Savannah River
NUCLEAR SOLUTIONS℠

Corrective Measures Implementation Plan/ Remedial Action Implementation Plan for the Early Construction and Operational Disposal Site N-1 (NBN), Central Shops Scrap Lumber Pile (631-2G), and Building 690-N, Process Heat Exchanger Repair Facility (aka Ford Building) Operable Unit (U)

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DISCLAIMER

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Prepared for
U.S. Department of Energy
and
Savannah River Nuclear Solutions, LLC
Aiken, South Carolina

CERTIFICATION

**CMIP/RAIP for the ECODS N-1, CSSLP,
and Ford Building OU (U)
SRNS-RP-2023-00535, January 2024**

[REF: 40CFR270.11 (d)(1)]

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

2/22/24

Richard M. Sprague, Senior Vice President — **Date Signed**

Environment, Safety, Health, and Quality (ESH&Q)
for Savannah River Nuclear Solutions, LLC
as the Co-Operator with the U.S. Department of Energy
Savannah River Operations Office

2/27/24

Karen M. Morrow, Director — **Date Signed**

Remediation and Deactivation &
Decommissioning Division
U.S. Department of Energy
Savannah River Operations Office
Owner and Co-Operator

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LIST OF ABBREVIATIONS AND ACRONYMS

~	approximate, approximately
ac	acre
ARAR	applicable or relevant and appropriate requirement
bgs	below ground surface
BMP	Best Management Practice
BRA	Baseline Risk Assessment
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulation
CMIP	Corrective Measures Implementation Plan
CMIR	Corrective Measures Implementation Report
CMS	Corrective Measures Study
CSBRP	Central Shops Burning/Rubble Pit
CSSLP	Central Shops Scrap Lumber Pile
ECODS	Early Construction and Operational Disposal Site
EPC	Exposure Point Concentration
FFA	Federal Facility Agreement
FS	Feasibility Study
ft	feet
ft^2	square feet
ha	hectare
HASP	Health and Safety Plan
km	kilometer
km^2	square kilometer
LLC	Limited Liability Company
LOD	Limits of Disturbance
LOE	Limits of Excavation
LUC	Land Use Controls
LUCIP	Land Use Control Implementation Plan
m	meter
m^2	square meter
m^3	cubic meter
mg/kg	milligram per kilogram
mi	mile
mi^2	square mile
NBN	No Building Number
OU	Operable Unit
pCi/g	picocurie per gram
PCR	Post-Construction Report
PCB	polychlorinated biphenyls

LIST OF ABBREVIATIONS AND ACRONYMS *(Continued/End)*

PP	Proposed Plan
QAPP	Quality Assurance Project Plan
RA	Remedial Action
RACR	Remedial Action Completion Report
RAIP	Remedial Action Implementation Plan
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RI	Remedial Investigation
ROD	Record of Decision
SAP	Sampling and Analysis Plan
SB	Statement of Basis
SCDHEC	South Carolina Department of Health and Environmental Control
SEMS	Superfund Enterprise Management System
SOW	Statement of Work
SRNS	Savannah River Nuclear Solutions
SRS	Savannah River Site
STR	Subcontract Technical Representative
SWPPP	Storm Water Pollution Prevention Plan
USDOE	United States Department of Energy
USEPA	United States Environmental Protection Agency
WSRC	Washington Savannah River Corporation

1.0 GENERAL DESCRIPTION

1.1 Purpose and Scope

This Corrective Measures Implementation Plan/Remedial Action Implementation Plan (CMIP/RAIP) has been prepared for the Early Construction and Operational Disposal Site N-1 (No Building Number [NBN]), Central Shops Scrap Lumber Pile (631-2G), and Building 690-N, Process Heat Exchanger Repair Facility (aka Ford Building) Operable Unit (OU). The CMIP/RAIP describes the plan for the implementation of the remedial action (RA) selected in the Record of Decision Remedial Alternative Selection for the Early Construction and Operational Disposal Site N-1 (NBN), Central Shops Scrap Lumber Pile (631-2G), and Building 690-N, Process Heat Exchanger Repair Facility (aka Ford Building) Operable Unit and includes the following:

- A general description of the location and history of the site, description of the constituents of concern to be remedied and an overview of the selected RA;
- A summary of any associated study (if applicable) and the application of its results in the remedial design;
- An outline of the necessary design tasks;
- A design summary highlighting the results of each of the design tasks performed to accomplish the objectives of the selected RA;
- A summary of the construction strategy addressing critical components of construction activities required to implement the remedial design;
- Requirements for health and safety, waste management, contamination control, decontamination, quality assurance, quality control inspections, performance verifications (sampling, testing/analysis, when applicable), post-construction operations, maintenance and land use controls, project closeout, post-construction monitoring; and a forecast schedule for implementation of the RA; and

- A forecast schedule and brief discussion of the contents of the upcoming post-Record of Decision (ROD) documents required by the Federal Facility Agreement (FFA) (FFA 1993) for the Savannah River Site (SRS).

1.2 General Description and History

SRS occupies ~803 square kilometers (km^2) (310 square miles [mi^2]) of land adjacent to the Savannah River, principally in Aiken and Barnwell counties of South Carolina (Figure 1). SRS is located ~40.2 km (25 mi) southeast of Augusta, Georgia, and 32 km (20 mi) south of Aiken, South Carolina.

The OU consists of the Early Construction and Operational Disposal Site (ECODS) N-1 subunit, Central Shops Scrap Lumber Pile (CSSLP) subunit, and the Ford Building subunit located at SRS as shown in Figure 2. These three subunits are located in three distinct locations within and near N Area (Central Shops) in an area of relatively flat terrain (Figure 3). The Early Construction and Operational Disposal Site N-1 (NBN), Central Shops Scrap Lumber Pile (631-2G), and Building 690-N, Process Heat Exchanger Repair Facility (aka Ford Building) Operable Unit (ECODS N-1, CSSLP, and Ford Building OU) is located within an industrial area, and the future land use is reasonably anticipated to remain industrial.

Groundwater is not part of the OU and will be addressed under the Central Shops Groundwater OU.

1.2.1 ECODS N-1 Subunit

ECODS N-1 is one of 25 ECODS at SRS that were used during the construction and early operation of SRS for disposal of construction debris and other non-radioactive waste materials. It is located within the Pen Branch watershed. Historical aerial photographs revealed that the area where the subunit is located was farmland prior to construction of SRS. ECODS N-1 is 107 meters (m) (350 feet [ft]) long by 15 m (50 ft) wide. Waste disposed of in ECODS N-1 was buried in two trenches, each ~46 m (150 ft) long and located end-to-end. ECODS N-1 was used to dispose of trash and construction debris, some containing asbestos, associated with the construction and operation of N Area. A portion of one pit may have been used as a burn pit for disposing of combustible waste.

ECODS N-1 is located in a relatively flat area that slopes gradually to the south. Ground surface elevation at ECODS N-1 is ~88 m (290 ft) above mean sea level. Runoff from the subunit runs overland to the south and is collected by an unnamed tributary of Pen Branch, which is 360 m (1,200 ft) to the south. From this point, the unnamed tributary flows south for 1.9 km (1.2 mi) before discharging into Pen Branch, which then flows southwest for an additional 17 km (11 mi) before entering the Savannah River.

ECODS N-1 was in use from August 1952 to June 1954. ECODS N-1 is currently a wooded area containing mature pine trees, providing a moderate habitat quality for ecological receptors (Figure 4).

1.2.2 CSSLP Subunit

The CSSLP subunit is located in the Fourmile Branch watershed in N Area. The former scrap lumber pile lies in the southwestern sloping plain adjacent to the Central Shops Burning/Rubble Pits (631-1G and 631-3G) (CSBRPs). The CSSLP subunit is segregated into two areas: the Upland Area (~1.3 hectares (ha) [3.3 acres (ac)]) and the Surface Water Impoundment Area (~0.41 ha [1.02 ac]) (Figure 5). A wetland and intermittent stream (located within the wetland area) is located south of the CSSLP subunit. The Upland Area was cleared in 1951 and used for equipment laydown and rubble storage in addition to an area for burning construction-related material. Before 1951, the area was farmland. Starting in 1975, operating procedures called for the CSSLP to receive inert, nonhazardous materials, including items such as nails, hinges, scrap lumber, poles, crates, pallets, and unsalvageable wood products. Historically, the CSSLP was used to burn various unknown types and quantities of wood, which may have included treated lumber and creosote-treated wood. Historical burning at the CSSLP produced ash that was placed directly into CSBRPs, which were closed under a ROD in 2002 (WSRC 2002). Between 1992 and 1994, the Surface Water Impoundment Area was constructed in the southern portion of the CSSLP subunit to capture stormwater runoff from the CSSLP (Figure 5).

Active burning at the CSSLP ended in the mid-2000s. The CSSLP subunit is currently sporadically covered by immature volunteer pine trees and provides marginal habitat quality for ecological receptors.

1.2.3 Ford Building Subunit

The Ford Building subunit is located within the N Area facility boundary in the Pen Branch watershed. The Ford Building was a one-story metal frame structure on a concrete pad, covering 900 square meters (m^2) (9,700 square feet [ft^2]). Ancillary equipment and other areas are included in the Ford Building subunit, including the remnants of a 13.8 kV Substation (652-44N), a Fuel Oil Tank Containment Dike, a shielding remnant area, and the Excess Equipment Yard (745-N) (Figure 6).

The Ford Building was constructed in the 1950s to test Ford Company-manufactured motor control packages for control rod drive mechanisms before they were installed in the SRS reactors. The primary area of the building consisted of a machine shop with offices, storage rooms, restrooms, and a service area.

In 2021, the deactivation and decommissioning phase of the Ford Building (690-N) was completed and documented in the Decommissioning Project Final Report Building 690-N, Process Heat Exchanger Repair Facility (SRNS 2021a). The building structure was demolished to its slab, and an engineered concrete cover system was installed over the entire concrete remnant slab area extending out 0.3 m (1 ft) from the building edge (SRNS 2019). The 15-centimeter (6-inch) concrete cover was designed to be compliant with polychlorinated biphenyl (PCB) capping requirements found in Toxic Substances Control Act regulations (40 Code of Federal Regulations [CFR] 761.61[a][7]). The concrete cover system serves to break the direct exposure pathway to PCBs and cesium-137 (Cs-137) in the remnant slab. The concrete cover system also achieves the substantive requirements under 40 CFR 761.62(c) for risk-based disposal of bulk product waste.

1.3 Nature and Extent of Contamination

Results of the contaminant migration evaluation indicate the contaminants at the ECODS N-1, CSSLP, and Ford Building are not a potential source for groundwater contamination (SRNS 2021b).

1.3.1 ECODS N-1 Subunit Nature and Extent of Contamination

There were no refined constituents of concern (RCOCs) identified at the ECODS N-1 subunit. However, asbestos was identified in subsurface soils that poses a risk for human exposure if disturbance of the soils occurs.

1.3.2 CSSLP Subunit Nature and Extent of Contamination

The primary contaminants at the CSSLP are the following:

- Arsenic is present in surface soil (0 to 0.3 m [0 to 1 ft]) (exposure point concentration [EPC] = 16.4 milligram per kilogram [mg/kg]) exceeding 1E-06 risk level for the resident (risk = 2.4E-05) and industrial worker (risk = 5.5E-06) scenarios; and

- Arsenic is present in surface sediment (0 to 0.3 m [0 to 1 ft]) (EPC = 8.27 mg/kg) exceeding 1E-06 risk level for the resident (risk = 1.2E-05) and industrial worker (risk = 2.8E-06) scenarios.

1.3.3 Ford Building Subunit Nature and Extent of Contamination

Contaminants associated with the Ford Building Subunit are as follows:

- Ford Building (690-N) slab – Prior to placement of a concrete cover with minimum 0.46 m (18 in.) gravel underlay in 2021, PCBs (Aroclor 1254 and 1260) and Cs-137 (+D) were present at the Ford Building remnant slab in concentrations exceeding 1E-06 risk level for both the resident and industrial worker scenarios; and

- Cobalt-60 (Co-60) is present in surface soil (0 to 1 ft) (EPC = 0.545 picocuries/gram [pCi/g]) exceeding 1E-06 risk level for the resident scenario (risk = 5.5E-05) and industrial worker (risk = 1.1E-05).

1.4 Remedial Action

As stated in the ROD (SRNS 2022a), the following RAs have been selected for the ECODS N-1, CSSLP, and Ford Building OU:

The selected remedy for the ECODS N-1 subunit is Land Use Controls (LUCs) to prevent human exposure to asbestos that is present in subsurface soils. This remedy was selected at the ECODS N-1 subunit due to the overall protection and effectiveness of the remedy.

The selected remedy for CSSLP subunit is excavation (hot spot removal) and disposal of contaminated media, which supports unrestricted land use and will not require LUCs, annual site inspections, or five-year remedy reviews. This remedy will eliminate exposure of contaminated media to human receptors. This remedy includes excavating contaminated media exceeding the arsenic cleanup level (8.2 mg/kg) down to 1 ft below ground surface (bgs), disposing of the contaminated media off-site, and backfilling with clean soil to grade.

The selected remedy for the Ford Building subunit is LUCs to prevent human exposure to Cs-137 and PCBs on the Ford Building remnant concrete slab and Co-60 in surface soils underlying a portion of the gravel apron surrounding the slab. This remedy was selected at the Ford Building subunit due to the short half-life (~5.3 years) of Co-60. The risks to the industrial worker will be below 1E-06 within 20 years, thereby eliminating any long-term requirements other than LUCs for the concrete cover that currently exists over the remnant slab.

LUCs for the ECODS N-1 subunit and Ford Building subunit will be in effect until concentrations of hazardous substances are at levels that allow for unrestricted use and exposure and include the following:

- Warning signs posted at the ECODS N-1 and Ford Building subunits around the waste unit boundaries/areas, operations and maintenance of the signage, operations and maintenance of the concrete cover over the Ford Building remnant slab;

- Administrative/Worker Access Controls: Includes SRS administrative controls and land use restrictions for onsite workers as implemented under the Site Use/Site Clearance Program and other controls that are in place to ensure worker safety, including work controls/work packages that include worker training, health and safety requirements, and pre-work briefings; and

- Engineering controls: SRS access controls that limit and inform SRS workers and inadvertent trespassers as described in the 2023 Resource Conservation and Recovery Act (RCRA) Permit Renewal Application, Volume I, Section F.1, which describes the security procedures and equipment, 24-hour surveillance system, artificial or natural barriers, entry control systems, and warning signs in place at the SRS boundary.

This remedy was selected because it meets the remedial action objectives (RAOs), provides overall protection of human health and the environment, complies with Applicable or Relevant and Appropriate Requirements (ARARs), and is cost-effective. The remedy provides a high level of long-term protection to the radioactive and hazardous constituents that remain in place. A conceptual site model (CSM) to illustrate how implementation of the RA breaks the exposure pathways is provided in Figure 7.

The RCRA permit will be revised to reflect selection of the final remedy using the procedures under 40 CFR Part 270, and South Carolina Hazardous Waste Management Regulations R.61-79.264.101; 270.

1.5 Remedial Action Objectives

As stated in the ROD (SRNS 2022a), the following RAOs have been identified for the ECODS N-1, CSSLP, and Ford Building OU:

ECODS N-1 subunit

- Prevent residential and industrial exposure to asbestos that is present in the subsurface. The primary route of exposure is the inhalation pathway.

CSSLP subunit

- Prevent residential and industrial exposure to arsenic in surface soils in the Upland Area at levels exceeding 1E-06 risk and/or SRS background concentration. The primary route of exposure is the incidental ingestion pathway; and

- Prevent residential and industrial exposure to arsenic in surface sediments in the Surface Water Impoundment Area at levels exceeding 1E-06 risk and/or SRS background concentration. The primary route of exposure is the incidental ingestion pathway.

Ford Building subunit

- Prevent residential and industrial exposure to Co-60 in surface soils at levels exceeding 1E-06 risk. The primary route of exposure is the external radiation pathway; and

- Prevent residential and industrial exposure to PCBs and Cs-137 at the Ford Building (690-N) remnant concrete slab at levels exceeding 1E-06 risk and PCB ARAR concentration of 1 mg/kg for free release. There is no human health exposure risk under the current configuration (i.e., no exposure pathway) due to the presence of the engineered concrete cover system over the remnant slab.

1.6 Remedial Action Implementation Schedule

The ECODS N-1, CSSLP, and Ford Building OU implementation schedule is provided in Figure 8.

1.7 Community Relations

The Statement of Basis/Proposed Plan for the Early Construction and Operational Disposal Site N-1 (NBN), Central Shops Scrap Lumber Pile (631-2G), and Building 690-N, Process Heat Exchanger Repair Facility (aka Ford Building) Operable Unit (SRNS 2022b) is part of the Administrative Record File and identifies the preferred RA for addressing hazardous substances existing at the ECODS N-1, CSSLP, and Ford Building OU. The Statement of Basis/Proposed Plan (SB/PP) and associated fact sheet were made available for public comment. Public notification of the comment period was made through mailings of the SRS Environmental Bulletin, a newsletter sent to approximately 300 citizens in South Carolina and Georgia, and through notices in the Aiken Standard, the Allendale Citizen Leader, the Augusta Chronicle, the Barnwell People-Sentinel, and the State newspapers. The public comment period was also announced on local radio stations.

The 45-day public comment period for the SB/PP began on February 16, 2023 and ended on April 2, 2023. No comments were received from the public.

A fact sheet used to inform interested parties about activities related to the RA is attached as Appendix A. An opportunity for a public briefing will be held before initiation of the RA.

2.0 REMEDIAL DESIGN

2.1 Design Strategy

The design strategy for the ECODS N-1, CSSLP, and Ford Building OU pertains to the following RAs as identified in the approved ROD (SRNS 2022a):

- LUCs for the ECODS N-1 subunit;
- Excavation (hot spot removal), and disposal of surface soil and sediment in exceedance of the arsenic cleanup level (8.2 mg/kg) at the CSSLP subunit; and
- LUCs for the Ford Building subunit.

2.1.1 Design Strategy for LUCs

The RA at ECODS N-1 and Ford Building subunits will require LUCs. The design strategy for the LUCs includes the development of a Land Use Control Implementation Plan (LUCIP) (SRNS 2023) and the placement of access control warning signs. The construction and placement of the signs will be performed by Savannah River Nuclear Solutions (SRNS) personnel or by a subcontractor. Planned locations of the signs are provided in Figures 4 and 6. The design for the signs will adhere to design standards that are typical of access control warning signs placed at other OUs as identified in Attachment 1.

2.1.2 Design Strategy for Excavation, (Hot Spot Removal) and Disposal of Surface Soil/Sediment

The RA at the CSSLP subunit will require a multi-phased design strategy involving excavation and disposal of surface soil and sediment in exceedance of the identified arsenic cleanup level (8.2 mg/kg). Stormwater management of the rainwater in the Surface Water Impoundment Area (capacity of ~1,324,894 L [350,000 gal]) will be accomplished by releasing surface water through a best management practice (BMP) stormwater-sediment feature. After the Surface Water Impoundment Area is emptied of stormwater, if water is present, the estimated area to be cleared is ~0.77 ha (1.9 ac). Pre-excavation soil samples per the Sampling and Analysis Plan (SAP) (Appendix B) will then be taken to determine the lateral extent of the area to be excavated. This area will be surveyed by SRNS personnel to establish the limit of disturbance (LOD) for the excavation activities. The LOD will include areas necessary for equipment access and staging. The LOD will be used to determine if a Storm Water Pollution Prevention Plan (SWPPP) is required. Land disturbances less than 0.4 ha (1 ac) do not require a SWPPP. Once the LOD is established, the area to be excavated will be grubbed. BMPs will be implemented to mitigate erosion and provide sediment control.

After excavating an estimated ~1,788 cubic meters (m^3) (2,339 yd^3) (SRNS 2021b) of contaminated media to a depth of 0.3 m (1 ft) bgs, the excavated material will be directly loaded into roll-off containers and staged at the site. The excavated wastes that contain contaminated soil/sediment will be hauled to a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Off-Site Rule-approved Landfill (e.g., Three Rivers Landfill) for disposal.

