternative A-2: LUCs with Beneficial Reuse, page 3-2.** The middle paragraph on this page addressing Phase 2 implementation activities should include confirmation sampling upon completion of excavation activities, as this activity is also listed in the cost estimates for this alternative at each OU.

Response: Agree.

The third paragraph in Section 3.1.2 will be revised as follows:

“Phase 2 of the implementation includes excavation of the ash and its beneficial reuse. Excavation of ash material to allow for unrestricted use is the goal. Following completion of the excavation activities, confirmation sampling will be performed. After sampling indicates cleanup levels have been achieved, the ash units will be restored (i.e., contoured for proper drainage and revegetated as necessary).”

Responsible Party: Eric Schiefer, (803) 952-6273, eric.schiefer@srs.gov

2. **Table 5, Summary of the Remaining Coal Ash and Coal Fines Operable Units Cleanup Levels, page 5-52 and Table F-1, Human Health Risk-Based Preliminary Remedial Goals for the Remaining Coal Ash and Coal Fines OUs, page F-7.** These tables do not include the PRG for Ra-226, which is a HH RCOC for the A-Area Ash Pile. Also, Section F-4 of Appendix F does not include mention of Ra-226. *Please revise these tables and Appendix F to include this HH RCOC.*

Response: Agree.

Ra-226 is a daughter product of the U-238 decay series and will be managed under the cleanup level established for the entire decay series. It is due to this reasoning that Ra-226 was not identified in Table 5, Table F-1, or Section F-4. However, for clarity a footnote will be added to Table 5 and Table F-1 and the first paragraph of Section F-4 will be updated as follows:

SRS Responses to South Carolina Department of Environmental Services Comments on the Focused Early Action Corrective Measures Study/Feasibility Study in Support of Beneficial Reuse of Select Coal Ash and Coal Fines at the A-Area Ash Pile (788-A), A-Area Coal Pile Runoff Basin (788-3A), F-Area Ash Landfill (288-F), H-Area Ash Basin (288-H), K-Area Ash Basin (188-K), and L-Area Ash Basin (188-L) Operable Units, SEMS Numbers: 61, 62, 88, 90, & 91, (SRNS-RP-2024-00222, Revision 0, October 2024) Savannah River Site, Aiken, South Carolina

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“The human health (HH) risk assessment is presented in Appendix C of this document. HH RCOCs were identified in the remaining coal ash and coal fines OUs for arsenic, and naturally occurring radionuclides (potassium-40, thorium-232, and uranium-238). Radium-226 was identified as a HH RCOC for the AAP; however, radium-226 is a daughter product of the uranium-238 decay series and will be managed under the cleanup level established for the entire decay series.”

Responsible Party: Justin Steadman, (803) 952-7346, justin.steadman@srs.gov

SRS Responses to South Carolina Department of Environmental Services Comments on the Focused Early Action Corrective Measures Study/Feasibility Study in Support of Beneficial Reuse of Select Coal Ash and Coal Fines at the A-Area Ash Pile (788-A), A-Area Coal Pile Runoff Basin (788-3A), F-Area Ash Landfill (288-F), H-Area Ash Basin (288-H), K-Area Ash Basin (188-K), and L-Area Ash Basin (188-L) Operable Units, SEMS Numbers: 61, 62, 88, 90, & 91, (SRNS-RP-2024-00222, Revision 0, October 2024)
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Response to Comment #2:

Table F-1. Human Health Risk-Based Preliminary Remedial Goals for the Remaining Coal Ash and Coal Fines OUs

RCOC	Units	Resident						Industrial Worker					
		Risk = 1E-06	Risk = 1E-05	Risk = 1E-04	HQ = 0.1	HQ = 1	HQ = 3	Risk = 1E-06	Risk = 1E-05	Risk = 1E-04	HQ = 0.1	HQ = 1	HQ = 3
Arsenic	mg/kg	6.77E-01	6.77E+00	6.77E+01	3.49E+00	3.49E+01	1.05E+02	3.00E+00	3.00E+01	3.00E+02	--	--	--
Potassium-40	pCi/g	1.44E-01	1.44E+00	1.44E+01	--	--	--	2.19E-01	2.19E+00	2.19E+01	--	--	--
Thorium-232	pCi/g	9.85E-03	9.85E-02	9.85E-01	--	--	--	1.53E-02	1.53E-01	1.53E+00	--	--	--
Uranium-238 ¹	pCi/g	1.25E-02	1.25E-01	1.25E+00	--	--	--	2.00E-02	2.00E-01	2.00E+00	--	--	--

-- not applicable

HQ hazard quotient

RCOC refined constituent of concern

Note: Risk-based PRGs are based on the Regional Screening Levels (RSLs) (1E-06) from the U.S. Environmental Protection Agency (USEPA) RSLs website for nonradiological constituents and Preliminary Remediation Goals (PRGs) (1E-06) from the USEPA PRG website for radiological constituents that are provided in Appendix C.

- 1) Radium-226 was identified as a HH RCOC for the AAP; however, radium-226 is a daughter product of the uranium-238 decay series and will be managed under the cleanup level established for the entire decay series.

SRS Responses to South Carolina Department of Environmental Services Comments on the Focused Early Action Corrective Measures Study/Feasibility Study in Support of Beneficial Reuse of Select Coal Ash and Coal Fines at the A-Area Ash Pile (788-A), A-Area Coal Pile Runoff Basin (788-3A), F-Area Ash Landfill (288-F), H-Area Ash Basin (288-H), K-Area Ash Basin (188-K), and L-Area Ash Basin (188-L) Operable Units, SEMS Numbers: 61, 62, 88, 90, & 91, (SRNS-RP-2024-00222, Revision 0, October 2024)
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