



Scoping Summary for 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) in Support of Beneficial Reuse of Select Coal Ash and Coal Fines Operable Units at the Savannah River Site

(Focused Early Action Corrective Measures Study / Feasibility Study)

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SAVANNAH RIVER SITE • AIKEN, SOUTH CAROLINA

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1.0 PROJECT PHASE AND STATUS OF THE SRS COAL ASH AND COAL FINES UNITS

In 2022, the United States Department of Energy (USDOE) proposed a wholistic remedial approach to address several of the remaining coal ash and coal fines Operable Units (OUs) at the Savannah River Site (SRS) that includes future beneficial reuse of the ash material as a fill material or concrete additive rather than a waste material that requires excavation and disposal or containment by an engineered cover system. The U.S. Environmental Protection Agency (USEPA) and South Carolina Department of Health and Environmental Control (SCDHEC) approved an implementation and administrative strategy for the coal ash and coal fines OUs on August 11, and September 22, 2022, respectively. This scoping summary supports the development of a Focused Early Action (EA) Corrective Measures Study/Feasibility Study (CMS/FS) for the “Beneficial Reuse (BR)” units: 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) (Figure 1).

The Revision 0 Focused EA CMS/FS associated with the comprehensive ash and coal fines strategy for the six BR units is due for submittal to the regulatory agencies by October 2, 2024, followed by an EA Statement of Basis/Proposed Plan (SB/PP), and subsequent EA Record of Decision (ROD) issuance date of February 23, 2027. The proposed remedy of Land Use Controls (LUCs) with Beneficial Reuse consists of two implementation phases: Phase I - LUCs, and Phase II - Beneficial Reuse of Excavated Materials. A flowchart of the overall strategy is provided in Figure 2.

The purpose of the Focused EA CMS/FS scoping meeting is to reach Core Team (i.e., representatives from USDOE, USEPA, and SCDHEC) agreement on the following:

1. Sufficiency of data to support the CMS/FS,
 2. Risk assessment approach,
 3. Remedial alternatives (i.e., likely response actions) to be evaluated, and
-

4. Administrative path in pursuit of BR of SRS coal ash and coal fines OUs (flowchart presented in Figure 2).

2.0 BACKGROUND

SRS began early infrastructure development between 1951 and 1955 including the use of coal-fired powerhouses to generate steam and electricity. These powerhouses were located in each industrial/administrative area of the SRS with coal ash (coal combustion products) produced as a waste as a result of boiler operations. The coal ash was either sluiced into a nearby ash basin or hauled to an ash pile. Associated coal pile runoff basins were constructed to receive surface water runoff from coal storage areas. Several SRS ash basins, coal pile runoff basins, and one ash pile have been remediated/certified closed with a final ROD in four SRS areas (A, D, P and R). The remedial actions for these OUs were implemented to meet regulatory requirements due primarily to elevated levels of arsenic (As) and naturally occurring radionuclides that result in unacceptable long-term risks to a future resident or industrial worker from direct exposure to the material. Beneficial reuse of coal ash and coal fines was not a component of the remedial strategy for these previously closed OUs. The remaining coal ash and coal fines related units that haven't been remediated yet are included in the scope of this project (Table 1).

Previous Actions

No previous Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulatory actions have been implemented for the coal ash and coal fines OUs considered for BR. SRS proposed a regulatory strategy for the remaining coal ash and coal fines OUs including BR at a Core Team meeting held on April 19, 2022, with a follow-up meeting held on May 23, 2022. As a result of these meetings, SRS submitted the *Preferred Remedial Action and Regulatory Strategy for Remaining Savannah River Site's Coal Ash and Coal Fines Operable Units (U)* (IACD-22-166) in July 2022 to the USEPA and SCDHEC for regulatory review and approval. SCDHEC provided comments on the strategy letter, and SRS provided responses to the comments on September 15, 2022.

USEPA and SCDHEC approved the regulatory strategy and associated comment responses in their letters dated August 11, 2022, and September 22, 2022, respectively.

Beneficial Use

Proven unencapsulated reuse alternatives for coal ash/fines include use as fill material. SRS will have a need for large quantities of fill material for the closures of waste storage facilities such as the Saltstone Disposal Units (SDUs) or F-Area and H-Area Tank Farms. Coal ash/fines can be used as lower fill material as part of the cover systems at these receiving facilities. Regulatory acceptance of unencapsulated uses of fly ash requires demonstration that there will be no unacceptable releases of contaminants to the environment, and the ash has acceptable geotechnical characteristics. If necessary, additional testing will be conducted to meet these needs as the designs for these cover systems are finalized. The LUCs with BR remedial alternative also includes that the coal ash/fines can be beneficially reused as an additive or replacement for cement in concrete mixes improving the durability and strength of concrete products. Given that the specific reuse option has not been determined, it is unclear what the costs (if any) would be for transportation of the ash for reuse. Therefore, SRS plans to include the costs for the excavation of the ash from the unit in the remedial alternative cost for LUCs with BR. Any costs associated with transportation of the coal ash/fines to the receiving facility that would be incurred by Area Completion Projects (ACP) will be documented in the Post Construction Report/Remedial Action Completion Report (PCR/RACR) following remedy implementation.

Coal Ash and Coal Fines OUs Considered for Beneficial Reuse

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

The A-Area Ash Pile (AAP) is located in A Area in the northwest portion of SRS within the Upper Three Runs watershed (Figure 1, Figure 3). The AAP is adjacent to an unnamed tributary to Tims Branch. The AAP encompasses 1.6 acres [ac] (0.6 hectares [ha]) and

is located south of the A-Area Coal Pile Runoff Basin (ACPRB). The AAP contains bottom ash and fly ash received from the A-Area coal-fired boiler house (784-A) between 1952 and 1978 with an estimated volume of 70,000 cubic yards (yd³) (53,518 cubic meters [m³]). Grade level at the AAP ranges from 325 to 330 feet [ft] (99 to 101 meters [m]) above mean sea level (amsl), and the elevation at the top of the pile is approximately 345 ft (105 m) amsl (15 to 20 ft [4.6 to 6.1 m] above grade). Depth to groundwater is ~120 ft (36 m) below ground surface (bgs). During operation of the AAP, the pile was graded, the top leveled, and the north side (stream side) benched. AAP is heavily vegetated with mature pines, hardwoods, and a dense undergrowth. The banks of the adjacent tributary to Tims Branch were significantly scoured, and erosion threatened the stability of the ash pile until sheet piling and other erosion control measures were installed in the tributary in the early 2000s. To monitor these conditions, an annual slope stability assessment is performed to ensure that there is no immediate threat of collapse of the ash pile and/or migration into the adjacent tributary. The heavily vegetated side slopes help to prevent migration and slope failure.

The ACPRB is located southeast of the A-Area boiler house (Figure 3). The basin was constructed in 1978 and operated until closure of the boiler house in 2008. Runoff from the coal storage pile was collected/transported in ditches and underground pipes that discharged to the ACPRB. The basin is an unlined earthen surface impoundment surrounded by earthen berms.

The ACPRB covers approximately 2.6 ac (1.1 ha). Elevations across the basin range from 344 to 355 ft (105 to 108 m) amsl. The maximum capacity of the ACPRB is estimated at 75,000 yd³ (57,341 m³). The ACPRB is inactive and receives water only via precipitation. There is usually very little surface water present in the basin. The depth to groundwater in this area is approximately (~) 120 ft (37 m) bgs as determined by monitoring wells near the basin.