A statement of work (SOW) will be prepared to describe the project boundaries and extent of sediment and soil excavation. The excavation (hot spot removal) and disposal of soil and sediment will be executed per the SOW either by SRNS construction or subcontract. The method of excavation of the sediment/soil will be designed to minimize disruption to the CSSLP subunit and will be proposed by the subcontractor and approved by SRNS as part of the bidding process.

Demobilization and site restoration will occur after completion of the excavation and disposal of contaminated media.

2.2 Design Activities

The following is a list of design tasks necessary to implement the selected RAs.

ECODS N-1 and Ford Building Subunits LUCs

- Identify access control warning sign locations in the field and obtain initial survey coordinates; and
- Prepare site maps with sign locations to be included in the Post-Construction Report/Corrective Measures Implementation Report/Remedial Action Completion Report (PCR/CMIR/RACR).

CSSLP Subunit Excavation (Hot Spot Removal) and Disposal of Contaminated Media

- Prepare definitive site survey of the excavation area and areas necessary for equipment access and staging;
- Pre-excavation sampling to determine the extent of contaminated media above the arsenic cleanup level (8.2 mg/kg) at the identified location in CSSLP subunit;
- Establish excavation boundaries and LOD based on the results of the sampling as defined in the SAP (Appendix B);
- Develop Health and Safety Plan (HASP);
- Develop Waste Management Plan; and
- Develop SOW for subcontractor or SRNS construction project execution.

2.3 Design Deliverables

Design deliverables include excavation drawings and a SOW for execution.

2.4 Results of Data Acquisition

2.4.1 Evaluation of Studies

A treatability study was not required for the implementation of the selected RAs. Data presented in the RCRA Facility Investigation/Remedial Investigation/Baseline Risk Assessment/Corrective Measures Study/Feasibility Study (RFI/RI/BRA/CMS/FS) (SRNS 2021b) were used to approximate the LUC boundaries and the locations requiring excavation. Soil/sediment sampling as described in the SAP (Appendix B) will be used to determine the excavation lateral limits at the designated locations in CSSLP subunit.

2.5 Design Criteria

The LUCs and their implementation for the ECODS N-1 and Ford Building subunits are described in the LUCIP (SRNS 2023).

The design criteria for the CSSLP subunit include excavation of contaminated surface soil and sediment in the identified locations within the subunit. The extent of contaminated media will be verified via sampling as described in the SAP (Appendix B) to establish the limits of excavation (LOE). Results of the sampling will be presented in the PCR/CMIR/RACR. A table of ARARs, which includes the ARAR type, citation, status, a brief descriptive summary of what the ARAR requires, and a brief explanation for inclusion of the ARAR, is provided for the ECODS N-1 subunit in Table 1, CSSLP subunit in Table 2, and Ford Building subunit in Table 3.

Excavation within the LOE at the CSSLP subunit will be performed by dewatering the Surface Water Impoundment Area, if water is present, and excavating the soil and sediment within the identified LOE. Sediment controls will require the use of SRNS-approved BMPs. Free liquids, if any, within the excavated sediments will be treated with a drying agent prior to shipment within the SRS boundary to the CERCLA Off-Site Rule-approved Landfill (e.g., Three Rivers Landfill) for disposal.

Demobilization and site restoration of the CSSLP subunit will occur after completion of the excavation and disposal of contaminated media. Site restoration includes contouring the site to the original grade, backfilling to the original grade with 8 inches of common backfill and 4 inches of topsoil, applying

fertilizer, lime, and establishing vegetation with seed or sod and mulch as necessary. The backfill will be sampled and analyzed to verify compliance with SRS Fill and Cover Material Verification Protocol (WSRC 2003).

2.6 Drawings

Attachment 1 provides a sketch of a typical design for signs.

2.7 Design Technical Information

Design technical information will be provided in a standard SOW for construction. This SOW will be issued to the subcontractor (or SRNS site construction) with the excavation boundary drawing to provide the details of the existing conditions and excavation requirements.

3.0 PERMITTING REQUIREMENTS

Permitting requirements include the following:

- A SRS Site Use/Site Clearance Permit will be required for the placement of signage at the ECODS N-1 and Ford Building subunits and for the pre-excavation, excavation and disposal activities at the CSSLP subunit.

4.0 CONSTRUCTION

4.1 Construction Strategy

The construction strategy is applicable to the LUCs and the Excavation (Hot Spot Removal) and Disposal of Contaminated Media RAs.

For the LUCs, the access control warning signs will be installed per the LUCIP and the design sketch in Attachment 1. Once Site Use/Site Clearance is obtained, the signs will be installed, and as-built drawings will be prepared. Inspections and maintenance will be performed per the LUCIP.

The construction strategy for the Excavation (Hot Spot Removal) and Disposal of Contaminated Media RA will be implemented in phases. The first phase will include sampling to delineate the extent of contaminated media at the designated locations in the CSSLP subunit and characterize the waste for disposal. The design layout as depicted in Figure 5 will be updated based on the results of the sampling. The next phase will include the development of a SOW and procurement of subcontract services or establishment of a work agreement with SRS site forces to perform the minimum 12-inch deep excavation within the LOE. Following execution of the excavation, demobilization and site restoration will occur.

4.2 Construction Activities

Construction activities will be executed by SRS personnel and/or by a subcontractor. The general construction activities include, but are not limited to, the following:

- Implementation of the LUCs at ECODS N-1 and Ford Building subunits (i.e., installation of access control warning signs);
- Pre-excavation sampling to determine the extent of contaminated media above the arsenic cleanup level (8.2 mg/kg) at the identified locations in CSSLP subunit (referred to as “hot spot”);
- Project layout – surveying – for the LOE and LOD;
- Installation of erosion and sediment control measures;
- Clearing and grubbing of laydown yards and the LOE, and access road improvements (subcontract execution). Vegetation removed outside of the LOE boundary will be pushed aside and left within the CSSLP subunit;
- Mobilization of excavation equipment;
- Dewatering, if needed, and excavation of contaminated vegetation and soil/sediment within the LOE;

- Treatment of soil/sediment with a drying agent (if needed);
- Disposal of contaminated media in an existing CERCLA Off-Site Rule-approved Landfill (e.g., Three Rivers Landfill) for disposal; and
- Demobilization/site restoration.

4.3 Remedial Design Change Control

A subcontract technical representative (STR) will be assigned by SRNS to interface with any subcontractors performing the remediation, the SRNS project engineers, and other project team members. Subcontractors will be required to promptly notify the STR of observed irregularities or nonconformance of work or products. Any requested deviations from the SOW and design documents must be formally documented by the subcontractor and approved by SRNS. The United States Department of Energy (USDOE) will notify the U.S. Environmental Protection Agency (USEPA) and South Carolina Department of Health and Environmental Control (SCDHEC) regulators within a reasonable time frame if significant problems arise regarding any aspect of the Remedial Design/RA process. In particular, scheduling, budget and implementability/technical issues will be brought to the attention of USEPA and SCDHEC as soon as they are identified. Notifications will follow established protocols for major and minor changes during construction. If the change is considered major, National Oil and Hazardous Substances Pollution Contingency Plan §300.435(c)(2)(i) or (ii) will be followed for public participation requirements. Section 300.435(c)(2)(i) applies to Explanation of Significant Difference for RODs and (ii) applies to ROD amendments.

4.4 Waste Disposal and Transport

Excavated soil and sediment must not contain free liquids (i.e., free liquids cannot exceed 1% of the waste volume in a disposal container) for disposal at a CERCLA Off-Site Rule- approved Landfill (e.g., Three Rivers Landfill). As a result, the excavated contaminated soil and sediment will be treated with a drying agent, Waste Lock 770 or SRNS approved equivalent, if necessary to absorb the water from the excavated material prior to shipping.

Soil, sediment, and contaminated vegetation (excavated from the CSSLP subunit) will be placed into lined roll-off containers or skid pans staged near the excavation area. If roll-off containers are used, they will be partially filled to ensure the gross weight of 16,323 kilograms (36,000 pounds) is not exceeded for transportation.

4.5 Quality Assurance

Any portions of the RA that are performed by a subcontractor will require an approved project-specific Quality Assurance Project Plan (QAPP) (SRNS 2012). The QAPP will be submitted to SRNS for review and approval prior to the commencement of any field work. At a minimum, the QAPP will address the following elements:

- Management and Organization;
- Personnel Qualification and Training;
- Procurement Document Control;
- Document Control;
- Implementation of Work Processes;
- Testing and Inspections;
- Control of Measuring and Test Equipment;
- Handling, Storage and Shipping;
- Control of Subcontractor Requested Changes; and
- QA Records.

4.6 Non-Conformances

All non-conformances will be evaluated, resolved, or rectified as described in the pertinent sections of this document and per the subcontract documents where applicable. Design changes from the resolution of non-conforming conditions will be processed per Section 4.3, Remedial Design Change Control.

4.7 Health and Safety Plan

A Site-Specific HASP will be prepared in accordance with 29 CFR, Part 1910, Section 120, and will be implemented by the construction team. The HASP will be approved in accordance with SRS procedures, and a copy will be available at the jobsite at all times.

The plan will describe the following:

- Required actions by the facility personnel in case of fires, explosions, or any unplanned releases of hazardous waste;
- Arrangements with onsite security, fire department, medical facility, and emergency response teams to coordinate emergency services;
- Names, addresses, and phone numbers (office and home) of all persons qualified to act as emergency coordinators;
- Emergency equipment available at the facility; and
- Evacuation plan for facility personnel.

5.0 POST-CONSTRUCTION

5.1 Post-Construction Monitoring

No post-construction monitoring is required for this remediation.

5.2 Contingency Plan Implementation Strategy

All field construction activities performed by the subcontractor will be overseen by an SRNS STR. The STR is responsible for ensuring that construction/excavation activities are performed in accordance with the contract requirements and for interfacing with the subcontractor and other SRNS project team members.

5.3 Operations, Maintenance, and Institutional Control

The LUCIP will identify LUCs and maintenance in accordance with the requirements defined in the ROD and will remain in effect unless it is modified as needed to be protective of human health and the environment.

5.4 Requirements for Project Closeout

Completion of construction will be verified by the SRNS project team. The SRNS project team will perform periodic surveillance of construction activities and will compile the results of the pre-excavation sampling in the PCR/CMIP/RAIP. As-builts of the sign locations will be prepared to document the access controls associated with the LUCs.

5.5 Schedule for Federal Facility Agreement Deliverables

A schedule of the FFA milestones is provided in Figure 8. The PCR/CMIR/RACR for the OU will be combined into a single document. The ECODS N-1, CSSLP, and Ford Building OU PCR/CMIR/RACR will be submitted in accordance with the requirements for submittal of regulatory documents as identified in the FFA. The PCR/CMIR/RACR is scheduled to be prepared and submitted to USEPA and SCDHEC within 160 calendar days of completion of the RA. The PCR/CMIR/RACR will include items such as a chronology of events, performance standards and construction quality control information, a description of the construction activities, final inspections, project as-built drawings, a summary of project costs, and the results of the confirmation sampling.

6.0 REFERENCES

FFA, 1993. *Federal Facility Agreement for the Savannah River Site,* Administrative Docket No. 89-05-FF (Effective Date: August 16, 1993)

SRNS, 2012. *Area Completion Projects Programmatic Quality Assurance Project Plan for Environmental Data Collection and Management*, ERD-AG-2005-00001, Revision 5, Savannah River Site, Aiken, SC

SRNS, 2019. *Closure Cap Design for the 690-N Process Heat Exchanger Repair Facility*, T-CLC-N-00005, Revision 0, November 2019, Savannah River Nuclear Solutions, LLC, Savannah River Site, Aiken, SC

SRNS, 2021a. *Decommissioning Project Final Report Building 690-N, Process Heat Exchanger Repair Facility*, V-PCOP-N-00025, Revision 0, Savannah River Nuclear Solutions, LLC, Savannah River Site, Aiken, SC

SRNS, 2021b. *Resource Conservation and Recovery Act Facility Investigation/Remedial Investigation Report with Baseline Risk Assessment and Corrective Measures Study/Feasibility Study for the Early Construction and Operational Disposal Site N-1 (NBN), Central Shops Scrap Lumber Pile (631-2G), and Building 690-N, Process Heat Exchanger Repair Facility (aka Ford Building) Operable Unit (U)*, SRNS-RP-2021-00548, Rev. 0, Savannah River Nuclear Solutions, Limited Liability Company (LLC), Savannah River Site, Aiken, SC

SRNS, 2022a. *Record of Decision Remedial Alternative Selection for the Early Construction and Operational Disposal Site N-1 (NBN), Central Shops Scrap Lumber Pile (631-2G), and Building 690-N, Process Heat Exchanger Repair Facility (aka Ford Building) Operable Unit (U)*, SRNS-RP-2022-01284, Rev. 0, Savannah River Nuclear Solutions, LLC, Savannah River Site, Aiken, SC

SRNS, 2022b. *Statement of Basis/Proposed Plan for the Early Construction and Operational Disposal Site N-1 (NBN), Central Shops Scrap Lumber Pile (631-2G), and Building 690-N, Process Heat Exchanger Repair Facility (aka Ford Building) Operable Unit)*, SRNS-RP-2022-00202, Rev. 1, Savannah River Nuclear Solutions, LLC, Savannah River Site, Aiken, SC

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WSRC, 2002. *Record of Decision Remedial Alternative Selection for the Central Shops Burning/Rubble Pits (CSBRP) (631-1G and 631-3G) Operable Unit (U),* WSRC-RP-200-4265, Rev. 1.1, October 2002, Westinghouse Savannah River Company, Aiken, SC

WSRC, 2003. *SRS Fill and Cover Material Verification Protocol*, ERTEC-2003-00012, Soil and Groundwater Closure Projects Engineering and Technology Technical Memorandum, Savannah River Site, Aiken SC.

7.0 APPENDICES

Appendix A Fact Sheet

Appendix B Sampling and Analysis Plan for Pre-Excavation for the ECODS N-1, CSSLP, and Ford Building OU

8.0 ATTACHMENTS

Attachment 1 Access Control Warning Sign Sketch

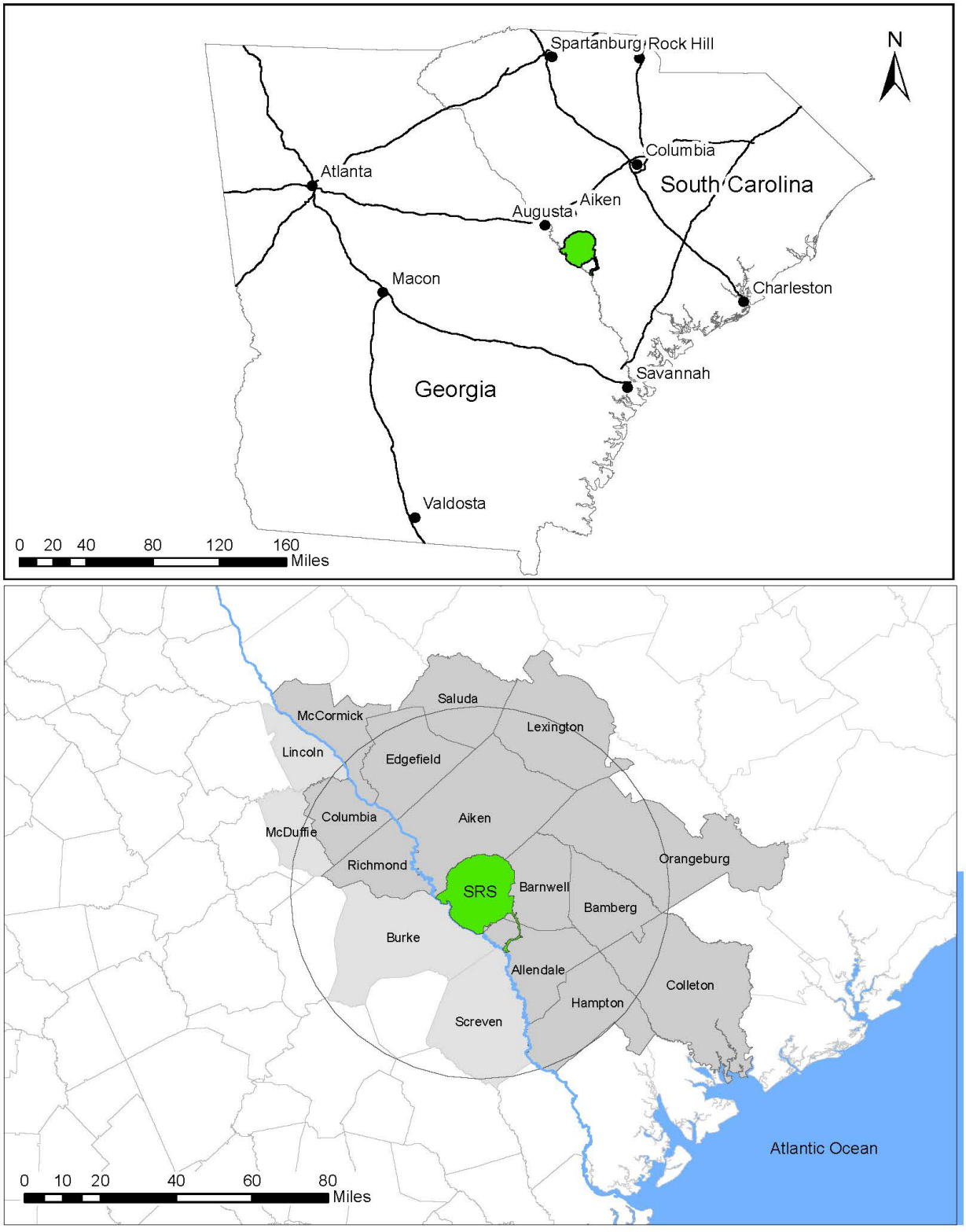


Figure 1. Location of the SRS

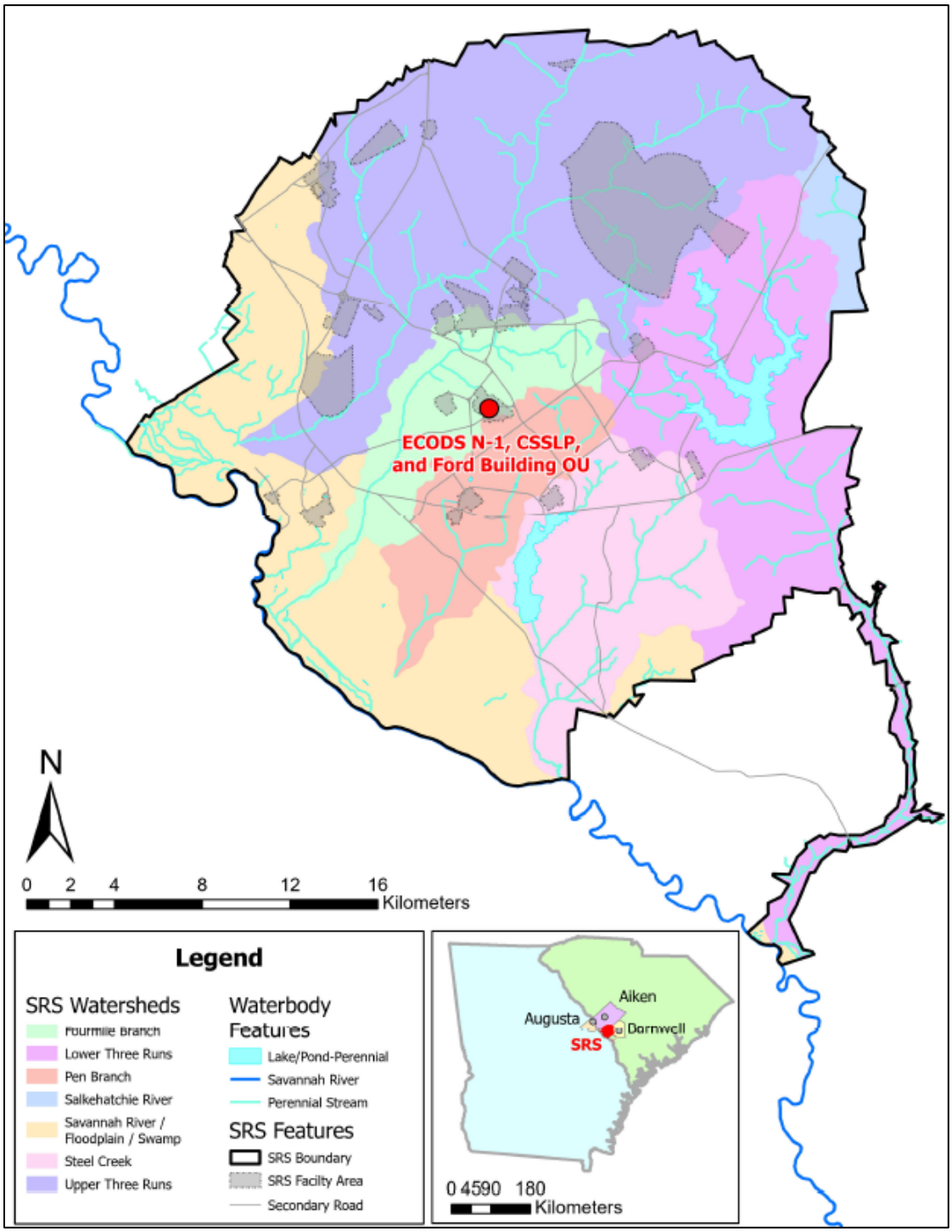


Figure 2. Location of the ECODS N-1, CSSLP, and Ford Building OU at the Savannah River Site

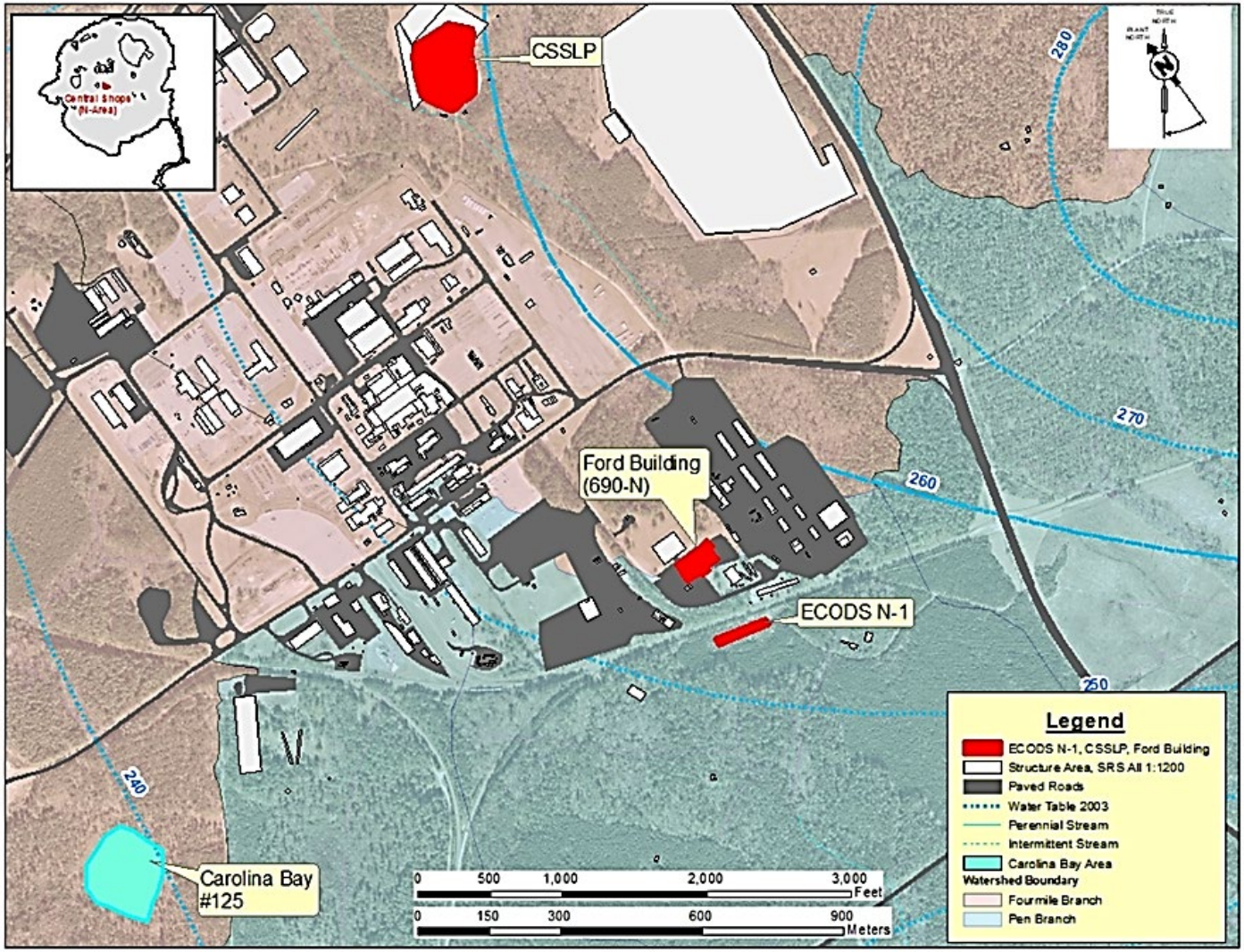


Figure 3. Location of the ECODS N-1, CSSLP, and Ford Building OU (N Area)

Figure 4. ECODS N-1 Approximate Area of Land Use Control Boundary

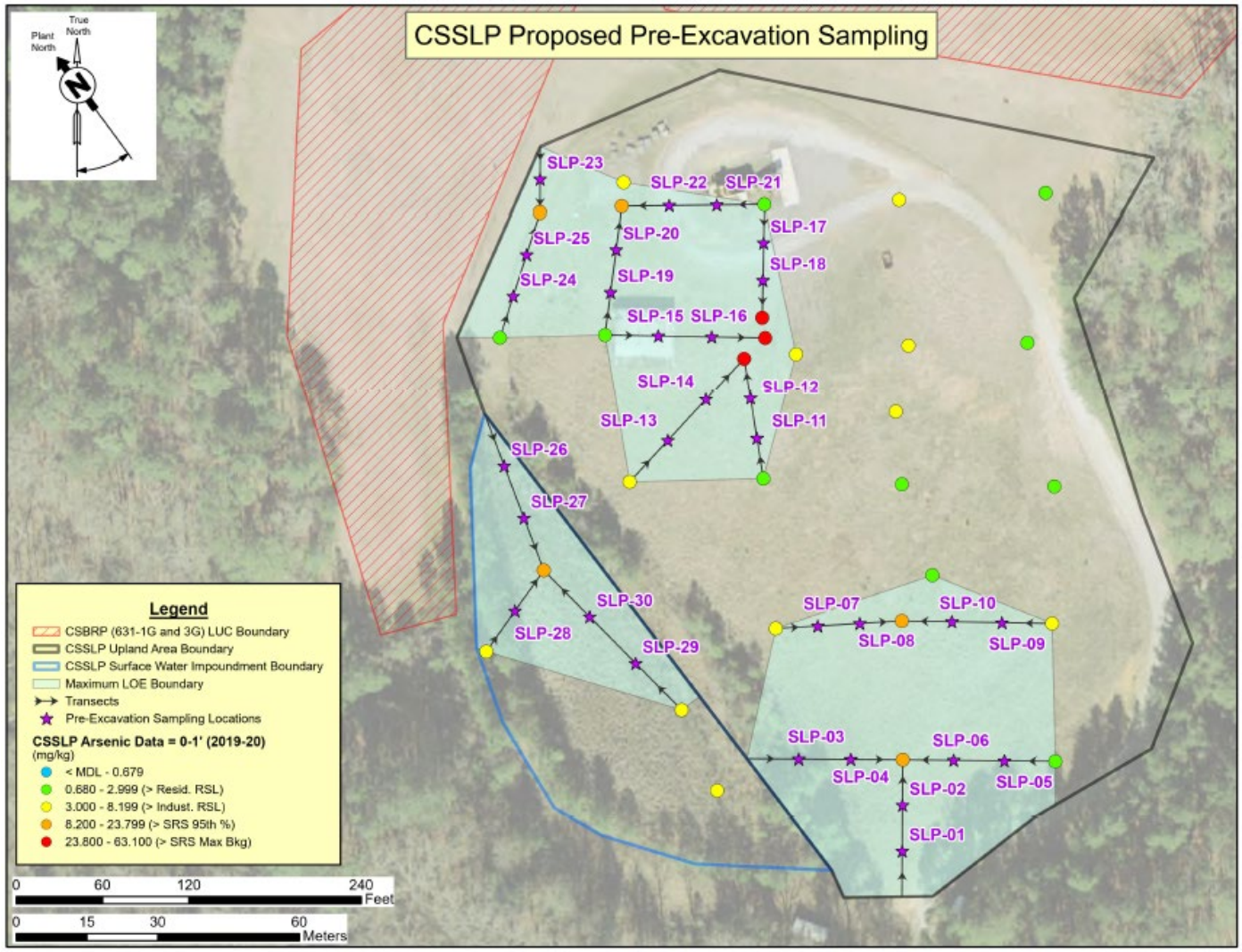


Figure 5. CSSLP Subunit Hotspot Removal Locations

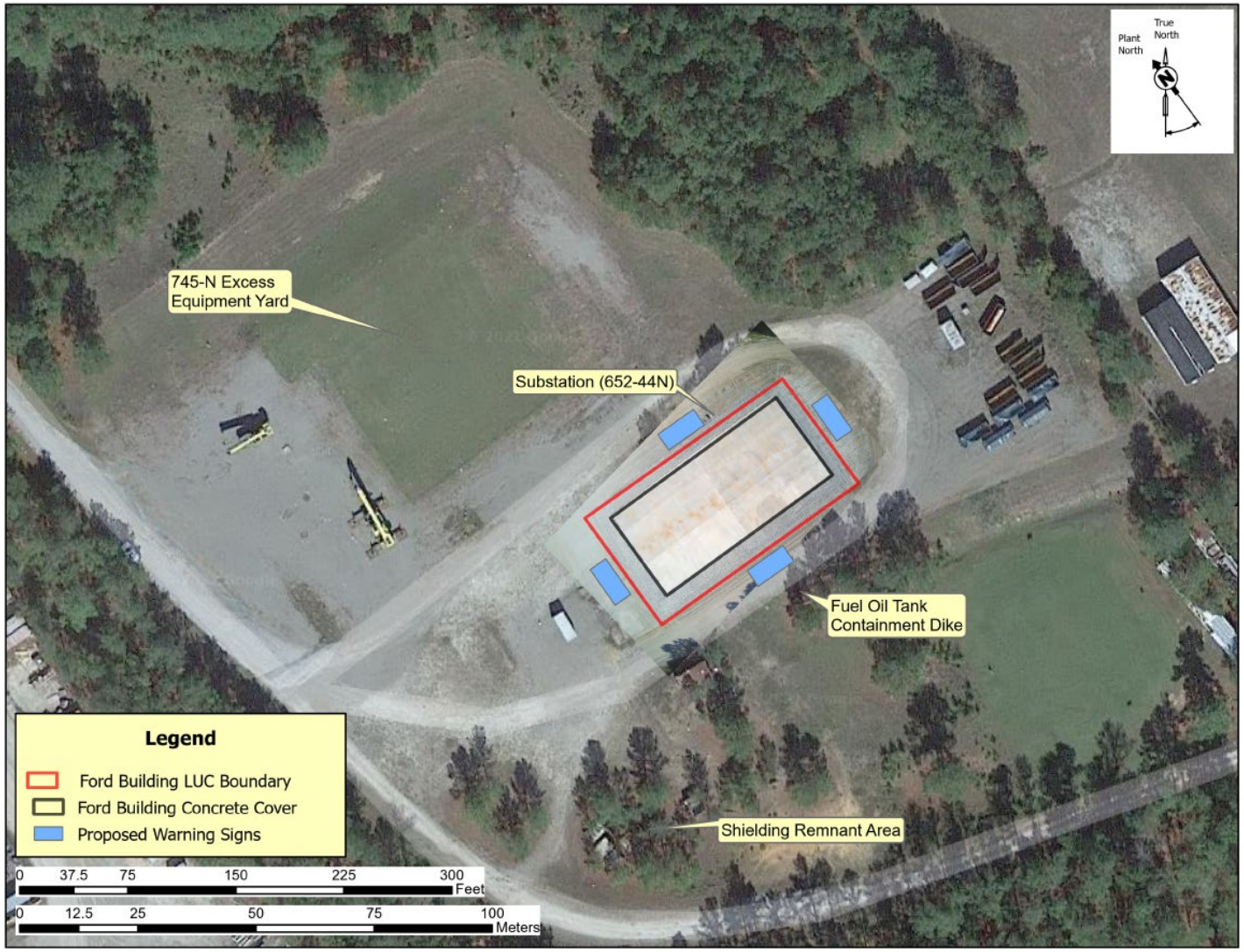
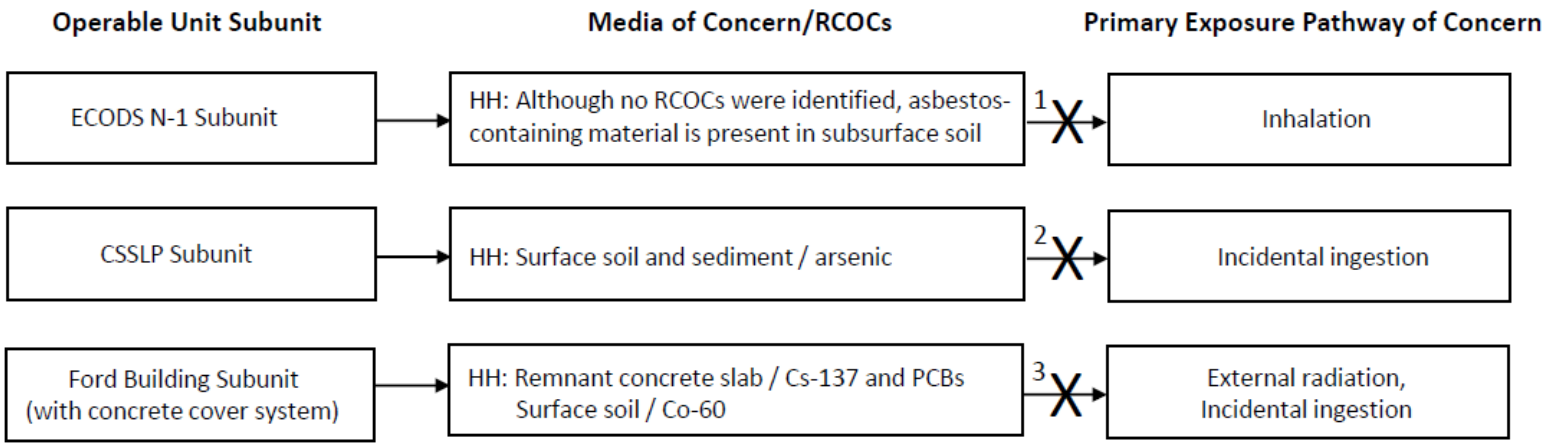


Figure 6. Ford Building Approximate Area of Land Use Control Boundary



HH – Human health

1. Alternative A-2, LUCs - prevents exposure to asbestos containing materials buried at depth.
2. Alternative B-4, Excavation (Hot Spot Removal) and Disposal - prevents exposure to arsenic in surface soil and sediment; qualifies for unrestricted land use (no LUCs)
3. Alternative C-2, LUCs - prevents exposure to Cs-137 and PCBs on remnant concrete slab and Co-60 in surface soil

Figure 7. ECODS N-1, CSSLP, and Ford Building OU Post-Remedial Action Conceptual Site Model

Deliverable	Submittal Date
Issuance of the Record of Decision	October 12, 2023
Remedial Action Start	December 16, 2024
Submit Rev. 0, Post-Construction Report/ Corrective Measures Implementation Report/Remedial Action Completion Report	March 16, 2026

Figure 8. Post-ROD Schedule

Table 1. ARARs for the Selected Remedial Alternative for the ECODS N-1 Subunit

Action	Requirements	Prerequisite	Citation(s)
Institutional Controls / LUCs			
Warning signs for disposal site	Display warning signs at all entrances and at intervals of 100m (328 feet) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material was deposited.	Closure of an area that received asbestos- containing waste materials that does not include a natural barrier to adequately deter access by the general public – **relevant and appropriate**	40 *CFR* § 61.151(b)(1)
	The warning signs must: (i) Be posted in such a manner and location that a person can easily read the legend; and (ii) Conform to the requirements for (20"x14") upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph; and (iii) Display the legend as prescribed in § 61.151(b)(1)(iii) located in the lower panel with letter sizes and styles of visibility at least equal to those specified in § 61.151(b)(1)(iii).	Closure of an area that received asbestos- containing waste materials that does not include a natural barrier to adequately deter access by the general public – **relevant and appropriate**	40 *CFR* § 61.151(b)(1)(i)-(iii)
Fence for disposal site	Fence the perimeter of the site in a manner adequate to deter access by the general public. NOTE: Access control at SRS boundary meets this requirement to deter the general public	NA	40 *CFR* § 61.151(b)(2)

Table 1. ARARs for the Selected Remedial Alternative for the ECODS N-1 Subunit (*continued/end*)

Action	Requirements	Prerequisite	Citation(s)
Institutional Controls / LUCs			
Deed notice for asbestos waste disposal site	Record, in accordance with State law, a notation on the deed to the facility property and on any other instrument that would normally be examined during a title search; this notation will in perpetuity notify any potential purchaser of the property that: • The land has been used for disposal of asbestos-containing waste material; and • The survey plat and record of the location and quantity of asbestos containing waste disposed of within the disposal site required in § 61.154(f) have been filed with the Administrator; and • The site is subject to 40 CFR part 61, Subpart M. NOTE: Recordation of deed notice that informs potential purchaser on the waste disposal site is considered a substantive requirement for post-closure. NOTE: SRS complies with the Land Use Control Assurance Plan (WSRC 1999) to ensure these land use restrictions are maintained, including deed restrictions.	Closure of an inactive disposal area that received asbestos containing waste materials **– relevant and appropriate**	40 *CFR* § 61.151(e)(1)-(3)

ARAR = applicable or relevant and appropriate requirement
CFR = *Code of Federal Regulations*

Table 2. ARARs for the Selected Remedial Alternative for the CSSLP Subunit

Action	Requirements	Prerequisite	Citation
All Land-disturbing Activities (i.e., excavation, clearing, grading, etc.)			
Managing stormwater runoff from land-disturbing activities	Must comply with the substantive requirements for stormwater management and sediment control of *NPDES General Permit No. SCR100000* .	Large and small construction activities (as defined in R. 61-9) of more than 1 acre of land – **applicable**	SCDHEC R. 61-9.122.41 NPDES General Permit No. SCR100000
	The stormwater management and sediment control plan shall contain at a minimum the information provided in the following subsections:	Activities involving more than two (2) ac and less than five (5) ac of actual land disturbance which are not part of a larger common plan of development or sale – **applicable**	SCDHEC R. 72-307 I. – *South Carolina Storm Water Management and Sediment Reduction Regulations*
	A plan for temporary and permanent vegetative and structural erosion and sediment control measures which specify the erosion and sediment control measures to be used during all phases of the land disturbing activity and a description of their proposed operation;		SCDHEC R. 72-307 I.(3)(d)
	Provisions for stormwater runoff control during the land disturbing activity and during the life of the facility meeting the following requirements of subsections (e)1 and 2.		SCDHEC R. 72-307 I.(3)(e)
Managing fugitive dust emissions from land disturbing activities	Emissions of fugitive particulate matter shall be controlled in such a manner and to the degree that it does not create an undesirable level of air pollution.	Activities that will generate fugitive particulate matter (Statewide) – **applicable**	SCDHEC R. 61-62.6 Section III(a)- *Control of Fugitive Particulate Matter Statewide*
Waste Treatment and Disposal — (e.g., excavated contaminated soils/sediments, debris)			
Disposal of solid waste	Shall ultimately dispose of solid waste at facilities and/or sites permitted or registered by the Department for processing or disposal of that waste stream.	Generation of solid waste intended for off-site disposal – **relevant and appropriate**	SCDHEC R. 61-107.5(D)(3)
	Must determine whether the waste is identified in subpart C of 40 *CFR* Part 261 by using prescribed testing methods or applying generator knowledge based on information regarding material or processes used.	Generation of solid waste that is not listed in subpart D of 40 *CFR* Part 261 and not excluded under 40 *CFR* 261.4 – **applicable**	40 *CFR* 262.11(c) SCDHEC R. 61-79 262.11*(c)*