The AAP and ACPRB were investigated via the Remedial Investigation/Feasibility Study (RI/FS) process in 2008 and documented in the *Resource Conservation and Recovery Act (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). A Revision 1.1 Redline SB/PP was issued in March 2014 identifying the consolidation of AAP into the ACPRB with a soil cover, LUCs, and groundwater monitoring. Finalization and regulatory approval of the SB/PP and preparation of a ROD were placed on hold due to the uncertainty associated with the proposed USEPA coal combustion residuals (CCR) regulations being applied to this OU as applicable or relevant and appropriate requirements (ARARs).

A preliminary design for excavation of the AAP has been prepared. This design examined topography and constructability aspects to determine the area and volume of material (ash and soil) that would require excavation to remove the ash and provide the necessary grading. This design estimated that the extent of ash was ~ 2.5 ac (1.1 ha) and the volume of excavated material would be ~70,000 yd³ (57,341 m³). Additional fieldwork was performed in 2020 as part of the ash consolidation project (*Preferred Remedial Action and Regulatory Strategy for Remaining Savannah River Site's Coal Ash and Coal Fines Operable Units*) to determine/estimate the extent of ash along transects outside the boundary of the pile (Figure 3).

H-Area Ash Basin

The H-Area Ash Basin (HAB) is located in the Fourmile Branch watershed, downgradient of H Area and is an active basin (Figure 1 and Figure 4). The HAB receives rainwater runoff discharge from an above ground pipeline that accumulates in Abatement Pumps located behind the H-Area powerhouse (284-H) and has an active Industrial Wastewater Treatment (IWT) permit. All operating systems in the H-Area powerhouse have been shut down. The HAB includes wet soils within and beyond the boundary of the OU. A known/suspected Carolina bay is partially located within the southeastern boundary of the HAB. This OU received ash via sluice of wet ash slurry from the H-Area powerhouse. The powerhouse operated from 1950 to 1990. In 1993 to 1994 ~100,000 yd³ (76,455 m³) of ash was removed from the basin and transported to F-Area Landfill (FAL) (288-F) and F-Area Ash Basin (288-1F).

The area of the HAB is 13 ac (5 ha) with an estimated volume of ash of 259,000 yd³ (198,019 m³) inside and outside of the basin. The basin is heavily vegetated with mature pines, hardwoods, and a dense undergrowth. Standing water is frequently encountered in the southeast side of the basin. The depth to groundwater in this area is 22 ft (6.7 m) bgs. As part of the ash consolidation strategy development, three ash/soil samples were collected from the HAB in 2020 to compare results to similar OUs and to analyze the material for geophysical parameters. In addition, the extent of ash outside the berm was evaluated by field observations from multiple transects.

K-Area Ash Basin

The K-Area Ash Basin (KAB) is located southwest of the K-Reactor Complex and is in the Pen Branch watershed (Figure 1 and Figure 5). The KAB received ash from the K-Area coal-fired powerhouse (184-K) via wet sluice. The powerhouse operated from 1951 to 1990. The KAB has an active IWT permit and receives stormwater from the K-Area Ameresco Biomass Facility in the form of process blowdown water during the winter months. The blowdown process can be re-routed, as necessary, to support future remedial activities at the KAB.

The KAB is heavily vegetated with mature pines, hardwoods, and a dense undergrowth. The depth to groundwater in this area is ~61 ft (19 m) bgs. No standing water was observed during multiple field visits to the basin. The area of the basin is ~11.2 ac (4.5 ha); however, ash was discovered beyond the basin, as shown in Figure 5, covering approximately an additional 4.0 ac (1.6 ha). Estimates using historical topographic data and ground surface LiDAR data indicate an ash volume of ~ 273,000 yd³ (208,723 m³).

As part of the ash consolidation strategy development (the *Preferred Remedial Action and Regulatory Strategy for Remaining Savannah River Site's Coal Ash and Coal Fines Operable Units*), three ash/soil samples were collected from the KAB in 2020 to compare results to similar OUs and to obtain geophysical data. In addition, the extent of ash distribution was evaluated by field observations from multiple transects located outside the basin boundary.

L-Area Ash Basin

The L-Area Ash Basin (LAB) is an inactive ash basin. The LAB is located northeast of the L-Reactor Complex and is in the Pen Branch watershed (Figure 1 and Figure 6). The LAB received ash from the L-Area coal-fired powerhouse (184-L) via wet sluice. The powerhouse operated from 1951 to 1968.

Currently, the LAB is heavily vegetated with mature pines, hardwoods, and a dense undergrowth. The northern portion of the basin is frequently inundated with water. The depth to groundwater in this area is estimated to be about 25 to 40 ft (8 to 12 m) bgs. The interior area of the basin is ~17.6 ac (7.1 ha), with ash present over about 1.7 ac (0.7 ha) exterior to the basin. The volume of fly ash and bottom ash is estimated to be ~323,000 yd³ (246,951 m³) including ash deposits inside and outside the basin.

As part of the ash consolidation strategy development, three bulk surface samples were collected from the LAB in 2020 to compare results to similar OUs and to process the data for geophysical parameters. In addition, the extent of ash distribution outside the basin was estimated by field observations from multiple transects emanating from the edge of the basin boundary.

F-Area Landfill

The FAL is located in the Upper Three Runs watershed between F and H Areas (Figure 1 and Figure 7). FAL is an active Class II Landfill (SCDHEC Solid Waste Landfill Permit #025800-1601). The FAL consists of the active F-Area Landfill (288-F) and the area outside the 288-F boundary where ash deposits are known to exist. The 288-F became operational in 1954 and received ash from the A-, F-, and H-Area powerhouses during its operational history.

The interior area of the FAL is ~ 7 ac (2.8 ha). The FAL is surrounded by a relatively congested industrial area and has engineered storm water controls in place. The depth to the groundwater is ~70 to 80 ft (21 to 24 m) bgs. As of August 2023, the volume of ash within the FAL was calculated to be ~190,343 yd³ (145,527 m³) with an additional capacity (remaining available volume) of 172,584

yd³ (131,949 m³). The estimate of ash volume outside of the FAL is ~15,360 yd³ (11,743 m³). The closure plan for the FAL includes a SCDHEC Class II cover system, with minimum 2 ft (0.6 m) soil cover.

As an outcome of a May 23, 2022, BR strategy meeting, SCDHEC stated that the 288-F Class II Ash Landfill will remain a permitted operating landfill until BR is initiated (*F-Area Ash Landfill Permitting in Support of the Regulatory Strategy for the SRS Ash/Coal Fines Waste Units*, May 23, 2022 [SRNS-J2600-2022-00251, dated May 24, 2022]).

3.0 LAND USE

In general, the remaining coal ash and coal fines OUs are located near or within the perimeter of industrial areas. The ACPRB is located within an area designated for industrial use. The AAP, FAL, HAB, and KAB are partially located within an area designated for industrial use based on Facility Area boundaries. No current or future development of the remaining coal ash and coal fines OUs is planned.

4.0 PROBLEMS WARRANTING ACTION

The six coal ash and coal fines OUs were placed in three groups based on unit type, quantity of available data, and level of data assessment as discussed below. Table 2 provides a comparison of the maximum detected concentrations of arsenic and naturally occurring radionuclide activities at SRS ash containing units against the SRS background concentrations and activities.