Table 2. ARARs for the Selected Remedial Alternative for the CSSLP Subunit (*continued*)

Action	Requirements	Prerequisite	Citation
Waste Characterization – Primary Wastes (e.g., excavated contaminated soil and sediment) and Secondary Wastes (e.g., contaminated equipment, PPE)			
Characterization of ***solid waste*** (all primary and secondary wastes) and listed hazardous waste determination	Must make an accurate determination as to whether that waste is a hazardous waste in order to ensure wastes are properly managed according to applicable RCRA regulations. A hazardous waste determination is made using the following steps: (a) Must be made at the point of waste generation, before any dilution, mixing, or other alteration of the waste occurs, and at any time in the course of its management that it has, or may have, changed its properties as a result of exposure to the environment or other factors that may change the properties of the waste such that the RCRA classification of the waste may change (b) Must determine whether the waste is excluded from regulation under 40 CFR § 261.4 (c) Must use the knowledge of the waste to determine whether waste meets any of the listing descriptions under subpart D of 40 CFR Part 261. Acceptable knowledge that may be used in making an accurate determination as to whether the waste is listed may include waste origin, composition, the process producing the waste, feedstock, and other reliable and relevant information	Generation of solid waste as defined in 40 CFR § 261.2 – **applicable**	40 CFR § 262.11(a), (b) and (c)
Determination of characteristic hazardous waste	The person then must also determine whether the waste exhibits one or more hazardous characteristics as identified in subpart C of 40 CFR part 261 by following the procedures in paragraph (d)(1) or (2) of this section, or a combination of both.	Generation of solid waste which is not excluded under 40 CFR § 261.4(a) – **applicable**	40 CFR § 262.11(d)

Table 2. ARARs for the Selected Remedial Alternative for the CSSLP Subunit (*continued/end*)

Action	Requirements	Prerequisite	Citation
Determination of characteristic hazardous waste through knowledge	The person must apply knowledge of the hazard characteristic of the waste in light of the materials or the processes used to generate the waste. Acceptable knowledge may include process knowledge (e.g., information about chemical feedstocks and other inputs to the production process); knowledge of products, by-products, and intermediates produced by the manufacturing process; chemical or physical characterization of wastes; information on the chemical and physical properties of the chemicals used or produced by the process or otherwise contained in the waste; testing that illustrates the properties of the waste; or other reliable and relevant information about the properties of the waste or its constituents. A test other than a test method set forth in subpart C of 40 CFR part 261, or an equivalent test method approved by the Administrator under 40 CFR 260.21, may be used as part of a person's knowledge to determine whether a solid waste exhibits a characteristic of hazardous waste. However, such tests do not, by themselves, provide definitive results. Persons testing their waste must obtain a representative sample of the waste for the testing, as defined at 40 CFR 260.10.		40 CFR § 262.11(d)(1)

ARAR = applicable or relevant and appropriate requirement, CFR = Code of Federal Regulations, NPDES = National Pollutant Discharge Elimination Systema, SCDHEC = South Carolina Department of Health and Environmental Control

Table 3. ARARs for the Selected Remedial Alternative for the Ford Building Subunit

Action	Requirements	Prerequisite	Citation
Waste treatment and disposal — (e.g., excavated contaminated soils/sediments, debris)			
Disposal of PCB bulk product waste at 690-N	EPA will issue a written decision on each application for a risk-based sampling, disposal, or storage method for PCB bulk product wastes. EPA will approve such an application if it finds that the method will not pose an unreasonable risk of injury to health or the environment. NOTE: Appropriate information required in an application can be provided in a CERCLA document (e.g., Engineering Evaluation/Cost Analysis, Action Memo, FS, PP, or ROD) that is approved or issued by EPA.	Sampling, storage and/or disposal of PCB bulk product waste (as defined in 40 CFR 761.3) – **applicable**	40 CFR Part 761, Section 62, Paragraph (c)
Waste Generation and Management			
Management of PCB waste (e.g., contaminated PPE, equipment, wastewater)	Any person storing or disposing of PCB waste must do so in accordance with 40 CFR 761, Subpart D.	Generation of waste containing PCBs at concentrations ≥ 50 ppm **– applicable**	40 CFR 761.50(a), specifically 40 CFR 761.50(b)(4)
	PCB bulk product waste shall be disposed of in accordance with paragraph (a), (b), or (c) of 40 CFR 761.62. Under some of these provisions, it may not be necessary to determine the PCB concentration or leaching characteristics of the PCB bulk product waste..	Generation of PCB bulk product waste as defined in 40 CFR 761.3 **– applicable**	40 CFR 761.62
Disposal with PCB Bulk Product Waste Left in Place			
Risk-based sampling, storage and/or disposal of PCB bulk product waste	May sample or dispose of bulk product waste in a manner other than prescribed in 40 CFR 761.62(a) or (b), or store bulk product waste in a manner other than prescribed in 40 CFR 761.65, if receive approval in writing from EPA Regional Administrator and EPA finds that the method will not pose an unreasonable risk of injury to human health or the environment. Each application must contain information indicating that, based on technical, environmental or waste specific characteristics or considerations, the proposed sampling, disposal or storage methods will not pose an unreasonable risk of injury to human health or the environment. *NOTE*: Appropriate information required in an application can be provided in a CERCLA document (e.g. FS, PP, or ROD) that is approved or issued by EPA.	Sampling, storage and/or *disposal of PCB bulk product waste* (as defined in 40 CFR 761.3) **– relevant and appropriate**	40 CFR 761.62(c)

Table 3. ARARs for the Selected Remedial Alternative for the Ford Building Subunit (*continued/end*)

Action	Requirements	Prerequisite	Citation
Cap with risk-based disposal of PCB bulk product waste	A cap means, when referring to on-site cleanup and disposal of PCB remediation waste, a uniform placement of concrete, asphalt, or similar material of minimum thickness spread over the area where remediation waste was removed or left in place in order to prevent or minimize human exposure, infiltration of water, and erosion. • A concrete or asphalt cap shall have a minimum thickness of 15 centimeters (6 inches). • A cap must be of sufficient strength to maintain its effectiveness and integrity during the use of the cap surface which is exposed to the environment. • A cap shall not be contaminated at a level ≥1 ppm PCB per Aroclor ™ (or equivalent) or per congener. • Repairs shall begin within 72 hours of discovery for any breaches which would impair the integrity of the cap.	Cap requirements for the self-implementing on-site cleanup and disposal of PCB remediation waste **– relevant and appropriate**	40 CFR 761.61(a)(7)

ARAR = applicable or relevant and appropriate requirement, CFR = Code of Federal Regulations

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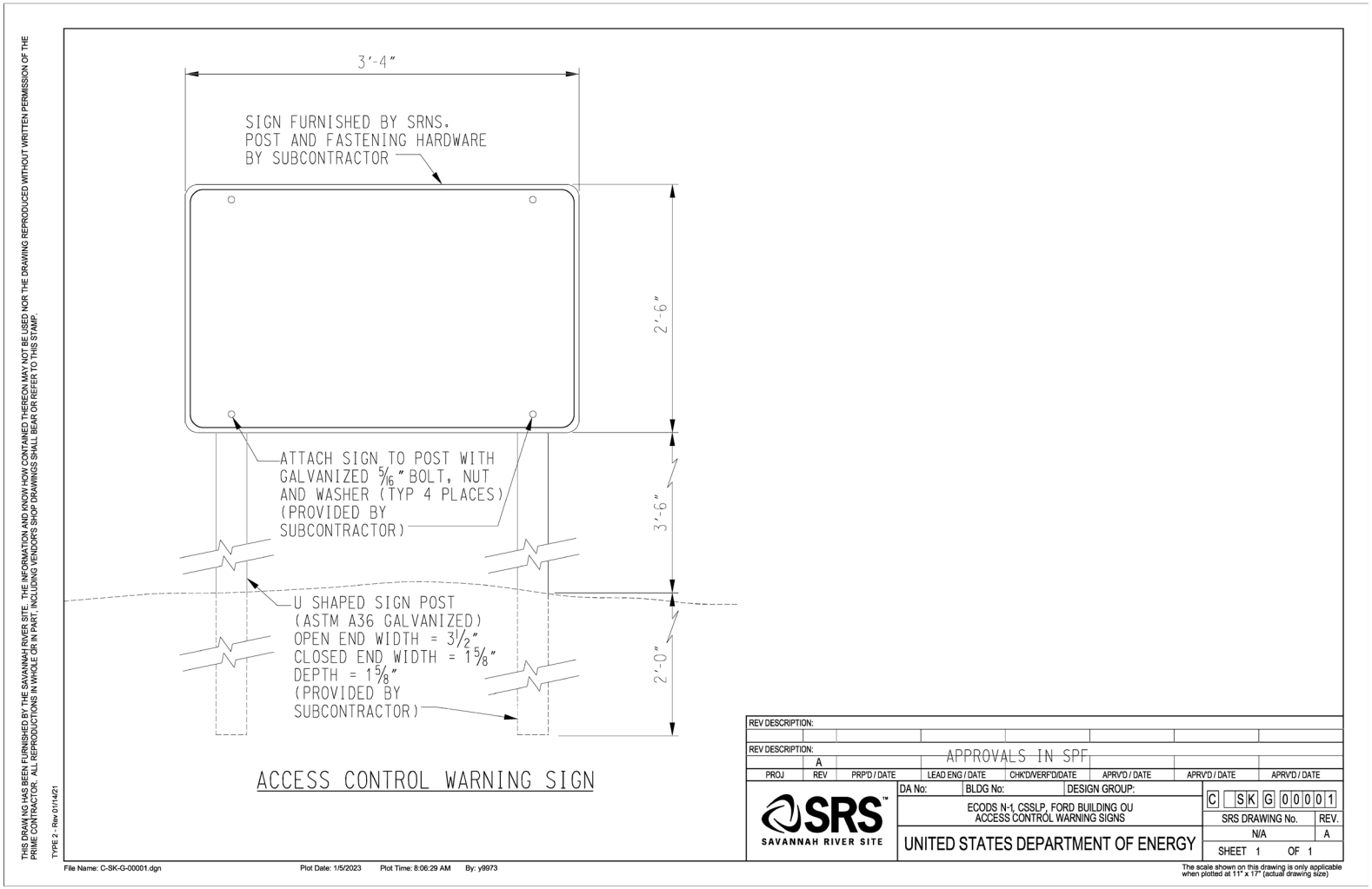
ATTACHMENT 1

ACCESS CONTROL WARNING SIGN SKETCH

C-SK-G-00001


3'-4"
SIGN FURNISHED BY SRNS.
POST AND FASTENING HARDWARE
BY SUBCONTRACTOR
2'-6"
ATTACH SIGN TO POST WITH
GALVANIZED 5/16" BOLT, NUT
AND WASHER (TYP 4 PLACES)
(PROVIDED BY
SUBCONTRACTOR)
3'-6"
U SHAPED SIGN POST
(ASTM A36 GALVANIZED)
OPEN END WIDTH = 3 1/2"
CLOSED END WIDTH = 1 5/8"
DEPTH = 1 5/8"
(PROVIDED BY
SUBCONTRACTOR)
2'-0"
ACCESS CONTROL WARNING SIGN
THIS DRAWING HAS BEEN FURNISHED BY THE SAVANNAH RIVER SITE. THE INFORMATION AND KNOW-HOW CONTAINED THEREIN MAY NOT BE USED NOR THE DRAWING REPRODUCED WITHOUT WRITTEN PERMISSION OF THE PRIME CONTRACTOR. ALL REPRODUCTIONS IN WHOLE OR IN PART, INCLUDING VENDOR'S SHOP DRAWINGS SHALL BEAR OR REFER TO THIS STAMP.
TYPE 2 - Rev 01/14/21
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DESIGN GROUP:
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ECODS N-1, CSSLP, FORD BUILDING OU
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The scale shown on this drawing is only applicable when plotted at 11" x 17" (actual drawing size)

APPENDIX A

FACT SHEET

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FACT SHEET

Remedial Action Early Construction and Operational Disposal Site N-1 (NBN), Central Shops Scrap Lumber Pile (631-2G), and Building 690-N, Process Heat Exchanger Repair Facility (aka Ford Building) Operable Unit

Location

The Early Construction and Operational Disposal Site (ECODS) N-1 (NBN), Central Shops Scrap Lumber Pile (CSSLP)(631-2G), and Building 690-N, Process Heat Exchanger Repair Facility (aka Ford Building Operable Unit is listed as a Resource Conservation and Recovery Act 3004(u) Solid Waste Management Unit / Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) unit in Appendix C of the Federal Facility Agreement for the Savannah River Site (SRS). These three subunits are located in three distinct locations within and near N Area (Central Shops) in an area of relatively flat terrain. Groundwater is not part of the OU and will be addressed under the Central Shops Groundwater OU.

History

ECODS N-1 is one of 25 ECODS at SRS that were used during the construction and early operation of SRS for disposal of construction debris and other non-radioactive waste materials. It is located within the Pen Branch watershed.

The CSSLP subunit is segregated into two areas, the Upland Area (~1.3 hectares (ha) [3.3 acres (ac)]) and the Surface Water Impoundment Area (~0.41 ha [1.02 ac]). The Upland Area was cleared in 1951 and used for equipment laydown, rubble storage, and for burning construction-related material of various unknown types and wood, which may have included treated lumber and creosote-treated wood.

The Ford Building was constructed in the 1950s to test Ford Company-manufactured motor control packages for control rod drive mechanisms before they were installed in the SRS reactors. In 2021, the building structure was demolished to its slab, and an engineered concrete cover system was installed over the entire concrete remnant slab area extending out 0.3 m (1 ft) from the building edge.

Remedial Action

The selected remedy for the ECODS N-1 subunit is Land Use Controls (LUCs) to prevent human exposure to asbestos that is present in subsurface soils. This remedy was selected at the ECODS N-1 subunit due to the overall protection and effectiveness of the remedy.

The selected remedy for CSSLP subunit is excavation (hot spot removal) and disposal of arsenic-contaminated surface soil and sediment to support unrestricted land use; it will not require land use controls, annual site inspections, or five-year remedy reviews. This remedy will eliminate exposure of contaminated media to human receptors. This remedy includes excavating contaminated media exceeding the arsenic cleanup level (8.2 mg/kg) down to 1 ft below ground surface, disposing of the contaminated media off-site, and backfilling with clean soil to grade.

The selected remedy for the Ford Building subunit is LUCs to prevent human exposure to Cs-137 and polychlorinated biphenyls on the Ford Building remnant concrete slab and Co-60 in surface soils underlying a portion of the gravel apron surrounding the slab. This remedy was selected at the Ford Building subunit due to the short half-life (~5.3 years) of Co-60. The risks to the industrial worker will be below 1E-06 within 20 years, thereby eliminating any long-term requirements other than LUCs for the concrete cover that currently exists over the original remnant slab.

LUCs for the ECODS N-1 and Ford Building subunits will be in effect until concentrations of hazardous substances are at levels that will allow for unrestricted use.

APPENDIX B

Sampling and Analysis Plan (SAP) for Pre-Excavation for the ECODS N-1, CSSLP, and Ford Building OU

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APPENDIX B
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APPENDIX B
LIST OF ABBREVIATIONS AND ACRONYMS

Acronym	Meaning
~	approximate, approximately
>	greater than
<	less than
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
DQD	Decision Quality Data
DQO	Data Quality Objectives
EPC	exposure point concentration
ERDMS	Environmental Restoration Data Management System
ft	feet
IDW	Investigation Derived Waste
km	kilometer
LLC	Limited Liability Company
LOE	limits of excavation
m	meter
m^3	cubic meter
MDL	method detection limit
mi	mile
msl	mean sea level
pCi/g	picocuries per gram
PQO	Project Quality Objectives
QAPP	Quality Assurance Project Plan
RA	remedial action
RCOC	refined constituents of concern
RI/BRA	Remedial Investigation/Baseline Risk Assessment
RPD	relative percent difference
ROD	Record of Decision
SAP	Sampling Analysis Plan
SRNS	Savannah River Nuclear Solutions, LLC
SRS	Savannah River Site
ssEQL	sample specific estimated quantitation limit
TAL	target analyte list
TCL	total constituent list
USDOE	United States Department of Energy
USEPA	United States Environmental Protection Agency
yd^3	cubic yard

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1.0 INTRODUCTION

This Sampling and Analysis Plan (SAP) was prepared in accordance with the United States Environmental Protection Agency (USEPA) Uniform Federal Policy for Quality Assurance Project Plans (USEPA et al 2005) and the Area Completion Projects Programmatic Quality Assurance Project Plan for Environmental Data Collection and Management (SRNS 2012). Project- or task-specific information for the Early Construction and Operational Disposal Site N-1 (NBN), Central Shops Scrap Lumber Pile (631-2G), and Building 690-N, Process Heat Exchanger Repair Facility (aka Ford Building) Operable Unit (ECODS N-1, CSSLP, and Ford Building OU) is documented in this SAP and refers to the program level Quality Assurance Project Plan (QAPP) (SRNS 2012) for the program level quality objectives, standard operating procedures, and quality assurance (QA)/quality control (QC) procedures.

1.1 Purpose for Sampling

This SAP was prepared to direct the sampling and analysis in support of the remedial action (RA) selected in the Record of Decision (ROD) (SRNS 2022a) for the CSSLP subunit of the ECODS N-1, CSSLP, and Ford Building OU. The selected alternative at the CSSLP subunit is excavation (hot spot removal) and disposal. Pre-excavation sampling is required to confirm the lateral extent of the areas needing to be excavated. Confirmation sampling of the backfill and topsoil material is also required prior to placement within the subunit. This SAP includes the sampling design as well as sample collection and analytical methods necessary to obtain useful data for acceptance of the remedy.

1.2 Sampling Unit Location

The ECODS N-1, CSSLP, and Ford Building OU is located in N Area (Central Shops) within the Savannah River Site (SRS) (Figure B1). The ECODS N-1, CSSLP, and Ford Building OU consists of three subunits located in three distinct locations within and near N Area (Figure B2). This SAP specifically addresses the RAs that will be conducted at the CSSLP subunit and are summarized in Section 2.0.

1.3 Statement of Broad Objectives for the Sampling

The primary objective of this sampling plan is to delineate the lateral limits of excavation (LOE) of the arsenic-contaminated media at the CSSLP subunit. Preliminary "hot spots" were identified based on previous sampling locations that exceeded the selected cleanup level (8.2 milligrams per kilogram [mg/kg] [95%tile for background]) for arsenic (Figure B3). Pre-excavation sampling is necessary to refine the lateral extent of the contaminated media as agreed upon in the selected RA. Soil and sediment samples will be analyzed for arsenic. Sampling will be conducted in transects around the previous sampling locations that exceeded the cleanup level (Figure B4). The backfill and topsoil material that will be used to grade the excavated areas to surface will also be sampled to ensure the selected cleanup level is met after completion of the construction activities.

The data collected as part of the SAP will consist of definitive level data used to document the acceptance of the selected remedy at the CSSLP subunit.

2.0 SAMPLING UNIT BACKGROUND

2.1 Sampling Area Physical and Geographical Description

The CSSLP subunit lies in a southwestern sloping plain within the Fourmile Branch Watershed (Figure B2). The CSSLP subunit is approximately (~) 2 hectares (5 acres) as shown on Figure B4. The subunit is segregated into two separate areas: the Upland Area and the Surface Water Impoundment Area. Ground surface elevation in the area is ~84 meters (m) (275 feet [ft]) above msl. Surface waters in the vicinity of the subunit flow into an unnamed intermittent stream, which ultimately discharges into Fourmile Branch about 2.6 kilometers (km) (1.6 miles [mi]) to the northwest at ~55 m (180 ft) above mean sea level (msl). Fourmile Branch discharges into the Savannah River ~14.5 km (9 mi) downstream. The Surface Water Impoundment Area was created to capture surface water runoff from the Upland Area of the CSSLP subunit and the adjacent Central Shops Burning Rubble Pits (631-1G and 631-3G), which were closed under a ROD in 2001 (WSRC 2002). The CSSLP subunit is currently sporadically covered by immature volunteer pine trees and wetland vegetation, and provides marginal habitat quality for ecological receptors.

Surface soils in the vicinity belong to the Fuquay-Blanton-Dothan association, which includes well-drained and somewhat excessively drained soils that have a loamy subsoil (SCS 1990). Fill material within the CSSLP subunit belongs to the Udorthents soil series. Udorthents soils are well-drained soils formed in heterogeneous materials that are derived as spoil or refuse from excavations and major construction operations (SCS 1990). Udorthents soils are disturbed soils that include firm and friable substratum in industrialized areas. The Udorthents series is difficult to define because the diagnostic horizons used to classify soils have been destroyed or rearranged by heavy equipment to such an extent that the horizons cannot be identified. A sandy layer of fill material intermixed with wood and gravel was persistent in the surface soil at the CSSLP subunit. An evident layer of wood and/or gravel was present around 0.6 m (2 ft) below ground surface (bgs) causing an interference at almost every location. Below this layer of interference, heterogenous layers of natural formation clays and sands were present in the subsurface strata.

The top of the water table aquifer beneath the CSSLP subunit is about 4.6 to 10.7 m (15 to 35 ft) bgs, and the hydraulic gradient indicates flow is to the west.

2.2 Operational History

The CSSLP was cleared in 1951 and was used for equipment laydown and rubble storage, in addition to a burning area. Prior to 1951, the area was farmland. Historically, the CSSLP was used to burn various unknown types and quantities of wood, which may have included treated lumber and creosote-treated wood. Since 1975, the CSSLP received inert, nonhazardous materials, including items such as nails, hinges, scrap lumber, poles, crates, pallets, and unsalvageable wood products. Sometime before 1996, the Surface Water Impoundment Area was created to capture surface water runoff from the CSSLP. Active burning at the CSSLP ended in the mid-2000s. Burning activities that occurred at the CSSLP are the primary contributor to the elevated levels of arsenic currently found within the soil and sediment media.

2.3 Previous Investigations/Regulatory Actions

The ECODS N-1, CSSLP, and Ford Building OU were initially part of the N-Area Operable Unit with a field start data of 2033. Per agreement with the United States Department of Energy

(USDOE), United States Environmental Protection Agency (USEPA), and South Carolina Department of Health and Environmental Control (SCDHEC) to support an accelerated cleanup strategy, the three units were designated as a stand-alone OU in the Federal Facility Agreement to be closed prior to the N-Area Operable Unit closure. The ECODS N-1, CSSLP, and Ford Building OU was investigated under the Resource Conservation and Recovery Act (RCRA) corrective action process with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) remedial process and evaluated in the RCRA Facility Investigation/Remedial Investigation/Baseline Risk Assessment/Corrective Measures Study/Feasibility Study (RFI/RI/BRA/CMS/FS) (SRNS 2021). Tables B1 and B2 provide a summary of the results from all soil and sediment samples collected in the 0- to 0.3-m [0- to 1-ft]) interval at the CSSLP subunit.

The approved ROD for the ECODS N-1, CSSLP, and Ford Building OU selected an excavation (hot spot removal) and disposal alternative for the CSSLP subunit. The selected alternative consists of removing arsenic-contaminated soil and sediment that exceed the cleanup level (8.2 mg/kg), down to 0.3 m (1 ft) bgs. A summary of the previous investigations and the RA selections can be found in the Statement of Basis/Proposed Plan (SRNS 2022b) and the ROD (SRNS 2022a).

2.4 Summary of Existing Data Compared to Risk-Based Thresholds

Arsenic was the only refined constituent of concern (RCOC) identified above the risk-based threshold of 1E-06 in the RFI/RI/BRA/CMS/FS (SRNS 2021) at the CSSLP subunit in soil and sediment. No RCOCs were identified in the surface water associated with the CSSLP subunit.

3.0 DATA QUALITY OBJECTIVES

The Data Quality Objective (DQO) process is a series of logical steps that guides managers or staff to a plan for the resource-effective acquisition of environmental data. It is both flexible and iterative and applies to both decision making (e.g., compliance/non-compliance with a standard) and estimation (e.g., ascertaining the mean concentration level of a contaminant). The DQO process is used to establish performance and acceptance criteria which serve as a basis for designing a plan for collecting data of sufficient type, quality and quantity to support the goals of the study. Table B3 summarizes the DQOs for the CSSLP subunit.

3.1 State the Problem

Arsenic is present in surface soil (0 to 0.3 m [0 to 1 ft]) (exposure point concentration [EPC] = 16.4 mg/kg) exceeding 1E-06 risk level for the resident (risk = 2.4E-05) and industrial worker (risk = 5.5E-06) scenarios. Arsenic is present in surface sediment (0 to 0.3 m [0 to 1 ft]) (EPC = 8.27 mg/kg) exceeding 1E-06 risk level for the resident (risk = 1.2E-05) and industrial worker (risk = 2.8E-06) scenarios. The extent of the contamination over the entire CSSLP subunit (soil and sediment) was estimated to be ~ 5,868 square meters (63,162 square feet) and 0.3 m (1 ft) deep. Figure B3 identifies locations exceeding the cleanup goal of 8.2 mg/kg (SRS 95%tile background concentration for arsenic). A conceptual site model (CSM) has been developed for the current conditions of the CSSLP subunit as shown in Figure B5. The CSM provides a summary of potential risks/hazards for each receptor by exposure route. The selected remedy in the approved ROD (SRNS 2022a) will break these exposure pathways by removing the contaminated media. However, a delineation of the extent of contamination is necessary to execute the selected remedy for CSSLP subunit as described in the ROD (SRNS 2022a). Sampling of the backfill and topsoil material that will be used to grade the excavated areas to surface is also required to ensure the final state of the subunit is below the cleanup level.

3.2 Identify the Decisions of the Study

The goals of the sampling effort are to delineate the lateral LOE of arsenic-contaminated media requiring 1 ft of excavation and to confirm the backfill and topsoil material is within acceptable limits to consider the RA complete.

3.3 Identify the Inputs to the Decisions

Characterization was conducted at the CSSLP subunit in 2019 and 2020 as part of a Pre-Work Plan and Work Plan efforts to identify any data needs at the subunit and for the purpose of unit evaluation. These data were compiled, reviewed, and evaluated in the RFI/RI/BRA/CMS/FS (SRNS 2021). The data were of sufficient quality to make a remedial decision, but additional data is required to support the RA.

Because the RA has already been selected, the inputs for decision making include the cleanup level (8.2 mg/kg) for arsenic as established in the ROD and the sampling data that will be collected as part of this SAP. The RA is limited to excavating soil and sediment that is above the cleanup level. Sampling of the backfill and topsoil material will also be necessary for RA completion.

3.4 Define the Boundaries of the Study

The scope of this SAP is limited to boundaries of the CSSLP subunit as identified on Figure B4. The maximum LOE boundaries and planned sample transects are also depicted in Figure B4.

3.5 Develop Decision Rules and Analytical Approach

Samples will be analyzed by laboratories that have passed the USDOE Consolidated Audit Program qualification audit and using USEPA SW846 methods, or approved equivalents, which have been certified by SCDHEC.

The pre-excavation sampling effort described in this SAP is being performed to delineate the boundaries of the RA that have been selected in the ROD. Samples will be used to determine the lateral extent of arsenic above the cleanup level of 8.2 mg/kg and to confirm the backfill and topsoil material is within acceptable limits.

The decision rules are:

- The lateral extent of the contaminated media will be determined by encompassing any pre-excavation confirmation sample that is verified above the cleanup level. The LOE boundary will be minimized to the innermost sampling location that is consecutively identified below the cleanup level. If all the pre-excavation sampling locations along an individual transect are identified above the cleanup level, then the LOE boundary will not be minimized along the given transect;

- Pre-excavation sampling locations will be collected and analyzed along each of the planned sample transects from the 0 to 0.3 m (0 to 1 ft) interval. If a sample cannot be collected from the defined sampling location due to below ground interferences, then a step out location will

be initiated at least two additional times before moving to the next proposed location along a given transect. If enough soil cannot be collected from the proposed sample location, then a step out location can be used to gather an adequate volume; and

- Confirmatory samples will be collected and analyzed from the backfill and topsoil material. Samples will be collected at the rate specified in *SRS Fill and Cover Material Verification Protocol* (WSRC 2003). If the results of an individual sample location do not meet the acceptable limits, then another sample will be collected until enough volume of material is identified below the acceptable limits.

3.6 Specify the Limits on Decision Errors

USEPA has developed the DQO process as the agency's recommended planning process when environmental data are used to select between two or more alternatives or to derive an estimate of contamination (USEPA 2006). The DQO process is a seven-step method designed to ensure that the appropriate type, quantity, and quality of environmental data are collected for the intended application. Table B3 presents the DQO worksheet developed for each media and/or data type and specifies the quantity, type, and quality of data, as well as ensuring representative data is collected for each sampling population. Analytical specifications are provided in Table B4. Additional analytical details are presented in the Analytical Plan, Section 5.0.

Total study error is the additive impact of two main sources of error: 1) sampling error, and 2) measurement error, with sampling error being responsible for the vast majority of the total error. "As much as 90% or more of the uncertainty in environmental data sets is due to sampling variability as a direct consequence of the heterogeneity of the environmental matrices" (Crumbling et.al. 2001). The method best suited to reduce sampling error is to gather representative samples (Crumbling et.al. 2001).

It is incorrect to assume that randomly collected, non-representative samples, plus perfect analytical chemistry will always lead risk managers to correct risk management decisions. In order to avoid incorrect risk management decisions, it is more important to develop Decision Quality Data (DQD). DQD is defined as "Data of known quality that can logically be demonstrated to be

effective for making the specified decision because both the sampling and analytical uncertainties are managed to the degree necessary to meet clearly defined and stated data needs" (Crumbling et.al. 2001). Therefore, it is more important for the risk managers to use DQD, emphasizing representative sampling with a specified percentage of definitive data, in order to make a correct decision, and should not be confused by emphasizing analytical data quality, which does not necessarily equate to a correct risk management decision.

Because SRS possesses significant process and historical knowledge and has historic data, this sampling plan will largely control sampling error (the cause of greatest total error) and set tolerable limits on decision errors by gathering data by judgmental, judgmental-stratified, and systematic sampling designs based on process knowledge, existing data, historical information/data, survey data, and institutional knowledge to generate DQD. This is the method SRS will use to control decision errors, since sample collection will be focused in areas of known contamination rather than using a sampling design intended to randomly search for contamination. Judgmental sampling provides a very conservative and certain method for collecting data with a high likelihood for detecting worst-case contaminant concentrations while reducing total study error.

Project Quality Objectives (PQOs) are qualitative and quantitative statements derived from the DQO process that clarify the measurement performance criteria, which define the appropriate types of data and acceptance limits for data. PQOs are used to assess whether the sampling design has achieved its quality objectives for the collected data to be qualified for project decision-making.

The PQO statements are as follows:

- RPD (relative percent difference) <35% between regular soil sample and field duplicate when result greater than or equal to (>) sample-specific Estimated Quantitation Limit (ssEQL) for precision data quality indicator;
- RPD <200% when soil sample result > method detection limit (MDL) but < ssEQL for accuracy/bias for precision data quality indicator;
- 5% of the samples will be split samples for the comparability data quality indicator;

- 5% of the samples will be field duplicate samples to assess the precision of the data quality indicator;

- 10% of the samples will be rinsate/equipment blanks samples for the adequacy of the data quality indicator;

- 90% of samples sent to laboratory have useable (non-rejected) results for completeness data quality indicator; and

- The objective for the representativeness data quality indicator is qualitative and will be met by properly documenting field and analytical protocols. In the event these methods are not able to be implemented, the appropriate corrective action documentation should encompass the impact on the representativeness of the information. When review of the data and documentation determines the data to be nonrepresentative, the information is qualified for use or is not used by the project.

3.7 Optimize Design for Obtaining Data

In order to delineate the lateral extent of arsenic-contaminated media at the CSSLP subunit, a maximum LOE boundary was established based on the proximity to the unit boundaries and previous sampling locations that were identified as having arsenic concentrations below the cleanup level. Transects consisting of proposed sampling locations were created to potentially minimize the LOE boundary. Transects are oriented from the LOE boundary inward, toward the previous sample locations that were identified above the cleanup level. All samples will be collected and sent to a certified laboratory for analysis. The lateral extent of the contaminated media will be determined by encompassing any pre-excavation confirmation sample that is verified above the cleanup level. The LOE boundary will be minimized to the innermost sampling location that is consecutively identified below the cleanup level.

Confirmation sampling of the backfill and topsoil material is also required to confirm that the cleanup level will be achieved, and the RA can be considered complete. Samples will be collected at the rate specified by *SRS Fill and Cover Material Verification Protocol* (WSRC 2003).

4.0 SAMPLE DESIGN AND RATIONALE

Implementation of the SAP to obtain DQD continues with the following sections that describe how the plan is implemented to collect the physical data to meet the criteria developed during the DQO process.

4.1 Rationale for CSSLP Subunit Soil and Sediment Sampling

Soil and sediment will be collected from the CSSLP subunit along 16 different transects based on the biased sampling design and previous sampling locations (Figure B4). Samples will be screened and analyzed for arsenic and collected down to 0.3 m (1 ft) bgs. Arsenic was the only RCOC identified above the human health risk-based threshold of 1E-06, as documented in the RFI/RI/BRA/CMS/FS (SRNS 2021). A maximum LOE was established as a baseline condition and was developed based on the proximity to the unit boundaries and previous sampling locations that were identified as having arsenic concentrations below the cleanup level of 8.2 mg/kg. To refine the lateral LOE, each transect consists of additional sampling locations. Transects are oriented from the LOE boundary inwards, towards previously collected samples identified above the cleanup level. This orientation will efficiently bound the contaminated media and potentially minimize the area of excavation. Analytical sampling will be used to evaluate each of proposed locations. Composite samples will be collected at each location from the 0- to 0.3-m (0- to 1-ft) interval. Thirty-five analytical samples are proposed, including samples obtained to meet QA/QC sampling requirements. The maximum LOE boundary will be minimized to the innermost consecutive sample location that is identified below the cleanup level, along each transect.

Confirmation sampling of the backfill and topsoil material is also required to confirm that the cleanup level will be achieved, and the RA can be considered complete. Per *SRS Fill and Cover Material Verification Protocol* (WSRC 2003), representative samples from on-site source material will be collected at a rate of one composite sample per five aliquots per 765 cubic meters (m^3) (1000 cubic yards [yd^3]), or per 1911 m^3 (2500 yd^3), if 11468 m^3 (15000 yd^3) of borrow pit soils have been demonstrated to be acceptable. If off-site borrow pit soils are used, one composite sample per five aliquots per 765 m^3 (1000 yd^3) will be used. Soil samples will be analyzed for the full target analyte list (TAL) and total constituent list (TCL) suites as well as the gross alpha, and

non-volatile beta indicators. The soil will be screened against residential human-health risk-based thresholds (USEPA regional screening levels and preliminary remediation goals as appropriate) at the 1E-06 exposure level for carcinogens or an HQ of 1.0 for noncarcinogens. Constituents exceeding the risk-based criteria will be screened against the 95th percentile concentration from the SRS Soils Background Study Report (SRNS 2006). An uncertainty analysis will be performed for any constituent that exceeds the human health and background screen criteria. Exceedances of gross alpha or non-volatile beta screening values (20 picocuries per gram [pCi/g] and 50 pCi/g, respectively) would trigger isotopic analysis to evaluate whether the radionuclides are naturally occurring.

The rationale and details of the sampling design/strategy are summarized in the Table B3.

5.0 ANALYTICAL PLAN

This section describes the data quality levels for each type of data being collected. All data collected under this SAP will follow the QAPP (SRNS 2012). The data quality level is determined by the intended use of the data.

5.1 Data Quality Levels for CSSLP Soil and Sediment Media

Soil characterization samples will be USEPA Definitive level (D) data. D level data is verified data which has achieved the USEPA's Screening level validation category (USEPA, et al, 2005) and meets the following selected aspects of USEPA Functional Guideline criteria: Quantitation Limits, Surrogate or Tracer Recoveries, Blanks (Method/Lab/Prep, Trip, Field, Equipment/Rinsate), Laboratory Control Samples Recoveries, Matrix Spike Recoveries/ Duplicates, Lab Replicates, Field Replicates, Cooler Temps, Chemical Preservation, Holding Times. Field QA/QC sampling requirements are listed in Table B5. Preservative, holding time, and container requirements for D level data are listed in Table B6. The remaining aspects of USEPA's National Functional Guidelines criteria can be found in the QAPP (SRNS 2012).

5.2 Field Analytical Sampling Quality Assurance/Quality Control

Field QA/QC will be maintained through the use of QA/QC samples and methods as described below and included in Tables B4 through B8:

- Field Duplicate (co-located) Samples: Two independent samples collected from side-by-side locations at the same point in time and space so as to be considered identical. These separate samples are intended to represent the same population and are carried through all steps of the sampling and analytical procedures in an identical manner. These samples are used to assess precision of the total method, including sampling, analysis, and site heterogeneity. Field duplicate samples are planned at a combined minimum rate of 5% according to Manual C3, Volume X, EC&ACP Geochemical Monitoring Procedures, ER-SOP-043, or typically 1 per 20 samples and analyzed for the same parameters as the associated samples;

- Rinsate/Equipment Blank: A sample of water free of measurable contaminants poured over or through decontaminated field sampling equipment that is considered ready to collect or process an additional sample. The purpose of this blank is to assess the adequacy of the decontamination process. Also called rinse blank or rinsate blank. Equipment blanks are typically planned at a rate of 1 blank per 40 samples; and

- Split Samples: Two or more representative portions from a sample in the field, analyzed by at least two different laboratories and/or methods. Prior to splitting, a sample is mixed (except volatiles, oil and grease, or when otherwise determined) to minimize sample heterogeneity. These are quality control samples used to assess precision, variability, and data comparability between laboratories. Split samples are planned at a combined minimum rate of 5% or typically 1 per 20 samples and analyzed for the same parameters as the associated samples.

5.3 Sample Matrix Table

Table B7 is the Sampling Matrix Table that includes all the detailed information for all samples planned to be collected at the CSSLP subunit. The exact number of samples may change based on field conditions. Table B8 is the Sampling Matrix Table that includes all the detailed information

for all samples planned to be collected for confirmation of the backfill and topsoil material. The exact number of samples may change based on the volume of soil needed.

5.4 Sample Location Map

Figure B4 illustrates the maximum LOE with the proposed sample transects and locations.

6.0 FIELD IMPLEMENTATION

6.1 List of Sampling/Collection Equipment

This section lists type of sampling/collection equipment needed to execute the Field Implementation Plan. Examples include:

- Hand augers
- Hand scoops
- Stainless steel bowls
- Global Positioning System Unit
- Drying Oven
- KIJ-5 Radio
- Sample bottles
- Coolers
- Decontamination Equipment

6.2 Investigation Derived Waste

Investigation Derived Waste (IDW) will be managed according to the site-specific IDW management plan developed for the project.