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

An *RFI/RI Work Plan and RFI/RI Report with Baseline Risk Assessment and Corrective Measure Study/Feasibility Study (CMS/FS) 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-2010-01457, Revision 1)* has been performed for the AAP and ACPRB. The evaluation is complete and additional data collection to support the focused EA CMS/FS is not necessary for the AAP/ACPRB OU.

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A-Area Ash Pile and A-Area Coal Pile Runoff Basin			
Problem(s) Warranting Action	Remedial Action Objectives	Scope of Problem(s)	Likely Response Actions
<ul style="list-style-type: none"> • AAP: As and naturally occurring radionuclides (K-40, Ra-226, U-238) are present in surface ash/soil that pose an unacceptable risk to the future resident (TCR = 3.7E-04) and industrial worker (TCR = 1.9E-04). 	<p>Protect industrial worker or potential future resident from exposure to contaminants in surface ash/soil that exceed 1×10^{-6} risk threshold or background levels.</p>	<p>The approximate volume of ash: A-Area Ash Pile: 70,000 yd³ (53,518 m³), 2.5 ac (1.1 ha), 17 ft (5 m) in depth (average)</p>	<ul style="list-style-type: none"> • No Action • LUCs with Beneficial Reuse¹ • Class III Cover with LUCs²
<ul style="list-style-type: none"> • ACPRB: As is present in the 0-1 ft sediment (coal fines) that presents an unacceptable risk to the future resident (TCR = 9.4E-05) and industrial worker (TCR = 2.3E-05). • As and 2-methylnaphthalene are present in the surface sediment and pose a hazard to benthic ecological receptors (HQ = 2.5). • Metals and low pH present in the surface water pose a hazard to aquatic ecological receptors (HQ range 1.4 to 25). 	<p>Protect industrial worker or potential future resident from exposure to contaminants in surface ash/soil that exceed 1×10^{-6} risk threshold or background levels.</p> <p>Prevent ecological exposure to contaminants in sediment/coal fines and surface water that pose a hazard to ecological receptors.</p>	<p>The approximate volume of coal fines for the A-Area Coal Pile Runoff Basin: 10,000 yd³ (7,645 m³), 2.6 ac (1.1 ha), 2.4 ft (0.7 m) depth</p>	
Uncertainties			
<p>It is uncertain what the costs (if any) for transportation of the ash for reuse will be, given that the specific reuse option has not been determined. This uncertainty impacts the evaluation of alternatives and will be managed by including the costs for excavation of the ash in the LUCs with Beneficial Reuse remedial alternative cost. Any costs associated with transportation of the coal ash/fines to the receiving facility that would be incurred by ACP will be documented in the PCR/RACR following remedy implementation.</p>			

¹ LUCs with Beneficial Reuse alternative assumes coal ash/fines remain at the OU under LUCs until needed for beneficial reuse. Coal ash/fines from AAP and ACPRB excavated for beneficial reuse.

² Class III Cover with LUCs alternative assumes coal ash/fines from AAP moved to ACPRB beneath a Class III cover system.

H-, K-, and L-Area Ash Basins

Data from HAB, KAB, and LAB consists of three ash samples from each ash basin collected in May 2020 from the 0 to 1 ft (0 to 0.3 m) surface interval and analyzed for Target Analyte List (TAL) /Target Compound List (TCL) semi-volatile (SVOCs) constituents, cesium-137 (Cs-137), hexavalent chromium (Cr[VI]), and radiological indicators to support the ash consolidation project (*Preferred Remedial Action and Regulatory Strategy for Remaining Savannah River Site's Coal Ash and Coal Fines Operable Units*). Table 2 demonstrates that concentrations of As and naturally occurring radionuclides (and corresponding risk levels of these constituents) for HAB, KAB, LAB are consistent with other ash waste unit risk evaluations that have been performed in the past including OUs that have gone through a formal baseline risk assessment (BRA) process, such as the AAP/ACPRB OU. Therefore, it can be expected that arsenic and naturally occurring radionuclides would be identified as RCOCs for HAB, KAB, and LAB. All of the Cr(VI) results were non-detect, and Cs-137 results were within background fallout levels.

For data processing, the data from the HAB, KAB, and LAB will be combined into one dataset. The combined dataset will have nine sample results (three locations per each ash basin). The data will be processed in accordance with the protocols in the EC&ACP Regulatory Document Handbook (June 2023). The data evaluation will include a contaminant migration analysis, human health risk assessment, ecological risk assessment, and principal threat source material (PTSM) evaluation. Based on the similarity of the data to other ash basin units and each other, additional data collection to support the focused EA CMS/FS is not proposed for the HAB, KAB or LAB OUs.

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H-, K-, and L-Area Ash Basins			
Problem(s) Warranting Action	Remedial Action Objectives	Scope of Problem(s)	Likely Response Actions
<ul style="list-style-type: none"> As and naturally occurring rads are present in the 0-1 ft ash/soil interval that pose an unacceptable risk to the future resident and industrial worker 	<ul style="list-style-type: none"> Protect industrial worker or potential future resident from exposure to contaminants in surface ash/soil that exceed 1×10^{-6} risk threshold or background levels. 	<ul style="list-style-type: none"> Estimated ash within the basin boundary: HAB: 259,000 yd³ (198,019 m³), 13 ac (5 ha), 12 ft (3.6 m) in depth KAB: 273,000 yd³ (208,723 m³), 11.2 ac (4.5 ha), 15 ft (4.5 m) in depth LAB: 323,000 yd³ (246,951 m³), 18 ac (7.1 ha), 11 ft (3.3 m) in depth 	<ul style="list-style-type: none"> No Action LUCs with Beneficial Reuse³ Class III Cover with LUCs⁴
<ul style="list-style-type: none"> As in the 0-1 ft ash/soils may pose an unacceptable risk to ecological receptors. 	<ul style="list-style-type: none"> Protect ecological receptors from exposure to contaminants in surface ash/soil that may pose a risk to ecological receptors 	<ul style="list-style-type: none"> Estimated ash deposits outside the basin boundary: HAB: 148,009 yd³ (113.16 m³), 18.4 ac (7.3ha) KAB: 17,964 yd³ (13,734 m³), 3.8 ac (1.5 ha) LAB: 18,026 yd³ (13,781 m³), 1.67 ac (0.7ha) 	
Uncertainties			
<ul style="list-style-type: none"> It is uncertain if any refined COCs in ash/soil for ecological receptors exist. This uncertainty will be addressed in the ecological risk assessment for these OUs and presented in the focused EA CMS/FS. The results are expected to have minimal impact on the overall remedial action strategy since the concentrations are similar to other ash basins that have undergone a formal BRA (Table 2). It is uncertain what the costs (if any) for transportation of the ash for reuse will be, given that the specific reuse option has not been determined. This uncertainty impacts the evaluation of alternatives and will be managed by including the costs for excavation of the ash in the LUCs with Beneficial Reuse remedial alternative cost. Any costs associated with transportation of the coal ash/fines to the receiving facility that would be incurred by ACP will be documented in the PCR/RACR following remedy implementation. 			

³ LUCs with Beneficial Reuse alternative assumes coal ash/fines remain at the OUs until needed for beneficial reuse; ash within and outside of basin(s) excavated for beneficial reuse.

⁴ Class III Cover with LUCs alternative assumes coal ash/fines inside the basin(s) remain in place and coal ash/fines from outside the basin(s) are excavated and placed in the basin(s) beneath the Class III cover(s).