7.0 REFERENCES

C3, ER-SOP-043, EC&ACP Geochemical Monitoring Procedures

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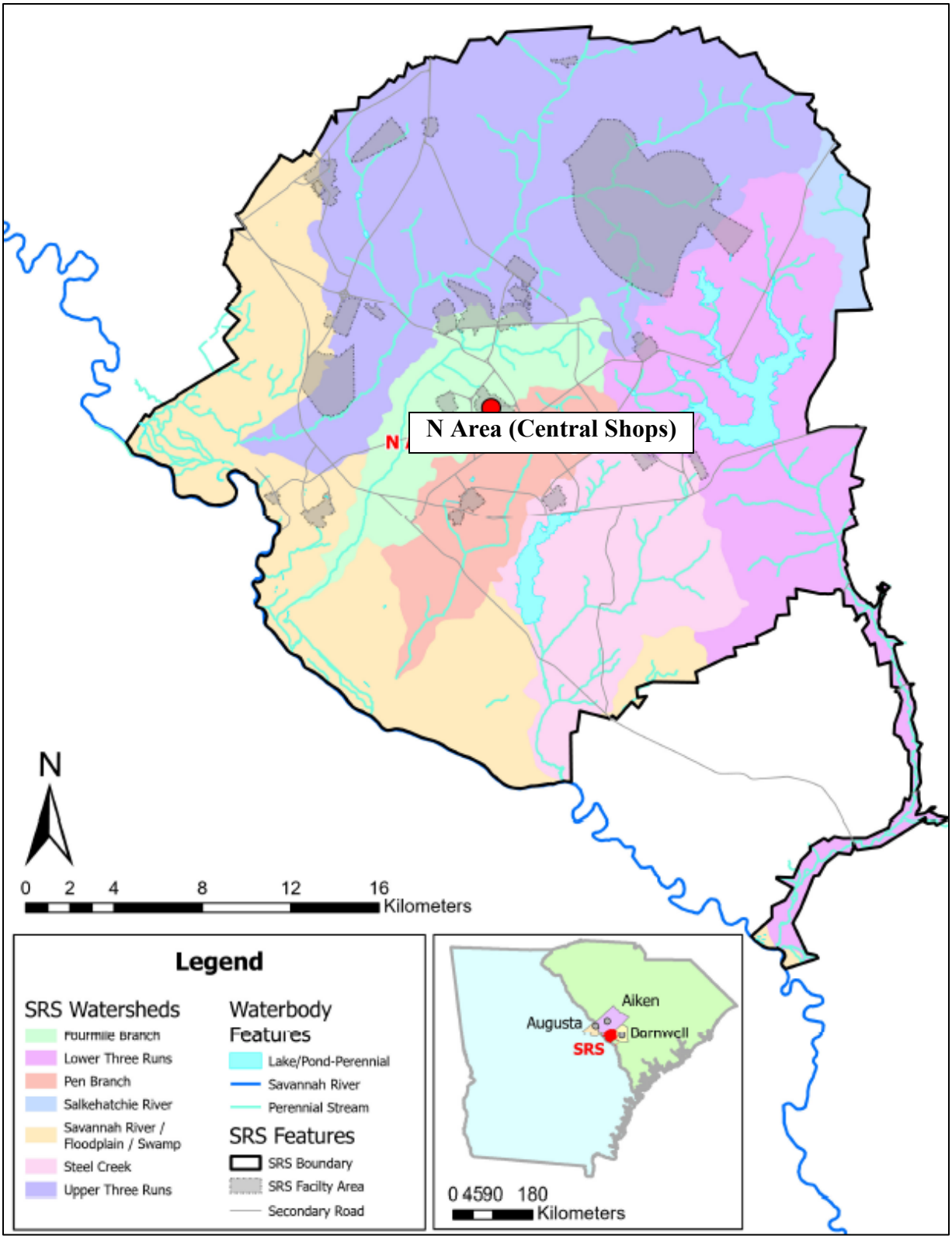

Figure B1. Location of N Area within SRS

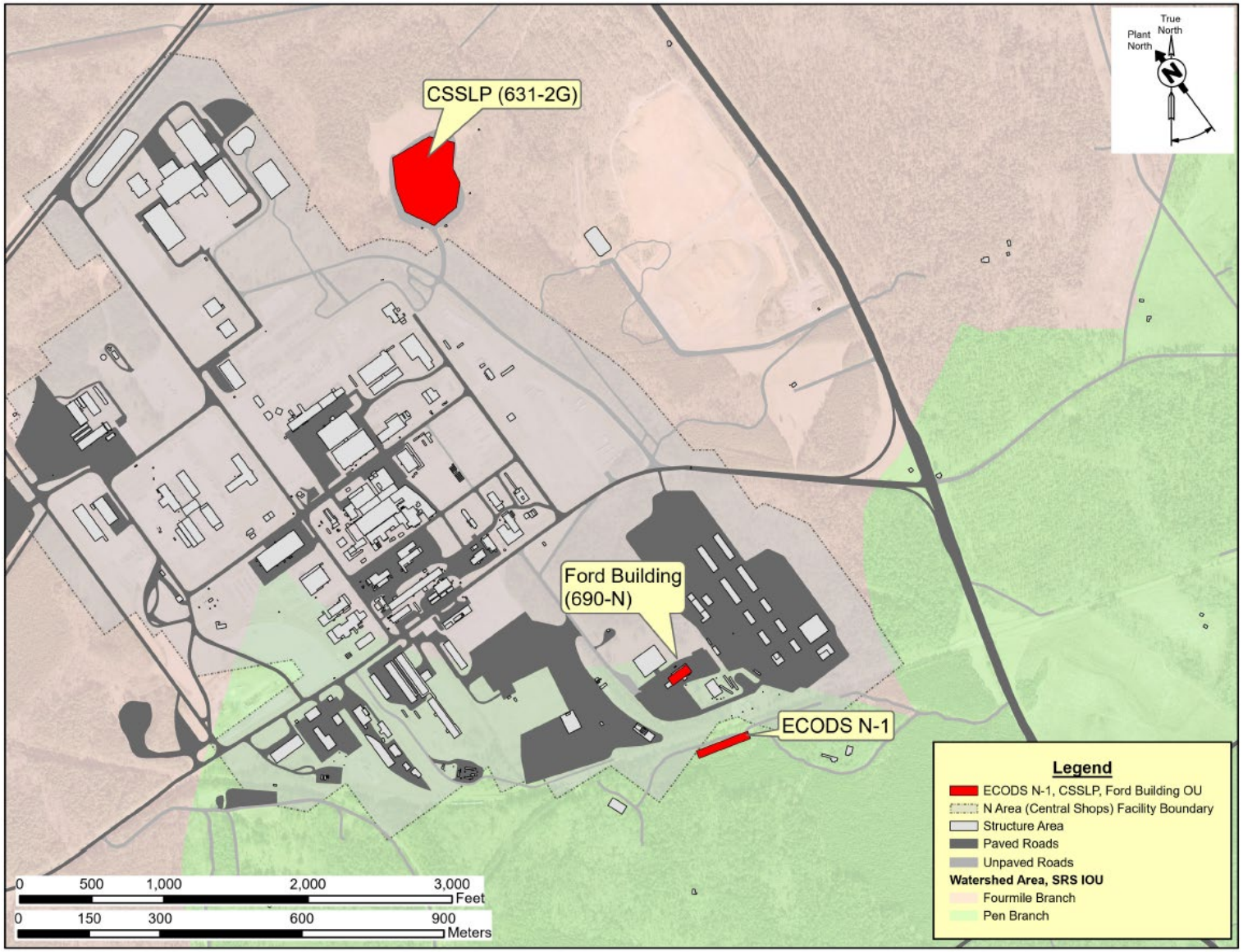

Figure B2. Location of ECODS N-1, CSSLP, and Ford Building OU within N Area

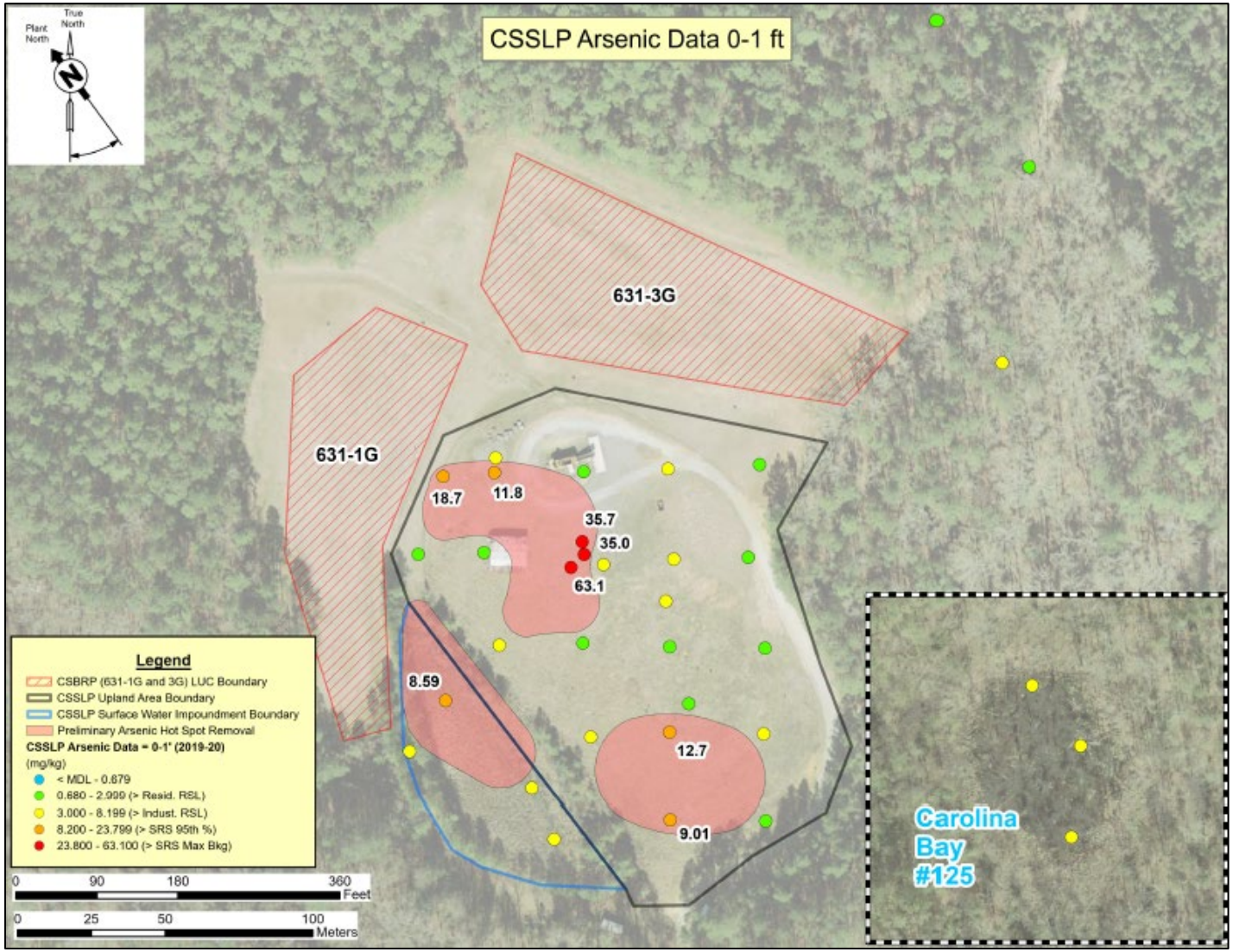

Figure B3. Previous Arsenic Results at the CSSLP and Preliminary Hot Spot Removal Areas

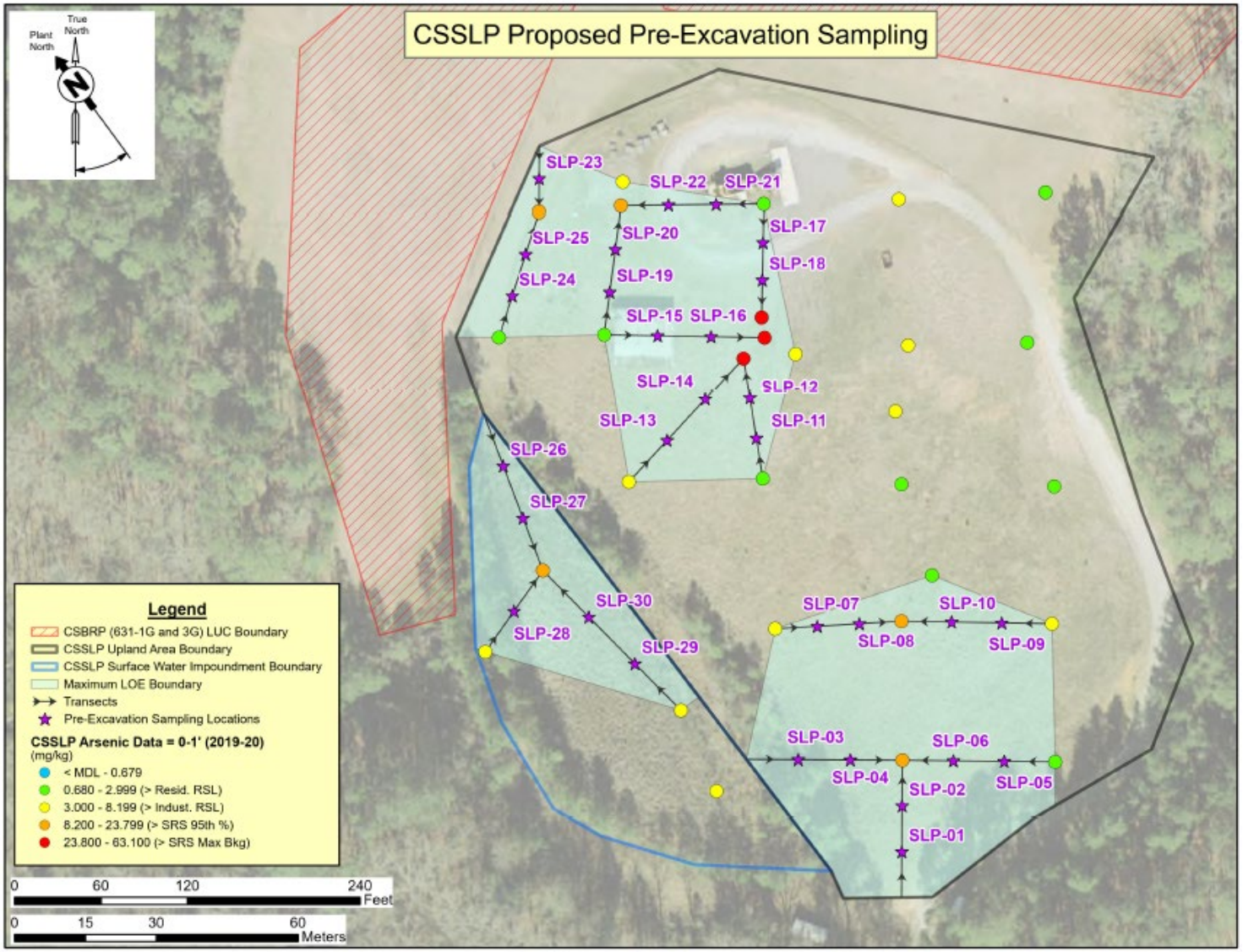

Figure B4. Pre-Excavation Sampling Locations to Refine the LOE

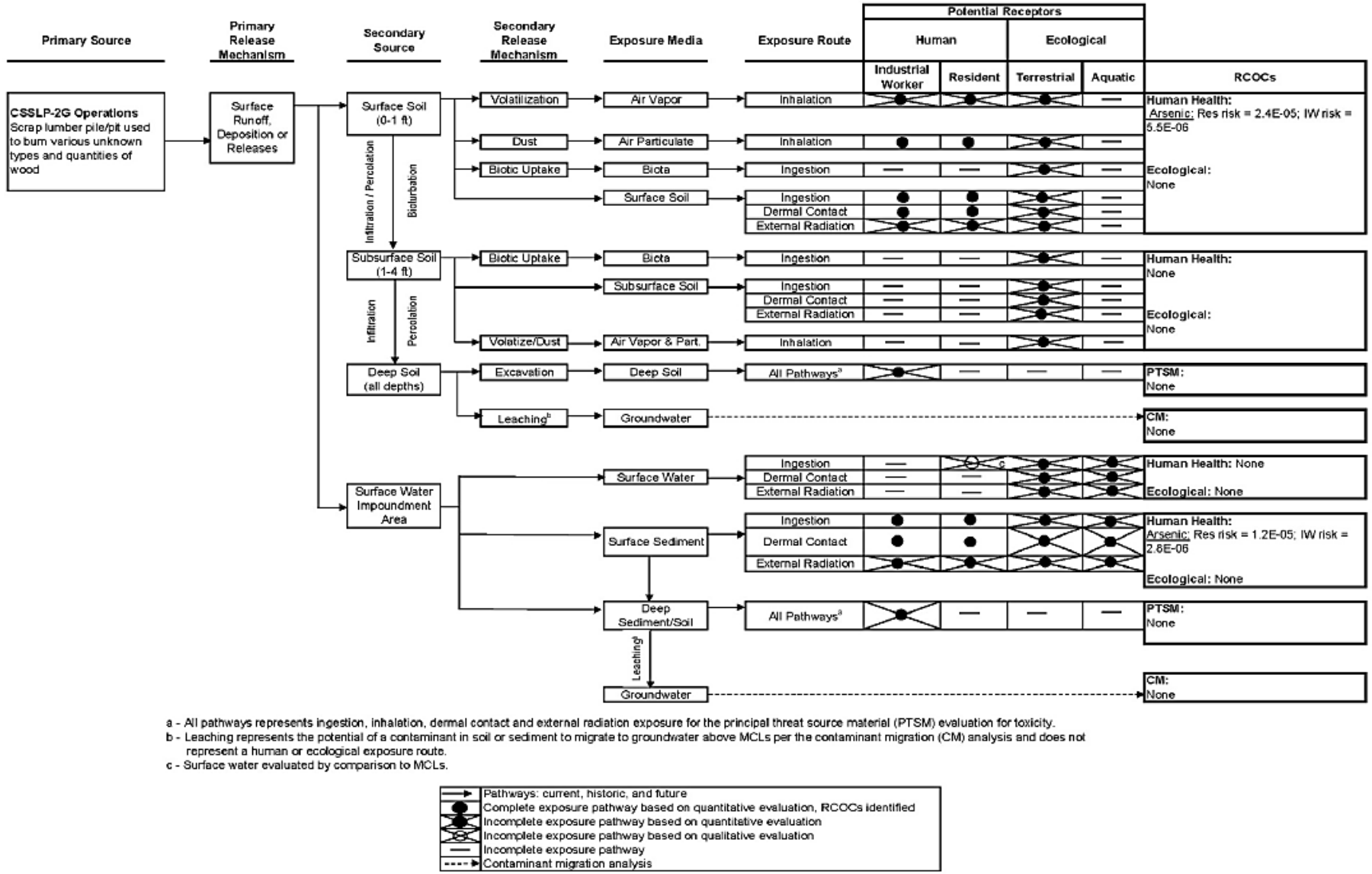

Figure B5. Conceptual Site Model for the CSSLP Subunit

TABLE B1. STATISTICAL SUMMARY FOR CSSLP SUBUNIT UPLAND AREA SOIL (0 TO 1 FT)

Analyte	Units	Samples	Non-Detects	Detects	J-Detects	Distr. Code	UCL Method	Mean	95% UCL	Max	Min	RME	Max Location	Qualifier of Max	Max Date
2-Methylnaphthalene	mg/kg	18	17	1	1	--	--	0.0087	--	0.016	ND	0.016	CSSLP-8	J	6/26/2019
Acetone	mg/kg	19	14	5	5	X	7	0.0761	0.153	0.579	ND	0.153	CSSLP-15	J	7/1/2019
Aldrin	mg/kg	19	18	1	0	--	--	0.0001	--	0.0008	ND	0.0008	CSSLP-7		6/26/2019
Alpha-Chlordane	mg/kg	19	17	2	2	X	7	0.0001	2.56E-04	0.0005	ND	2.56E-04	CSSLP-8	J	6/26/2019
Aluminum	mg/kg	25	0	25	4	N	1	5653.6	6239	9330	2190	6239	CSSLP-9		6/24/2019
Anthracene	mg/kg	18	17	1	0	--	--	0.0325	--	0.444	ND	0.444	CSSLP-5		6/19/2019
Antimony	mg/kg	25	21	4	4	X	7	0.3027	0.546	1.57	ND	0.546	CSSLP-5	J	6/19/2019
Aroclor 1254	mg/kg	19	11	8	6	G	2	0.0012	0.0027	0.0066	ND	0.0027	CSSLP-5		6/19/2019
Aroclor 1260	mg/kg	19	10	9	7	X	4	0.0021	0.0058	0.0153	ND	0.0058	CSSLP-5		6/19/2019
Arsenic	mg/kg	25	0	25	12	L	3	9.769	16.38	63.1	0.975	16.38	CSSLP-031		10/6/2020
Barium	mg/kg	25	0	25	1	X	4	29.38	52.61	108	5.24	52.61	CSSLP-028		10/7/2020
Benzo[G,H,I]Perylene	mg/kg	18	14	4	2	X	7	0.0154	0.0249	0.0763	ND	0.0249	CSSLP-18		6/26/2019
Benzo[a]anthracene	mg/kg	18	9	9	6	X	7	0.0508	0.157	0.389	ND	0.157	CSSLP-5		6/19/2019
Benzo[a]pyrene	mg/kg	18	11	7	4	X	7	0.0386	0.128	0.344	ND	0.128	CSSLP-5		6/19/2019
Benzo[b]fluoranthene	mg/kg	18	9	9	5	X	7	0.0725	0.218	0.563	ND	0.218	CSSLP-5		6/19/2019
Benzo[k]fluoranthene	mg/kg	18	12	6	4	X	7	0.0299	0.0579	0.226	ND	0.0579	CSSLP-5		6/19/2019
Beryllium	mg/kg	25	1	24	23	X	7	0.1741	0.205	0.524	ND	0.205	CSSLP-18		6/26/2019
Bis(2-ethylhexyl)phthalate (DEHP)	mg/kg	18	11	7	5	X	7	0.041	0.118	0.29	ND	0.118	CSSLP-5		6/19/2019
Cadmium	mg/kg	25	23	2	2	X	7	0.073	0.142	0.331	ND	0.142	CSSLP-028	J	10/7/2020
Calcium	mg/kg	25	0	25	3	X	4	942.7	1989	5320	241	1989	CSSLP-028		10/7/2020
Carbazole	mg/kg	18	17	1	1	--	--	0.01	--	0.0602	ND	0.0602	CSSLP-5	J	6/19/2019
Chromium	mg/kg	25	0	25	3	G	2	15.1	18.15	32.6	4.91	18.15	CSSLP-5		6/19/2019
Hexavalent Chromium 7196a	mg/kg	12	9	3	0	X	7	0.4117	0.793	0.986	ND	0.793	CSSLP-030		10/7/2020
Chrysene	mg/kg	18	10	8	5	X	7	0.0557	0.18	0.467	ND	0.18	CSSLP-5		6/19/2019
Cobalt	mg/kg	25	1	24	1	N	1	1.115	1.242	4.26	ND	1.242	CSSLP-18		6/26/2019
Copper	mg/kg	25	0	25	1	X	4	12.76	28.09	67.8	2.87	28.09	CSSLP-8		6/26/2019
Cumene (Isopropylbenzene)	mg/kg	19	17	2	2	X	7	0.0032	3.81E-04	0.0005	ND	3.81E-04	CSSLP-13	J	6/24/2019
Cyanide	mg/kg	6	4	2	2	X	7	0.0811	0.159	0.203	ND	0.159	CSSLP-031	J	10/6/2020
DDE	mg/kg	19	15	4	4	X	7	0.0004	5.01E-04	0.0011	ND	5.01E-04	CSSLP-7	J	6/26/2019
DDT	mg/kg	19	17	2	2	X	7	0.0004	4.04E-04	0.0006	ND	4.04E-04	CSSLP-6	J	6/26/2019

Table B1. Statistical Summary for CSSLP Subunit Upland Area Soil (0 to 1 ft) (Continued/End)

Analyte	Units	Samples	Non-Detects	Detects	J-Detects	Distr. Code	UCL Method	Mean	95% UCL	Max	Min	RME	Max Location	Qualifier of Max	Max Date
Dibenz[ah]anthracene	mg/kg	18	17	1	1	--	--	0.0162	--	0.0222	ND	0.0222	CSSLP-18	J	6/26/2019
Di-n-butyl phthalate	mg/kg	20	10	10	9	X	7	0.0156	0.024	0.0424	ND	0.024	CSSLP-9	J	6/24/2019
Fluoranthene	mg/kg	18	8	10	5	X	7	0.0162	0.3	0.798	ND	0.3	CSSLP-5		6/19/2019
Gamma-Chlordane	mg/kg	19	16	3	2	X	7	0.0002	3.06E-04	0.0008	ND	3.06E-04	CSSLP-6		6/26/2019
Gross Alpha	pCi/g	19	0	19	0	N	1	11.88	13.46	19.1	5.45	13.46	CSSLP-4		6/19/2019
Indeno[1,2,3-cd]pyrene	mg/kg	18	14	4	3	X	7	0.0162	0.0243	0.0756	ND	0.0243	CSSLP-18		6/26/2019
Iron	mg/kg	25	0	25	4	N	1	9458.4	10748	21300	3690	10748	CSSLP-029		10/7/2020
Lead	mg/kg	25	0	25	2	X	4	10.15	19.34	50.3	3.69	19.34	CSSLP-028		10/7/2020
Magnesium	mg/kg	25	0	25	5	L	3	359.9	467.2	2480	94.5	467.2	CSSLP-18		6/26/2019
Manganese	mg/kg	25	0	25	5	G	2	75.64	98.93	264	17.4	98.93	CSSLP-18		6/26/2019
Mercury	mg/kg	25	1	24	6	G	2	0.0207	0.0245	0.0515	ND	0.0245	CSSLP-030		10/7/2020
Methyl Ethyl Ketone	mg/kg	19	17	2	2	--	--	0.016	--	0.0038	ND	0.0515	CSSLP-7	J	6/26/2019
Naphthalene	mg/kg	18	17	1	1	--	--	0.008	--	0.0196	ND	0.0038	CSSLP-8	J	6/26/2019
Nickel	mg/kg	25	0	25	1	X	4	2.941	5.347	13.8	0.623	5.347	CSSLP-18		6/26/2019
Nonvolatile Beta	pCi/g	19	0	19	4	G	2	8.494	9.678	16.5	5.63	9.678	CSSLP-4		6/19/2019
Phenanthrene	mg/kg	18	12	6	3	X	4	0.0376	0.164	0.453	ND	0.164	CSSLP-5		6/19/2019
Potassium	mg/kg	25	0	25	4	X	4	212.97	385.6	722	51.4	385.6	CSSLP-3	J	6/19/2019
Pyrene	mg/kg	18	7	11	6	X	4	0.0648	0.234	0.61	ND	0.234	CSSLP-5		6/19/2019
Selenium	mg/kg	25	17	8	8	X	7	0.8058	1.248	3.13	ND	1.248	CSSLP-2	J	6/24/2019
Silver	mg/kg	25	22	3	3	X	7	0.089	0.156	0.479	ND	0.156	CSSLP-3	J	6/19/2019
Sodium	mg/kg	25	8	17	10	G	2	26.6	48.9	162	ND	48.9	CSSLP-028		10/7/2020
Thallium	mg/kg	25	24	1	1	--	--	0.2832	--	0.681	ND	0.681	CSSLP-032	J	10/6/2020
Vanadium	mg/kg	25	0	25	2	G	2	22.66	26.76	47	9.22	26.76	CSSLP-029		10/7/2020
Zinc	mg/kg	25	0	25	12	L	3	34.15	63.07	162	4.32	63.07	CSSLP-18		6/26/2019

Distribution Code:
N Normal Distribution
L Lognormal Distribution
G Gamma Distribution
X Non-Parametric

UCL Method Code: (as determined by ProUCL)
1 Student's t UCL
2 Approximate Gamma UCL
3 95% H-UCL
4 95% Chebyshev UCL
5 97.5% Chebysev UCL
6 99% Chebyshev UCL
7 Kaplan-Meier (KM) t UCL
8 Hall's Bootstrap UCL

ND = Non-Detect

TABLE B2. STATISTICAL SUMMARY FOR CSSLP SUBUNIT SURFACE WATER IMPOUNDMENT AREA SEDIMENT (0 TO 1 FT)

Analyte	Units	Samples	Non-Detects	Detects	J-Detects	Distr. Code	UCL Method	Mean	95% UCL	Max	Min	RME	Max Location	Qualifier of Max	Max Date
Acetone	mg/kg	4	1	3	0	X	7	0.0321	0.0707	0.06	ND	0.06	CSSLP-20-SED		10/12/2020
Aluminum	mg/kg	4	0	4	0	N	1	7760	9296	8960	5970	8960	CSSLP-21-SED		10/12/2020
Arsenic	mg/kg	4	0	4	0	N	1	5.94	8.27	8.59	4.12	8.27	CSSLP-20-SED		10/12/2020
Barium	mg/kg	4	0	4	0	N	1	19.3	31.51	33.4	11.4	31.51	CSSLP-22-SED		10/13/2020
Benzo[a]anthracene	mg/kg	4	4	1	1	--	--	0.0117	--	0.0121	ND	0.0121	CSSLP-21-SED	J	10/12/2020
Benzo[b]fluoranthene	mg/kg	4	4	1	1	--	--	0.012	--	0.0133	ND	0.0133	CSSLP-21-SED	J	10/12/2020
Beryllium	mg/kg	4	2	2	2	X	7	0.1148	0.191	0.183	ND	0.183	CSSLP-22-SED	J	10/13/2020
Bis(2-ethylhexyl)phthalate (DEHP)	mg/kg	4	4	1	1	--	--	0.0141	--	0.0216	ND	0.0216	CSSLP-22-SED	J	10/13/2020
Calcium	mg/kg	4	0	4	0	N	1	344.8	524.3	568	223	524.3	CSSLP-22-SED		10/13/2020
Chromium	mg/kg	4	0	4	0	N	1	11.78	15.7	15	8.66	15	CSSLP-21-SED		10/12/2020
Cobalt	mg/kg	4	0	4	1	N	1	0.6508	0.784	0.778	0.52	0.778	CSSLP-23-SED		10/12/2020
Copper	mg/kg	4	0	4	0	N	1	3.633	4.082	4.13	3.29	4.082	CSSLP-20-SED		10/12/2020
Dimethyl Phthalate	mg/kg	4	4	1	1	--	--	0.0134	--	0.0189	ND	0.0189	CSSLP-22-SED	J	10/13/2020
Gross Alpha	pCi/g	4	0	4	0	N	1	14.38	16.07	15.8	12.9	15.8	CSSLP-23-SED		10/12/2020
Hexavalent Chromium 7196a	mg/kg	4	3	1	1	--	--	0.4071	--	1.36	ND	1.36	CSSLP-22-SED	J	10/13/2020
Iron	mg/kg	4	0	4	0	N	1	10920	14642	14400	8220	14400	CSSLP-21-SED		10/12/2020
Lead	mg/kg	4	0	4	0	N	1	7.548	8.57	8.33	6.5	8.33	CSSLP-21-SED		10/12/2020
Magnesium	mg/kg	4	0	4	0	N	1	190.8	207.7	211	180	207.7	CSSLP-20-SED		10/12/2020
Manganese	mg/kg	4	0	4	0	N	1	50.55	89	81	21.3	81	CSSLP-22-SED		10/13/2020
Mercury	mg/kg	4	0	4	3	N	1	0.0198	0.0254	0.0266	0.0159	0.0254	CSSLP-21-SED		10/12/2020
Methyl Ethyl Ketone	mg/kg	4	2	2	1	X	7	0.0036	0.0084	0.0083	ND	0.0083	CSSLP-20-SED		10/12/2020
Nickel	mg/kg	4	0	4	0	N	1	1.953	2.165	2.18	1.74	2.165	CSSLP-21-SED		10/12/2020
Nonvolatile Beta	pCi/g	4	0	4	1	N	1	9.365	10.79	11.1	8.3	10.79	CSSLP-20-SED		10/12/2020
Potassium	mg/kg	4	0	4	0	N	1	143.5	191	200	113	191	CSSLP-20-SED		10/12/2020
Sodium	mg/kg	4	3	1	1	--	--	5.649	--	10.6	ND	10.6	CSSLP-22-SED	J	10/13/2020
Thallium	mg/kg	4	3	1	1	--	--	0.3689	--	0.619	ND	0.619	CSSLP-22-SED	J	10/13/2020
Toluene	mg/kg	4	2	2	1	X	5	0.0004	0.0083	0.004	ND	0.004	CSSLP-20-SED		10/12/2020
Vanadium	mg/kg	4	0	4	0	N	1	29.8	41.55	39.2	20.2	39.2	CSSLP-21-SED		10/12/2020
Zinc	mg/kg	4	0	4	4	N	1	7.72	9.591	8.81	5.44	8.81	CSSLP-20-SED	J	10/12/2020

Table B2. Statistical Summary for CSSLP Subunit Surface Water Impoundment Area Sediment (0 to 1 ft) *(Continued/End)*

Analyte	Units	Samples	Non-Detects	Detects	J-Detects	Distr. Code	UCL Method	Mean	95% UCL	Max	Min	RME	Max Location	Qualifier of Max	Max Date
Radionuclides															
Thorium-228	mg/kg	2	0	2	0	--	--	3.605	--	4.16	3.05	4.16	CSSLP-20-SED		10/12/2020
Thorium-230	mg/kg	2	0	2	1	--	--	1.33	--	1.44	1.22	1.44	CSSLP-23-SED		10/12/2020
Thorium-232	mg/kg	2	0	2	0	--	--	2.865	--	3.31	2.42	3.31	CSSLP-23-SED		10/12/2020
Uranium-233/234	mg/kg	2	0	2	0	--	--	1.034	--	1.27	0.797	1.27	CSSLP-20-SED		10/12/2020
Uranium-238	mg/kg	2	0	2	1	--	--	0.824	--	1.07	0.578	1.07	CSSLP-20-SED		10/12/2020

Distribution Code:
N Normal Distribution
L Lognormal Distribution
G Gamma Distribution
X Non-Parametric

UCL Method Code: (as determined by ProUCL)
1 Student's t UCL
2 Approximate Gamma UCL
3 95% H-UCL
4 95% Chebyshev UCL
5 97.5% Chebysev UCL
6 99% Chebyshev UCL
7 Kaplan-Meier (KM) t UCL
8 Hall's Bootstrap UCL

ND = Non-Detect

TABLE B3. DATA QUALITY OBJECTIVES WORKSHEET FOR SOIL AND SEDIMENT MEDIA

Pathway (Media)	Probable Conditions	Exposure Pathway and/or Release Mechanisms	Data Needs and DQOs Including Engineering/ Physical Processes	Field Activities Including Removal and Characterization	Parameters	Selected Remedial Action
Surface soil and sediment	Soil and sediment may be contaminated from historical operations at the CSSLP subunit.	Ingestion, inhalation, or dermal contact with contaminated soil and sediment.	Determine the linear extent of soil and sediment above the cleanup level for arsenic (8.2 mg/kg). Confirm the post-excavation backfill and topsoil material is below the acceptable limits for unrestricted use.	Soil and sediment sampling to be conducted around the sample locations where results from previous sampling events have been identified above the cleanup level for arsenic (8.2 mg/kg). Use linear-judgmental sampling design to collect soil and sediment samples. Collect samples from backfill and topsoil material as specified by protocol, ERTEC-2003-00012.	100% definitive-level data quality. For soil and sediment samples within the CSSLP samples will be analyzed for arsenic only. For backfill and topsoil confirmation sampling a full TAL/TCL suite with alpha/beta radiological indicators and gamma PHA suite will be analyzed. Speciate samples if radiological 20/50 trigger levels are exceeded.	Excavation (Hot Spot Removal) and Disposal of Contaminated Media.

TABLE B4. LABORATORY ANALYTICAL SPECIFICATIONS FOR INORGANIC ANALYTES FOR SOIL AND SEDIMENT MEDIA

Analyte	Analyte ID	Preparation[B] Method	EPA[B] Method	CRDL[A] (mg/kg)
Target Analyte List				
Cyanide				
Cyanide	57-12-5		EPA9012B	3.0
Metals				
Aluminum	7429-90-5	3051A,3052	EPA6010C	1.9
Antimony	7440-36-0	3051A,3052	EPA6010C	0.35
Arsenic	7440-38-2	3051A,3052	EPA6010C	0.312
Barium	7440-39-3	3051A,3052	EPA6010C	0.021
Beryllium	7440-41-7	3051A,3052	EPA6010C	0.0311
Cadmium	7440-43-9	3051A,3052	EPA6010C	0.04
Calcium	7440-70-2	3051A,3052	EPA6010C	0.069
Chromium	7440-47-3	3051A,3052	EPA6010C	0.09
Cobalt	7440-48-4	3051A,3052	EPA6010C	0.08
Copper	7440-50-8	3051A,3052	EPA6010C	0.1
Iron	7439-89-6	3051A,3052	EPA6010C	2.19
Lead	7439-92-1	3051A,3052	EPA6010C	0.59
Magnesium	7439-95-4	3051A,3052	EPA6010C	0.0141
Manganese	7439-96-5	3051A,3052	EPA6010C	0.0885
Mercury	7439-97-6	3051A,3052	EPA7471B	0.0152
Nickel	7440-02-0	3051A,3052	EPA6010C	0.088
Potassium	7440-09-7	3051A,3052	EPA6010C	0.08
Selenium	7782-49-2	3051A,3052	EPA6010C	0.0057
Silver	7440-22-4	3051A,3052	EPA6010C	0.101
Sodium	7440-23-5	3051A,3052	EPA6010C	0.298
Thallium	7440-28-0	3051A,3052	EPA6010C	0.16
Vanadium	7440-62-2	3051A,3052	EPA6010C	0.074
Zinc	7440-66-6	3051A,3052	EPA6010C	0.0043
Target Compound List				
PCBs				
AROCLOR 1016	12674-11-2	3540C,3541,3545A	EPA8082A	0.0032
AROCLOR 1221	11104-28-2	3540C,3541,3545A	EPA8082A	0.00022
AROCLOR 1232	11141-16-5	3540C,3541,3545A	EPA8082A	0.00022
AROCLOR 1242	53469-21-9	3540C,3541,3545A	EPA8082A	0.00022
AROCLOR 1248	12672-29-6	3540C,3541,3545A	EPA8082A	0.00022
AROCLOR 1254	11097-69-1	3540C,3541,3545A	EPA8082A	0.00022
AROCLOR 1260	11096-82-5	3540C,3541,3545A	EPA8082A	0.00022
Pesticides				
Aldrin	309-00-2	3540C,3541,3545A,3550C	EPA8081B	0.000029
alpha-Benzene hexachloride	319-84-6	3540C,3541,3545A,3550C	EPA8081B	0.000066
alpha-Chlordane	5103-71-9	3540C,3541,3545A,3550C	EPA8081B	0.000021
beta-Benzene hexachloride	319-85-7	3540C,3541,3545A,3550C	EPA8081B	0.00032
DDE	72-55-9	3540C,3541,3545A,3550C	EPA8081B	0.0017

TABLE B4. LABORATORY ANALYTICAL SPECIFICATIONS FOR INORGANIC ANALYTES FOR SOIL AND SEDIMENT MEDIA (*CONTINUED*)