F-Area Ash Landfill

A *Waste Characterization Report for Savannah River Site Ash Outside 288-F Landfill* documents the Toxic Characteristic Leaching Procedure metals and total metals results that were submitted to SCDHEC in 2012. A total of eight samples were collected and analyzed. With the exception of As, no samples were above residential risk screening levels and/or SRS background levels. Arsenic concentrations are consistent with other ash containing units (Table 2). Radionuclide results are not available but are expected to be consistent with naturally occurring radionuclides present at similar ash basins, i.e., HAB, KAB, and LAB.

Based on the arsenic results and the consistency between ash units, it is assumed the concentrations of ash-related constituents at FAL are consistent with similar characterized ash basins. Therefore, the risk levels/conclusions of the HAB, KAB and LAB evaluation will also be applied to the FAL OU. Additional data collection to support the focused EA CMS/FS is not proposed for the FAL OU.

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F-Area Ash Landfill			
Problem(s) Warranting Action	Remedial Action Objectives	Scope of Problem(s)	Likely Response Actions
<ul style="list-style-type: none"> As and naturally occurring rad are present in the 0-1 ft ash/soils that pose an unacceptable risk to the future resident and industrial worker. 	<ul style="list-style-type: none"> Protect industrial worker or potential future resident from exposure to contaminants in surface ash/soil that exceed 1×10^{-6} risk threshold or background levels. 	<p>The approximate volume of coal ash/fines for F-Area Ash Landfill is 358,000 yd³ (273,710 m³), 7 ac (2.8 ha), 32 ft depth (9.8 m)</p> <p>Estimated volume of ash outside the landfill is 15,360 yd³ (11,743 m³) 11.47 ac (4.6 ha)</p>	<ul style="list-style-type: none"> No Action LUCs with Beneficial Reuse⁵ Class III Cover with LUCs⁶
<ul style="list-style-type: none"> As may pose an unacceptable risk in the 0-1 ft ash/soils to ecological receptors. 	<ul style="list-style-type: none"> Protect ecological receptors from exposure to contaminants in surface ash/soil that may pose a risk to ecological receptors 		
Uncertainties			
<ul style="list-style-type: none"> Risk levels for human and ecological receptors are uncertain because no FAL site-specific data is available other than metals data. This is expected to have minimal impact on the overall remedial action strategy since the data indicates that the concentrations are similar to characterized ash basins. This uncertainty will be addressed by applying the results from the HAB, KAB, and LAB to the FAL and documenting in the focused EA CMS/FS. It is uncertain what the costs (if any) for transportation of the ash for reuse will be, given that the specific reuse option has not been determined. This uncertainty impacts the evaluation of alternatives and will be managed by including the costs for excavation of the ash in the LUCs with Beneficial Reuse remedial alternative cost. Any costs associated with transportation of the coal ash/fines to the receiving facility that would be incurred by ACP will be documented in the PCR/RACR following remedy implementation. 			

⁵ LUCs with Beneficial Reuse alternative assumes coal ash/fines remain at the landfill until needed for beneficial reuse; ash within and outside the landfill excavated for beneficial reuse.

⁶ Class III Cover with LUCs alternative assumes coal ash/fines inside the landfill remain in place and coal ash/fines from outside the landfill are excavated and placed beneath the Class III cover.

5.0 OU STRATEGY

The project team will develop a Focused EA CMS/FS for the remaining BR coal ash and coal fines OUs for submittal to the regulatory agencies by October 2, 2024. The project team believes that the existing data for the coal ash and coal fines OUs are sufficient for the development of the Focused EA CMS/FS. The human health and ecological risk assessments, contaminant migration analysis, and PTSM evaluation for the AAP/ACPRB OU is complete. The data sets from HAB, KAB, and LAB OUs will be combined and evaluated in accordance with the protocols in the EC&ACP Regulatory Document Handbook (June 2023). The conclusions from HAB, KAB, and LAB OUs will be applied to the FAL OU. The data evaluation will include the human health risk assessment, ecological risk assessment, contaminant migration analysis, and PTSM evaluation. The Focused EA CMS/FS will evaluate the following three remedial alternatives against the nine CERCLA criteria:

- A1: Alternative A-1: No Action
- A2: Alternative A-2: LUCs with Beneficial Reuse
- A3: Alternative A-3: Class III Cover with LUCs

The details of the BR will be provided in the CMIP/RAIP for the specific waste unit(s) at the time of Phase II implementation. The preferred remedy proposed by the project team for all six OUs is Alternative A-2: LUCs with Beneficial Reuse. The administrative path forward for Phase I and Phase II of Alternative A-2 is shown in Figure 2. Documents following the focused EA CMS/FS will include an EA SB/PP and EA ROD. Phase I of the remedy will implement LUCs for all six OUs, described in an EA Land Use Control Implementation Plan, with a remedial action start in February 2028. Phase II implementation (BR of excavation materials) will be described in a unit(s)-specific CMIP/RAIP with a remedial action start projected in 2037. The CMIP/RAIP will include details of how/where ash will be beneficially reused, excavation design details, and confirmation sampling. A PCR/RACR will be submitted for the OU/OUs after Phase II implementation, with the expectation that the OU/OUs will be excavated to unrestricted land use levels.

LUCs will be established if unrestricted use levels are not attained. Phase II will also meet any regulatory/permit requirements for the receiving facility (e.g., Saltstone) or donating facility (e.g., FAL).

Scoping Summary for SRS
Beneficial Reuse Ash/Coal Fines Operable Units
Savannah River Site

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Table 1. Coal Ash and Coal Fines Operable Units

<i>Unit</i>	<i>Depth to GW (ft bgs)</i>	<i>Area (ac)</i>	<i>Volume (yd³)</i>	<i>Comments</i>
A-Area Coal Pile Runoff Basin, 788-3A	120	2.62	10,000 ^a	Inactive. Coal fines present – not ash. RFI/RI/BRA complete
A-Area Ash Pile 788-A	120	2.55	70,000 ^b	Ash was trucked from the power plant and piled from 1950-1980 (approx.). Draft Proposed Plan to consolidate in Coal Pile Runoff Basins (CPRB). RFI/RI/BRA complete
K-Area Ash Basin, 188-K	61	11.16	273,000	Ash was sluiced into this basin from 1950-1990. Currently, the basin is heavily vegetated with no standing water. Active IWT.
L-Area Ash Basin, 188-L	17-50	18	323,000	Ash was sluiced into this basin from 1950-1968. Currently, the basin is heavily vegetated and holds some standing water in the northeast portion of the basin. Potential consolidation location.
H-Area Ash Basin, 288-H	22	13	259,000	Ash was sluiced into this basin from 1950-1990. Some standing water on the east and south sides of the basin. Active IWT.
F-Area Ash Landfill, 288-F	70-80	7	358,000	Active SCDHEC Solid Waste Landfill Permit.

Notes

- a) SRNS 2012, AAP/ACPRB RI/BRA
- b) Ash volume calculated from preliminary design (drawings: C-CG-A-00063, -00064 -00066, -00068)

Scoping Summary for SRS
Beneficial Reuse Ash/Coal Fines Operable Units
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Table 2. Waste Unit Comparison of Arsenic Concentrations and Naturally Occurring Radionuclide Activities

<i>HH COC</i>	<i>Units</i>	<i>SRS Bkgd</i>	<i>PAB</i>	<i>RAB</i>	<i>DCPRB</i>	<i>WADB</i>	<i>AAP</i>	<i>ACPRB</i>	<i>HAB</i>	<i>KAB</i>	<i>LAB</i>	<i>FAL</i>
As	mg/kg	22.9	59.7	28.7	158	33.6	51.6	44.7	76.5	32.3	19.1	36.3
K-40	pCi/g	8.53	13.8	16.9	NA	16.4	23.9	NA	11.3	12.5	10.8	na
Ra-228 (+D)	pCi/g	6.75	4.07	NA	NA	NA	NA	NA	4.15	2.91	2.63	na
Th-228 (+D)	pCi/g	4.17	3.94	NA	NA	NA	NA	NA	4.27	3.94	3.18	na
U-238 (+D)	pCi/g	1.9	5.29	8.32	NA	2.51	2.68	NA	3.59	3.7	5.82	na
Ra-226 (+D)	pCi/g	1.74	5.4	8.08	NA	2.38	3.33	NA	4.04	4.12	8.63	na
U-235 (+D)	pCi/g	0.17	NA	0.506	NA	NA	NA	NA	ND	ND	0.561	na

RSL/PRG = USEPA Regional Screening Level / Preliminary Remediation Goal set at risk = 1E-06
SRS Bkgd = *Background Soils Statistical Summary Report for Savannah River Site, Appendix B-2 (max detect, all depths)*
PAB = P-Area Ash Basin
RAB = R-Area Ash Basin
DCPRB = D-Area Coal Pile Runoff Basin
WADB = Wetland Area at Dunbarton Bay
AAP = A-Area Ash Pile
ACPRB = A-Area Coal Pile Runoff Basin
HAB = H-Area Ash Basin
KAB = K-Area Ash Basin
LAB = L-Area Ash Basin
FAL = F-Area Ash Landfill
na = not analyzed
NA = not applicable
ND = not detected

Table 3. Record of Core Team Agreements

Record of Key Agreements⁷	
Date	Description of Agreement
4/19/2022	The Core Team agreed on a preferred remedial strategy for remaining coal/ash operable units, including Beneficial Reuse for six of the units, and an administrative strategy.
11/2/2023	The Core Team agreed on all elements on the Problem Warranting Action Tables for each of the coal/ash OUs.
11/2/2023	The Core Team is in agreement with the use of analogous site data from the HAB, KAB, and LAB OUs combined into one dataset, and application of the risk levels/conclusions of the combined HAB, KAB and LAB evaluation to the FAL OU.
11/2/2023	The Core Team is in agreement with the overall strategy for the OU as presented in Section 5.0 and Figure 2.

⁷ Core team agreements will be documented at each scoping phase and should be retained for each successive phase to maintain a comprehensive list for the life of the project.

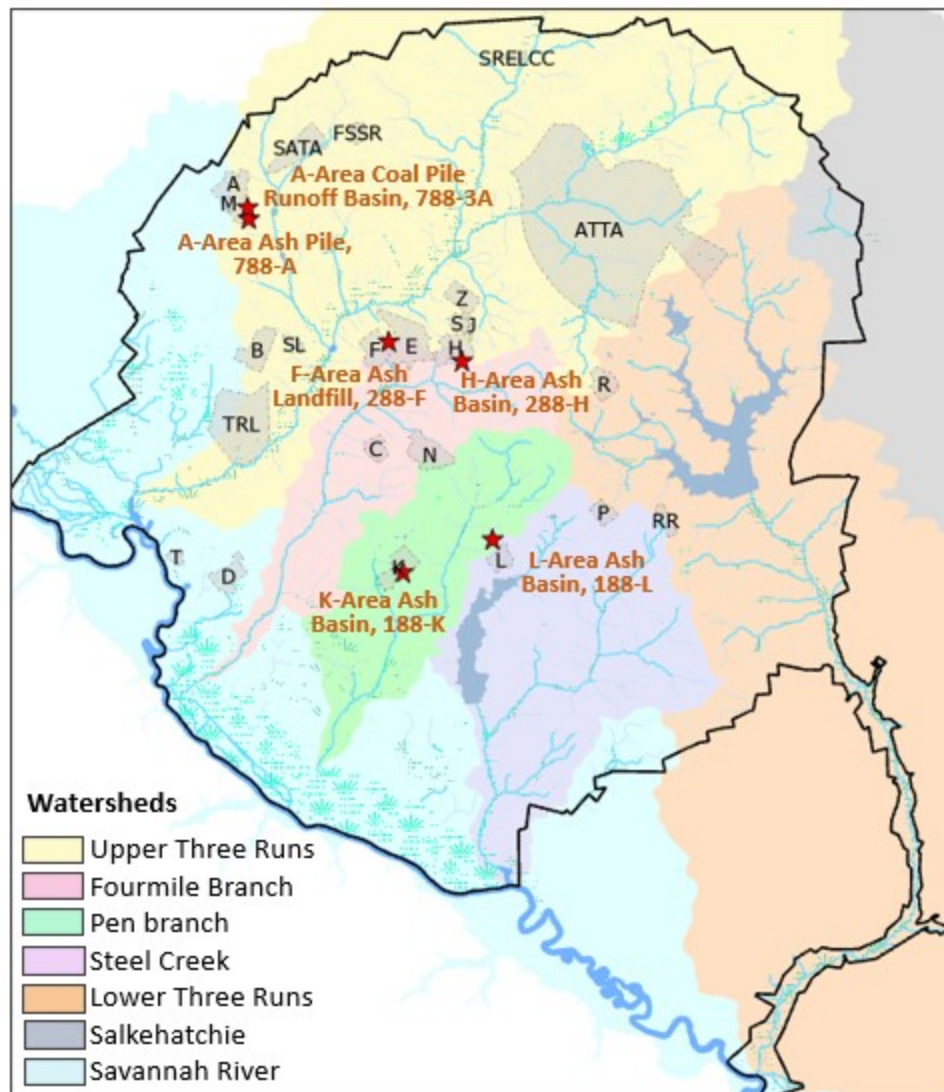
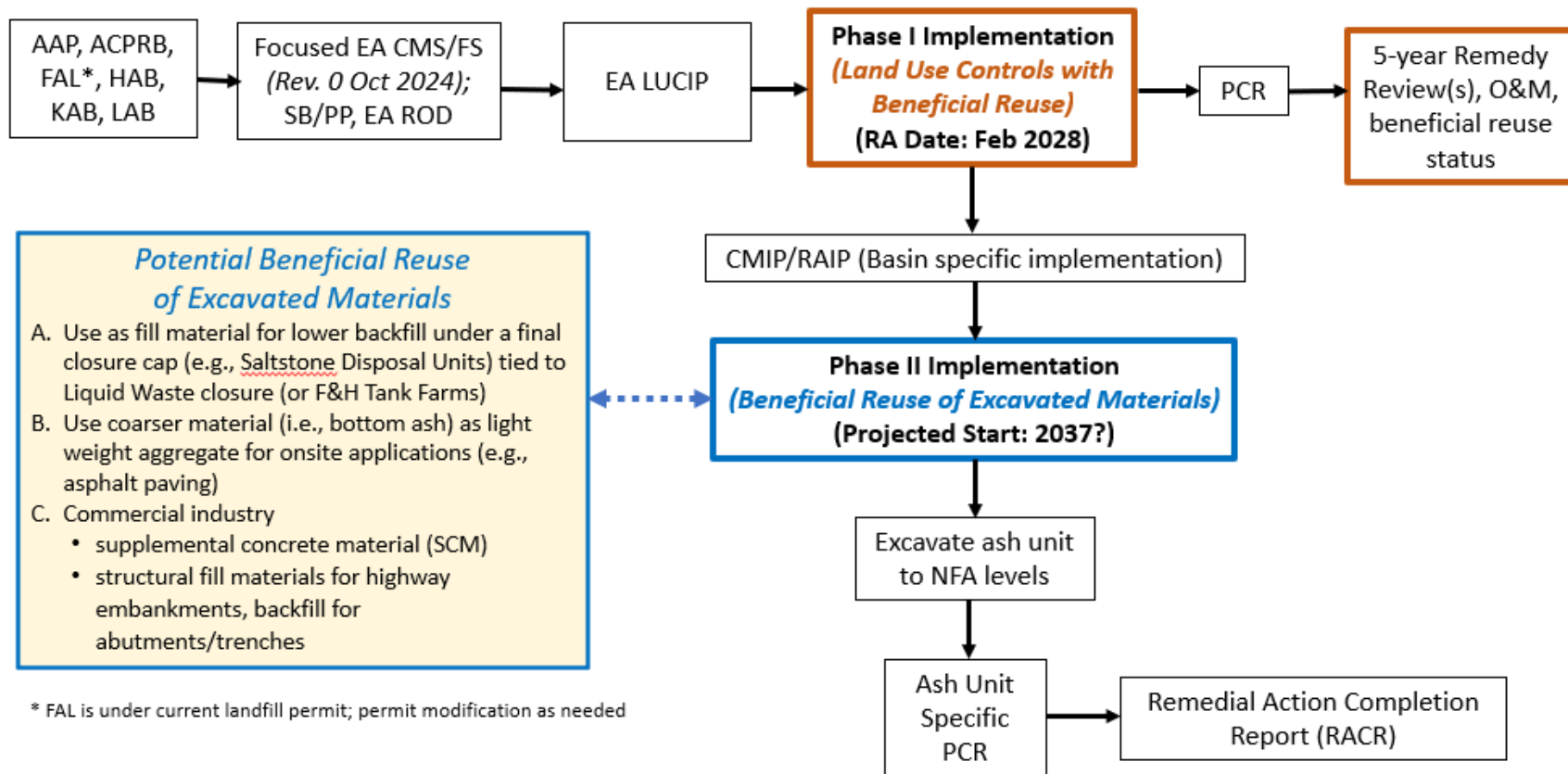
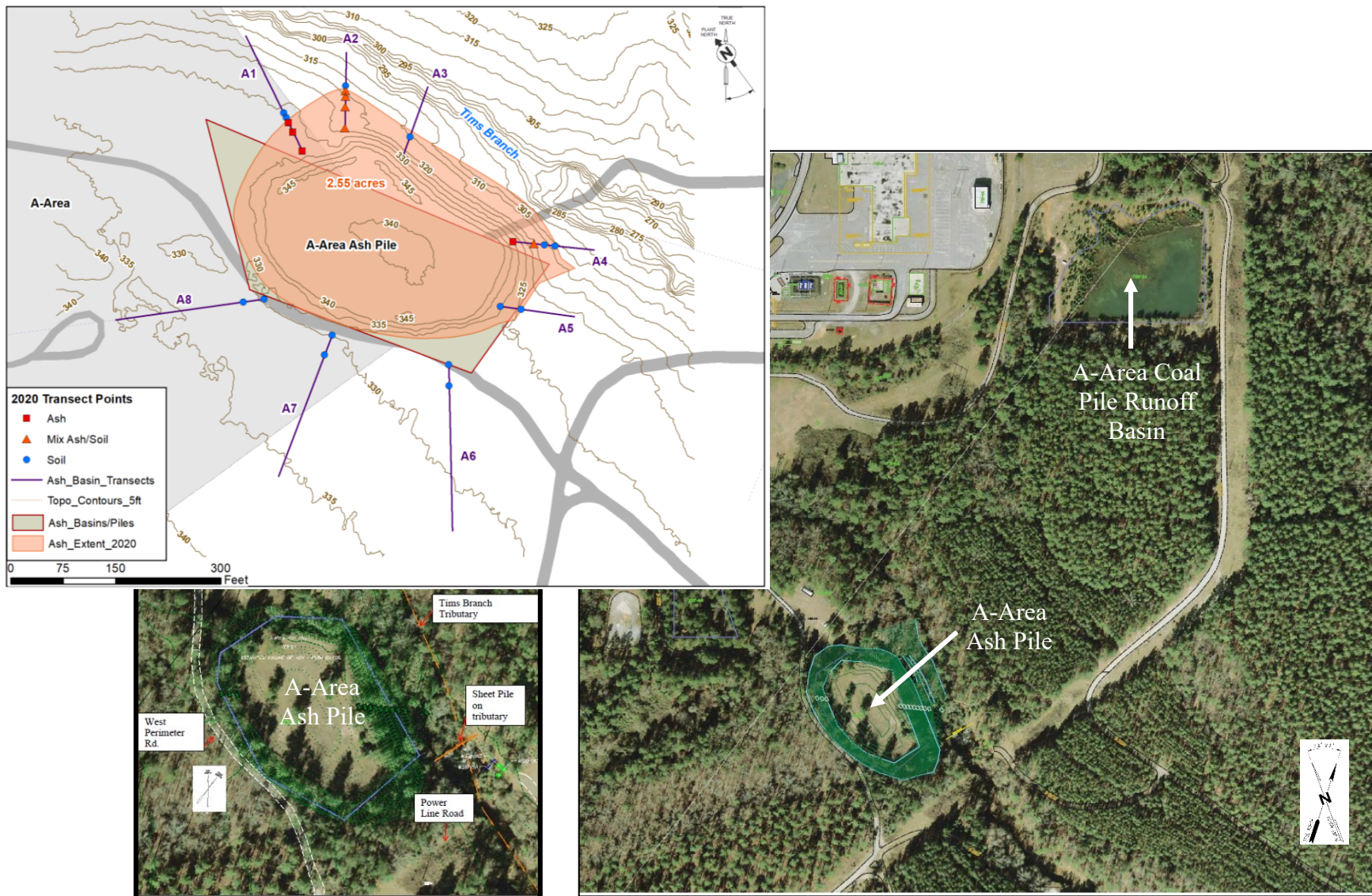


Figure 1. Coal Ash and Coals Fines Operable Units



CMIP/RAIP = Corrective Measures Implementation Plan/Remedial Action Implementation Plan, LUCIP = Land Use Control Implementation Plan, NFA = No Further Action, O&M = Operational and Maintenance, PCR = Post Construction Report

Figure 2. Administrative Path for Phase I and Phase II of the Land Use Controls with Beneficial Reuse Alternative



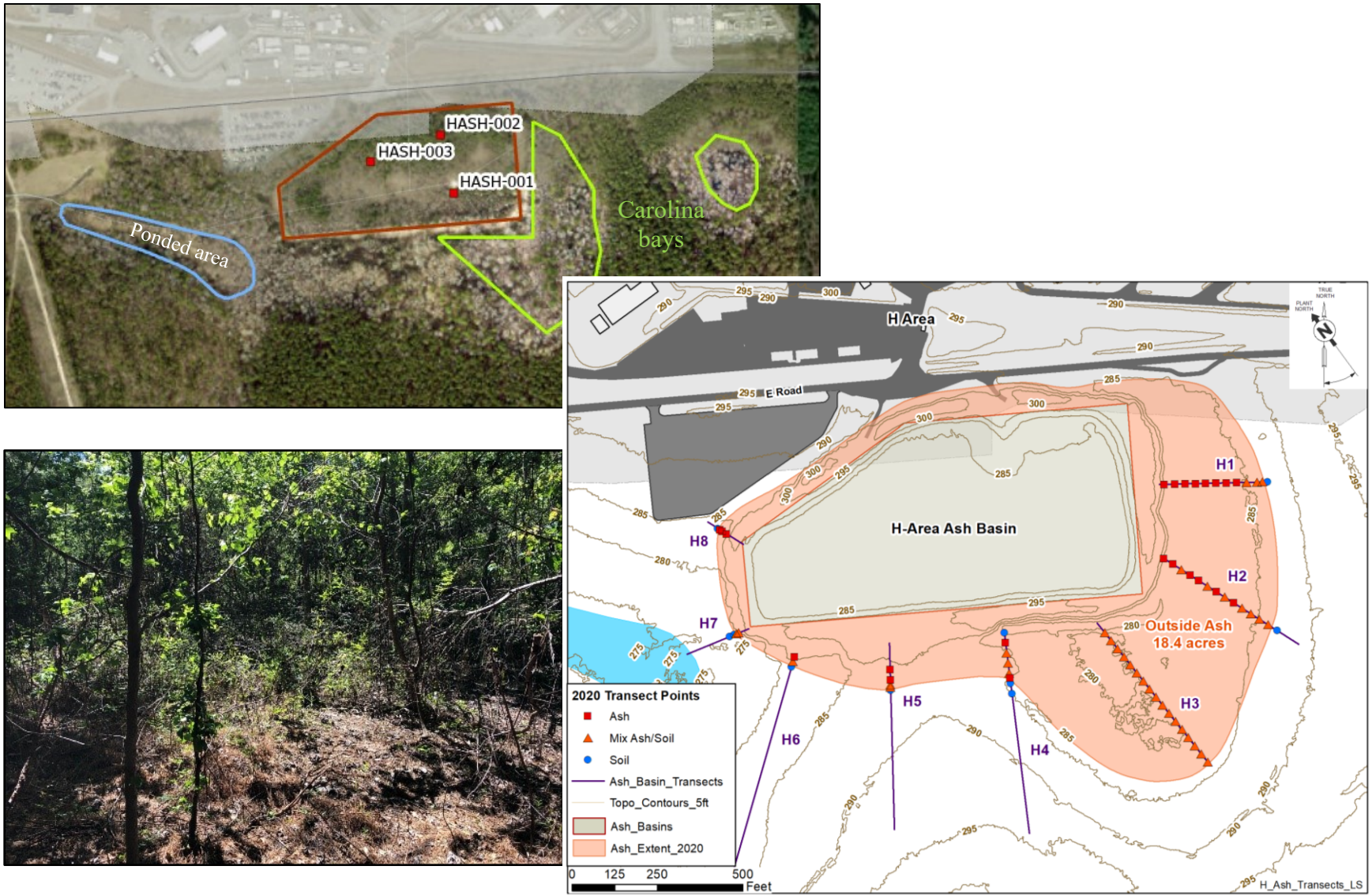


Figure 4. H-Area Ash Basin

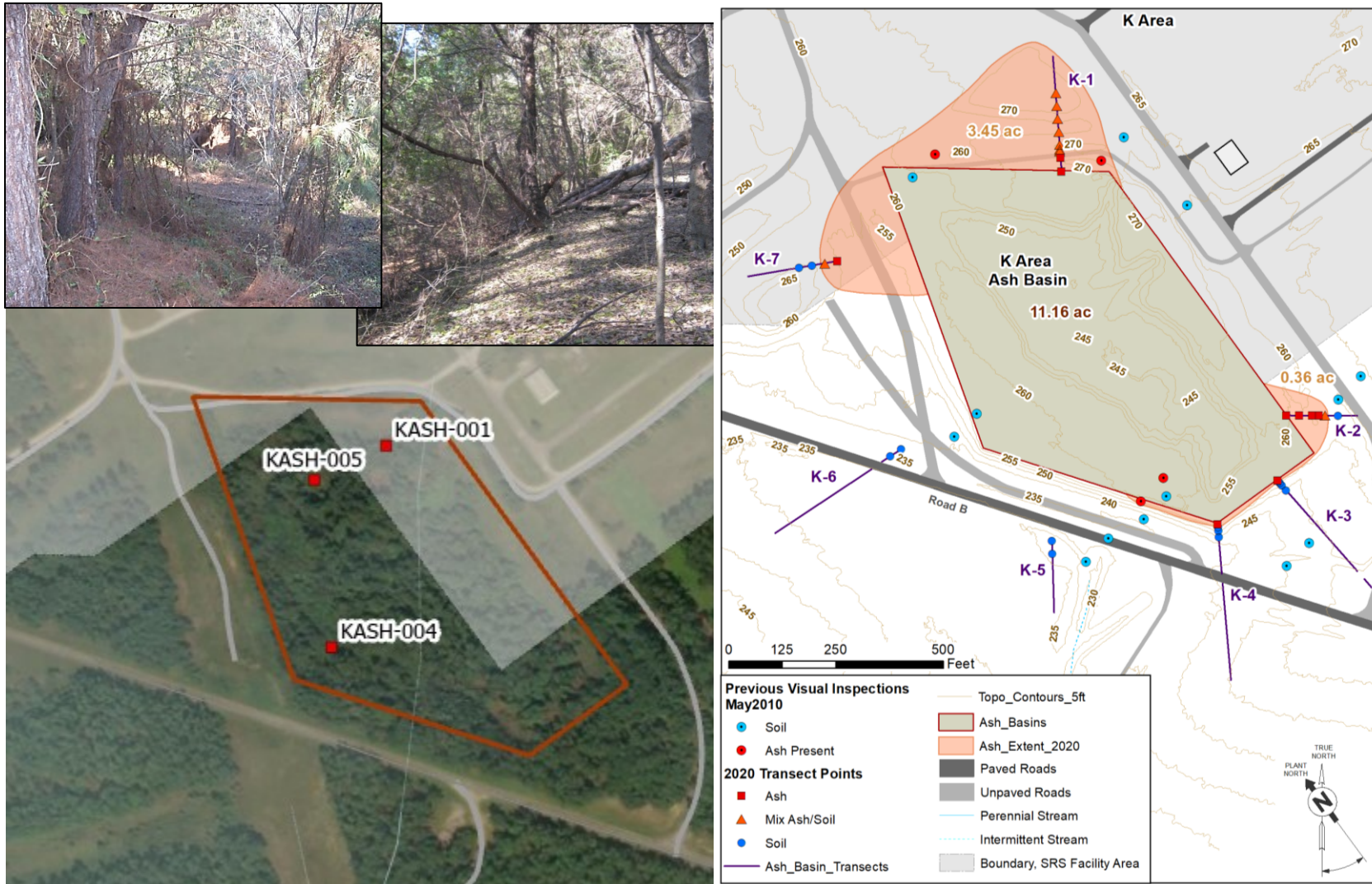


Figure 5. K-Area Ash Basin

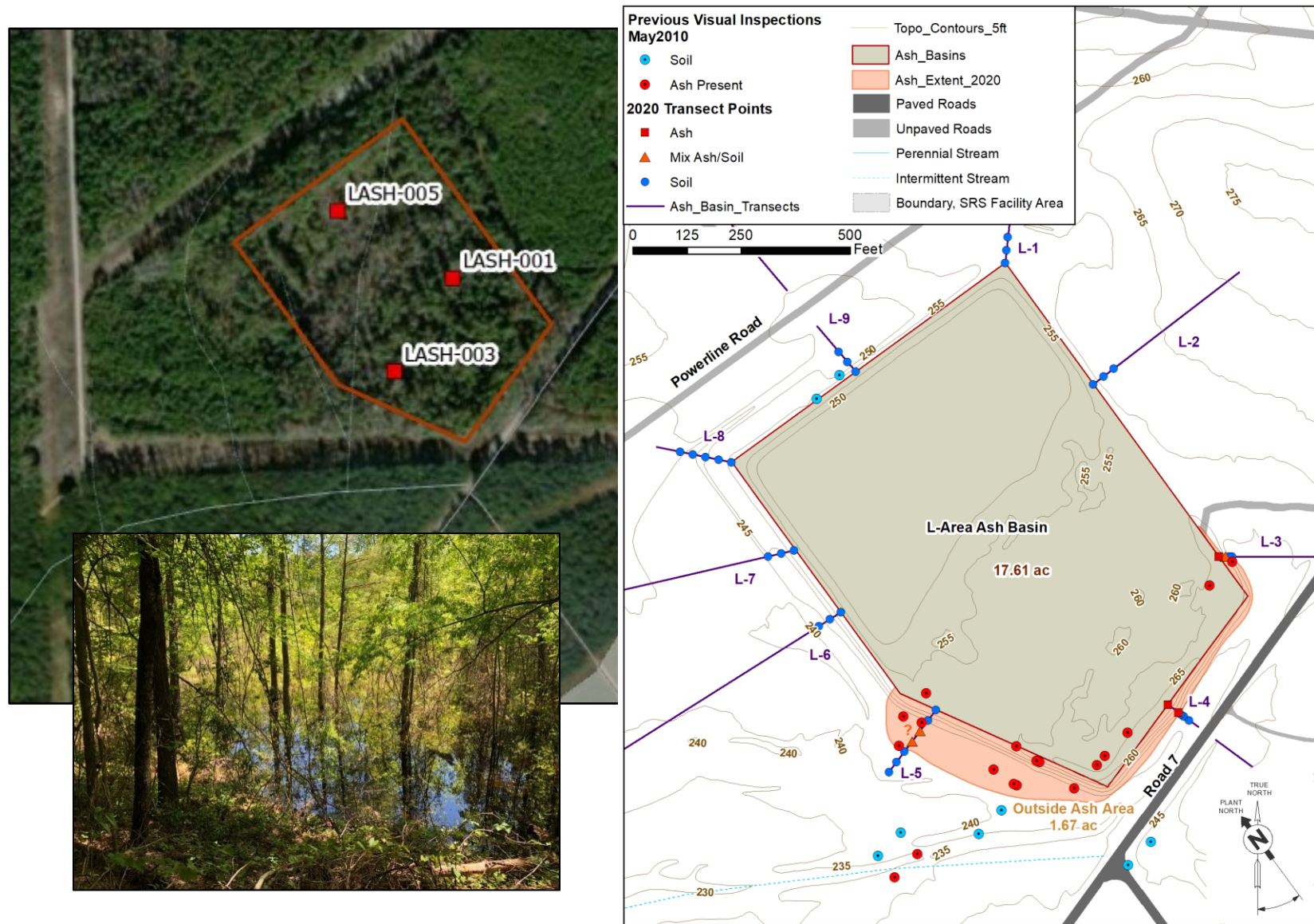


Figure 6. L-Area Ash Basin

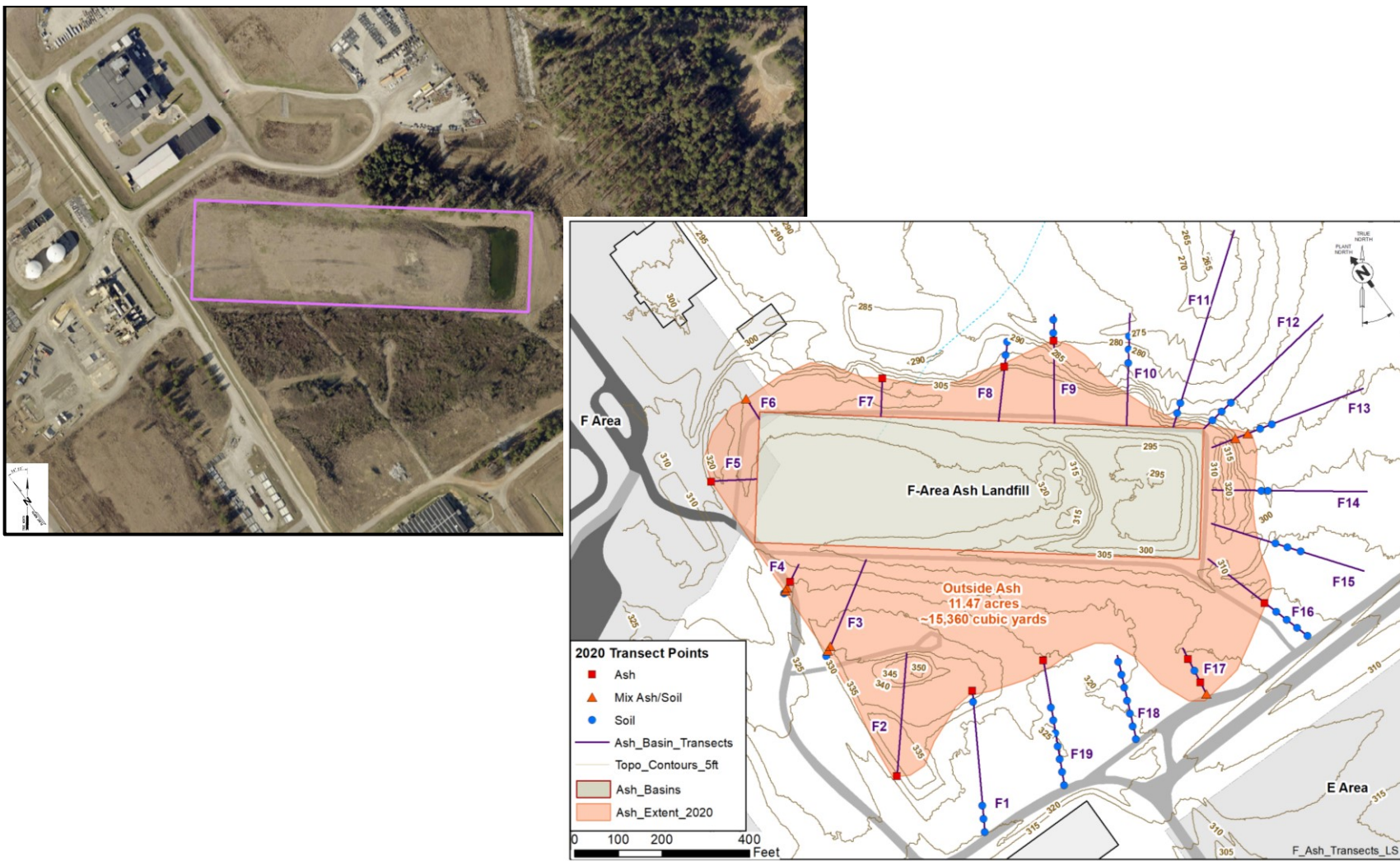


Figure 7. F-Area Ash Landfill