Analyte	Analyte ID	Preparation[B] Method	EPA[B] Method	CRDL[A] (mg/kg)
Pesticides (continued/end)				
DDT	50-29-3	3540C,3541,3545A,3550C	EPA8081B	0.00101
delta-Benzene hexachloride	319-86-8	3540C,3541,3545A,3550C	EPA8081B	0.000066
Dieldrin	60-57-1	3540C,3541,3545A,3550C	EPA8081B	0.00003
Endosulfan I	959-98-8	3540C,3541,3545A,3550C	EPA8081B	0.000066
Endosulfan II	33213-65-9	3540C,3541,3545A,3550C	EPA8081B	0.00013
Endosulfan sulfate	1031-07-8	3540C,3541,3545A,3550C	EPA8081B	0.00013
Endrin	72-20-8	3540C,3541,3545A,3550C	EPA8081B	0.00013
Endrin aldehyde	7421-93-4	3540C,3541,3545A,3550C	EPA8081B	0.00013
Endrin ketone	53494-70-5	3540C,3541,3545A,3550C	EPA8081B	0.00034
gamma-Chlordane	5103-74-2	3540C,3541,3545A,3550C	EPA8081B	C
Heptachlor	76-44-8	3540C,3541,3545A,3550C	EPA8081B	0.00044
Heptachlor epoxide	1024-57-3	3540C,3541,3545A,3550C	EPA8081B	0.00059
Lindane	58-89-9	3540C,3541,3545A,3550C	EPA8081B	0.000066
Methoxychlor	72-43-5	3540C,3541,3545A,3550C	EPA8081B	0.00113
Toxaphene	8001-35-2	3540C,3541,3545A,3550C	EPA8081B	0.0187
Semi-volatiles				
2,4,5-Trichlorophenol	95-95-4	3540C,3541,3545A,3550C	EPA8270D	0.0074
2,4,6-Trichlorophenol	88-06-2	3540C,3541,3545A,3550C	EPA8270D	0.0074
2,4-Dichlorophenol	120-83-2	3540C,3541,3545A,3550C	EPA8270D	0.014
2,4-Dimethylphenol	105-67-9	3540C,3541,3545A,3550C	EPA8270D	0.014
2,4-Dinitrophenol	51-28-5	3540C,3541,3545A,3550C	EPA8270D	0.12
2-Chlorophenol	95-57-8	3540C,3541,3545A,3550C	EPA8270D	0.0057
2-Methyl-4,6-dinitrophenol	534-52-1	3540C,3541,3545A,3550C	EPA8270D	0.0078
2-Nitrophenol	88-75-5	3540C,3541,3545A,3550C	EPA8270D	0.013
4-Chloro-m-cresol	59-50-7	3540C,3541,3545A,3550C	EPA8270D	0.0555
4-Nitrophenol	100-02-7	3540C,3541,3545A,3550C	EPA8270D	0.156
m/p-Cresol	1319-77-3	3540C,3541,3545A,3550C	EPA8270D	0.096
o-Cresol (2-Methylphenol)	95-48-7	3540C,3541,3545A,3550C	EPA8270D	0.0056
Pentachlorophenol	87-86-5	3540C,3541,3545A,3550C	EPA8270D	0.003
Phenol	108-95-2	3540C,3541,3545A,3550C	EPA8270D	0.0062
1,2,4,5-Tetrachlorobenzene	95-94-3	3540C,3541,3545A,3550C	EPA8270D	0.17
2,3,4,6-Tetrachlorophenol	58-90-2	3540C,3541,3545A,3550C	EPA8270D	0.17
1,1'-Biphenyl	92-52-4	3540C,3541,3545A,3550C	EPA8270D	0.35
2,4-Dinitrotoluene	121-14-2	3540C,3541,3545A,3550C	EPA8270D	0.0446
2,6-Dinitrotoluene	606-20-2	3540C,3541,3545A,3550C	EPA8270D	0.028
2-Chloronaphthalene	91-58-7	3540C,3541,3545A,3550C	EPA8270D	0.0056
2-Methylnaphthalene	91-57-6	3540C,3541,3545A,3550C	EPA8270D	0.05
2-Nitroaniline	88-74-4	3540C,3541,3545A,3550C	EPA8270D	0.0035
3,3'-Dichlorobenzidine	91-94-1	3540C,3541,3545A,3550C	EPA8270D	0.143
4-Bromophenyl phenyl ether	101-55-3	3540C,3541,3545A,3550C	EPA8270D	0.015
4-Chloroaniline	106-47-8	3540C,3541,3545A,3550C	EPA8270D	0.016
4-Chlorophenyl phenyl ether	7005-72-3	3540C,3541,3545A,3550C	EPA8270D	0.0409

TABLE B4. LABORATORY ANALYTICAL SPECIFICATIONS FOR INORGANIC ANALYTES FOR SOIL AND SEDIMENT MEDIA (*CONTINUED*)

Analyte	Analyte ID	Preparation[B] Method	EPA[B] Method	CRDL[A] (mg/kg)
Semi-volatiles (continued/end)				
Acenaphthene	83-32-9	3540C,3541,3545A,3550C	EPA8270D	0.0352
Acenaphthylene	208-96-8	3540C,3541,3545A,3550C	EPA8270D	0.035
Acetophenone	98-86-2	3540C,3541,3545A,3550C	EPA8270D	0.00049
Anthracene	120-12-7	3540C,3541,3545A,3550C	EPA8270D	0.0445
Atrazine	1912-24-9	3540C,3541,3545A,3550C	EPA8270D	0.0022
Benzaldehyde	100-52-7	3540C,3541,3545A,3550C	EPA8270D	6.1
Benzo[a]anthracene	56-55-3	3540C,3541,3545A,3550C	EPA8270D	0.0294
Benzo[a]pyrene	50-32-8	3540C,3541,3545A,3550C	EPA8270D	0.0255
Benzo[b]fluoranthene	205-99-2	3540C,3541,3545A,3550C	EPA8270D	0.0553
Benzo[g,h,i]perylene	191-24-2	3540C,3541,3545A,3550C	EPA8270D	0.0296
Benzo[k]fluoranthene	207-08-9	3540C,3541,3545A,3550C	EPA8270D	0.0588
Bis(2-chloro-1-methylethyl)ether	108-60-1	3540C,3541,3545A,3550C	EPA8270D	0.0541
Bis(2-chloroethoxy) methane	111-91-1	3540C,3541,3545A,3550C	EPA8270D	0.0072
Bis(2-chloroethyl) ether	111-44-4	3540C,3541,3545A,3550C	EPA8270D	0.0695
Bis(2-ethylhexyl) phthalate	117-81-7	3540C,3541,3545A,3550C	EPA8270D	0.035
Butylbenzyl phthalate	85-68-7	3540C,3541,3545A,3550C	EPA8270D	0.028
Caprolactam	105-60-2	3540C,3541,3545A,3550C	EPA8270D	0.0463
Carbazole	86-74-8	3540C,3541,3545A,3550C	EPA8270D	0.024
Chrysene	218-01-9	3540C,3541,3545A,3550C	EPA8270D	0.0329
Dibenz[a,h]anthracene	53-70-3	3540C,3541,3545A,3550C	EPA8270D	0.0332
Dibenzofuran	132-64-9	3540C,3541,3545A,3550C	EPA8270D	0.0389
Dibutyl phthalate	84-74-2	3540C,3541,3545A,3550C	EPA8270D	0.028
Diethyl phthalate	84-66-2	3540C,3541,3545A,3550C	EPA8270D	0.028
Dimethyl phthalate	131-11-3	3540C,3541,3545A,3550C	EPA8270D	0.028
Di-n-octyl phthalate	117-84-0	3540C,3541,3545A,3550C	EPA8270D	0.028
Fluoranthene	206-44-0	3540C,3541,3545A,3550C	EPA8270D	0.0034
Fluorene	86-73-7	3540C,3541,3545A,3550C	EPA8270D	0.0379
Hexachlorobenzene	118-74-1	3540C,3541,3545A,3550C	EPA8270D	0.0322
Hexachlorobutadiene	87-68-3	3540C,3541,3545A,3550C	EPA8270D	0.0056
Hexachlorocyclopentadiene	77-47-4	3540C,3541,3545A,3550C	EPA8270D	0.0024
Hexachloroethane	67-72-1	3540C,3541,3545A,3550C	EPA8270D	0.03
Indeno[1,2,3-c,d]pyrene	193-39-5	3540C,3541,3545A,3550C	EPA8270D	0.03
Isophorone	78-59-1	3540C,3541,3545A,3550C	EPA8270D	0.044
m-Nitroaniline	99-09-2	3540C,3541,3545A,3550C	EPA8270D	0.164
Naphthalene	91-20-3	3540C,3541,3545A,3550C	EPA8270D	0.0056
Nitrobenzene	98-95-3	3540C,3541,3545A,3550C	EPA8270D	0.014
N-Nitrosodiphenylamine	86-30-6	3540C,3541,3545A,3550C	EPA8270D	0.013
N-Nitrosodipropylamine	621-64-7	3540C,3541,3545A,3550C	EPA8270D	0.0559
Phenanthrene	85-01-8	3540C,3541,3545A,3550C	EPA8270D	0.0335
p-Nitroaniline	100-01-6	3540C,3541,3545A,3550C	EPA8270D	0.028
Pyrene	129-00-0	3540C,3541,3545A,3550C	EPA8270D	0.0082

TABLE B4. LABORATORY ANALYTICAL SPECIFICATIONS FOR INORGANIC ANALYTES FOR SOIL AND SEDIMENT MEDIA (*CONTINUED*)

Analyte	Analyte ID	Preparation[B] Method	EPA[B] Method	CRDL[A] (mg/kg)
Volatiles (continued)				
1,1,1-Trichloroethane	71-55-6	5035A	EPA8260B	0.00118
1,1,2,2-Tetrachloroethane	79-34-5	5035A	EPA8260B	0.00133
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5035A	EPA8260B	C
1,1,2-Trichloroethane	79-00-5	5035A	EPA8260B	0.00085
1,1-Dichloroethane	75-34-3	5035A	EPA8260B	0.00115
1,1-Dichloroethylene	75-35-4	5035A	EPA8260B	0.000054
1,2,4-Trichlorobenzene	120-82-1	5035A	EPA8260B	0.000423
1,2-Dibromo-3-chloropropane	96-12-8	5035A	EPA8260B	0.00045
1,2-Dibromoethane	106-93-4	5035A	EPA8260B	6.9E-06
1,2-Dichlorobenzene	95-50-1	5035A	EPA8260B	C
1,2-Dichloroethane (EDC)	107-06-2	5035A	EPA8260B	0.00035
1,2-Dichloropropane	78-87-5	5035A	EPA8260B	0.00035
1,3-Dichlorobenzene	541-73-1	5035A	EPA8260B	C
1,4-Dichlorobenzene	106-46-7	5035A	EPA8260B	C
2-Hexanone	591-78-6	5035A	EPA8260B	0.00286
Acetone	67-64-1	5035A	EPA8260B	0.00703
Benzene	71-43-2	5035A	EPA8260B	0.000823
Bromodichloromethane	75-27-4	5035A	EPA8260B	0.001
Bromoform (Tribromomethane)	75-25-2	5035A	EPA8260B	0.00115
Bromomethane (Methyl bromide)	74-83-9	5035A	EPA8260B	0.00256
Carbon disulfide	75-15-0	5035A	EPA8260B	0.000988
Carbon tetrachloride	56-23-5	5035A	EPA8260B	0.00122
Chlorobenzene	108-90-7	5035A	EPA8260B	0.000987
Chloroethane	75-00-3	5035A	EPA8260B	0.00269
Chloroethene (Vinyl chloride)	75-01-4	5035A	EPA8260B	0.00015
Chloroform	67-66-3	5035A	EPA8260B	0.00142
Chloromethane (Methyl chloride)	74-87-3	5035A	EPA8260B	0.0012
cis-1,2-Dichloroethylene	156-59-2	5035A	EPA8260B	C
cis-1,3-Dichloropropene	10061-01-5	5035A	EPA8260B	0.00131
Cyclohexane	110-82-7	5035A	EPA8260B	0.00008
Dibromochloromethane	124-48-1	5035A	EPA8260B	0.00103
Dichlorodifluoromethane	75-71-8	5035A	EPA8260B	0.004
Dichloromethane (Methylene chloride)	75-09-2	5035A	EPA8260B	0.00165
Ethylbenzene	100-41-4	5035A	EPA8260B	0.00107
Cumene (Isopropylbenzene)	98-82-8	5035A	EPA8260B	0.000254
Methyl acetate	79-20-9	5035A	EPA8260B	22
Methyl ethyl ketone	78-93-3	5035A	EPA8260B	0.00468
Methyl isobutyl ketone	108-10-1	5035A	EPA8260B	0.00262

TABLE B4. LABORATORY ANALYTICAL SPECIFICATIONS FOR INORGANIC ANALYTES FOR SOIL AND SEDIMENT MEDIA (*CONTINUED/END*)

Analyte	Analyte ID	Preparation[B] Method	EPA[B] Method	CRDL[A] (mg/kg)
Volatiles (continued/end)				
Methyl tertiary butyl ether (MTBE)	1634-04-4	5035A	EPA8260B	0.000107
Methylcyclohexane	108-87-2	5035A	EPA8260B	2.6
Styrene	100-42-5	5035A	EPA8260B	0.00072
Tetrachloroethylene (PCE)	127-18-4	5035A	EPA8260B	0.00142
Toluene	108-88-3	5035A	EPA8260B	0.00107
trans-1,2-Dichloroethylene	156-60-5	5035A	EPA8260B	0.002
trans-1,3-Dichloropropene	10061-02-6	5035A	EPA8260B	0.00113
Trichloroethylene (TCE)	79-01-6	5035A	EPA8260B	0.00137
Trichlorofluoromethane	75-69-4	5035A	EPA8260B	0.002
o-Xylene	95-47-6	5035A	EPA8260B	0.00311
m,p-Xylene	MPXYL	5035A	EPA8260B	0.005
Bromochloromethane	74-97-5	5035A	EPA8260B	0.005
1,4-Dioxane	123-91-1	5035A	EPA8260B	0.1
1,2-Dichlorobenzene	95-50-1	5035A	EPA8260B	.005
1,2,3-Trichlorobenzene	87-61-6	5035A	EPA8260B	.005

A) CRDL is the Contract Required Detection Limit and is not always attainable.
B) Extraction and preparation methods differ depending upon media, concentration, instrument, laboratory, and analytical method. Preparation methods will also influence detection limits.
C) Laboratory instructed to obtain the lowest possible MDL

TABLE B5. MINIMUM FIELD QUALITY ASSURANCE/ QUALITY CONTROL SAMPLING REQUIREMENTS

Data Quality Level	Field Quality Assurance/ Quality Control Samples	Frequency of Field Quality Assurance/ Quality Control Sample
UU	None	
VU	None	
VV	Co-located Field Duplicate	Minimum 5%
	Trip Blank[2]	Minimum 1 per cooler
	Equipment Blank	1 per 40 samples
	Field Blank	Optional; 1 per 40 samples
	Split Sample	Minimum 5%
SD	Co-located Field Duplicate	Minimum 5%
	Trip Blank[2]	Minimum 1 per cooler
	Equipment Blank	1 per 40 samples
	Field Blank	Optional; 1 per 40 samples
	Split Sample	Minimum 5%
D[1]	Co-located Field Duplicate	Minimum 5%
	Trip Blank[2]	Minimum 1 per cooler
	Equipment Blank	1 per 40 samples
	Field Blank	Optional; 1 per 40 samples
	Split Sample	Minimum 5%

Data Quality Levels
UU Data Unverified and Unvalidated Data (no errors from ERDMs database loading screens)
VU Data Verified and Unvalidated Data (includes missing data checks)
VV Data Verified and Validated Data (validated to automated criteria; equivalent to USEPA Screening Level Data)
SD Data USEPA Screening Level Data with 10% Definitive Confirmation
D Data USEPA Definitive Level Data

Footnotes:
1. Level of data quality used for the CSSLP subunit in this SAP
2. Usually only analyzed for VOCs

TABLE B6. PRESERVATIVES, HOLDING TIMES, AND SAMPLE CONTAINERS

Parameter	Preservatives	Holding Time	Containers
	Solid	Solid	Solid
Volatile Organic Compounds (VOCs)			
8260- VOCs, 8021 – Aromatic VOCs, 8021 Halogenated VOCs, 8015 – Nonhalogenated VOCs, 8032 – Acrylamide	Low-level soil Add ~5 g soil to 40 mL VOA vial preserved with 1 g of $NaHSO_4$/5 mL water	Low/High Level 14 days	3x40 (or 60) mL glass VOA vial (with stir bar for low-level soil), PTFE septa cap
8033 – Acetonitrile, 8315 – Carbonyl Compounds Prepped by: 5030 – Purge and trap (aqueous) 5035 – Closed system purge and trap (solid)	High-Level Soil Add ~5 g soil to 40 (or 60) ML VOA vial preserved with 10 mL methanol	Low/High Level 14 days	3x40 (or 60) mL glass VOA vial (with stir bar for low-level soil), PTFE septa cap
Prepared by: 5021 – Automated Headspace	Soil Only Add ~2 g soil to 22 mL soil vial. Cool to 4° C. Soil/Matrix Modifier Add ~2 g soil to 22 mL soil vial preserved with 10 mL matrix modifier. Cool to 4° C. Soil/Water Add ~2 g soil to 22 mL soil vial preserved with 10 mL water. Cool to 4° C.	14 days	2 x 22 mL glass soil headspace vial, PTFE-lined septa with crimp or screw–top cap
Prepared by: 5032 – Vacuum Distillation	Cool to 4° C. No headspace	14 days	2 x 125 mL CWM with PTFE – lined lids
Nonpurgeable Water-Soluble VOCs Prepared by: 5031 - Azeotropic Distillation	Cool to 4° C. No headspace	14 days	2 x 125 mL CWM
Prepared by: 3585 – Solvent Dilution	Oily Waste Cool to 4° C.	14 days	125 mL CWM

TABLE B6. PRESERVATIVES, HOLDING TIMES, AND SAMPLE CONTAINERS *(CONTINUED)*

Parameter	Preservatives	Holding Time	Containers
	Solid	Solid	Solid
Volatile Organic Compounds (VOCs) *(continued/end)*			
8031 – Acrylonitrile, 8316 – Acrolein, Acrylamide, Acrylonitrile	NA	NA	250 mL CWM
Extractable Organics			
8270 – Semivolatile Organics, 8041 – Phenols, 8061 – Phthalate Esters, 8070 – Nitrosamines, 8081 – Organochlorine Pesticides, 8082 – Polychlorinated Biphenyls, 8091 – Nitroaromatics/Cyclic Ketones, 8100 – Polycyclic Aromatic Hydrocarbons, 8111 – Haloethers, 8121 – Chlorinated Hydrocarbons, 8151 – Chlorinated Herbicides, 8310 – Polycyclic Aromatic Hydrocarbons, 8321 – Nonvolatile Organics, 8325 - Nonvolatile Organics, 8330 – Nitroaromatics and Nitramines, 8331 – Tetrazene, 8332 – Nitroglycerine, 8141 – Organophosphate Pesticides	Cool to 4° C.	14 days until extraction/analyzed within 40 days after extraction	250 mL CWM

TABLE B6. PRESERVATIVES, HOLDING TIMES, AND SAMPLE CONTAINERS *(CONTINUED/END)*

Parameter	Preservatives	Holding Time	Containers
	Solid	Solid	Solid
Extractable Organics *(continued/end)*			
8318 – N-Methyl carbamates	Cool to 4° C. Store in dark.	14 days until extraction/analyzed within 40 days after extraction	250 mL CWM
8280– Dioxins/Furans, 8290-Dioxins/Furans	Cool to 4° C. Store in dark.	30 days until extraction/analyzed within 45 days after extraction	250 mL CWM
Metals			
Metals (except mercury)	Cool to 4° C.	6 months	250 mL CWM (metals and cyanide may be collected in the same container for soils)
Mercury	Cool to 4° C.	28 days	250 mL CWM
Miscellaneous			
Chloride	NA	28 days	125 mL CWM
Common Ions	Cool to 4° C.	28 days	250 mL CWM
Hydrogen Ion (pH)	Cool to 4° C.	ASAP	125 mL CWM
Nitrate	Cool to 4° C.	48 hours	250 mL CWM
Nitrate-Nitrite	Cool to 4° C.	28 days	250 mL CWM
Oil & Grease	Cool to 4° C.	28 days	250 mL CWM
Organic Carbon, Total	Cool to 4° C.	28 days	125 mL CWM
Radiological Test Gross Alpha	Cool to 4° C.	6 months	250 mL HDPE
Radiological Test Nonvolatile Beta	Cool to 4° C.	6 months	250 mL HDPE
Radium Total	Cool to 4° C.	6 months	250 mL HDPE
Tritium	Cool 0 to 6 C	180 days	250 HDPE or 4 oz Amber Glass
Sulfate	Cool to 4° C.	28 days	125 mL CWM
Sulfide	Add 2N zinc acetate until moistened and cool to 4° C.	7 days	250 mL CWM
Total Organic Halogens (TOX)	Cool to 4° C.	28 days	125 mL CWM

Abbreviations used in Table:
ASAP – As soon as possible
CWM – Clear Wide-Mouth Glass Jar
HDPE – High-Density Polyethylene plastic bottle
$NaHSO_4$ – Sodium bisulfate
PTFE – Teflon lined seals

TABLE B7. SAMPLING MATRIX, CSSLP SOIL AND SEDIMENT SAMPLES

Sample Count	Sample Station	Top Depth *(ft)*	Bottom Depth *(ft)*	Sample Type	Sample Media	Collection Method	Analyte	Proposed Coordinates	
								Easting (UTM 83)	Northing (UTM 83)
1.	SLP-01	0	1	REG	Soil	Hand auger	Arsenic	-81.65246826	33.25464381
2.	SLP-02	0	1	REG	Soil	Hand auger	Arsenic	-81.65246826	33.25473097
3.	SLP-02RB	0	1	RB	Water	Hand auger	Arsenic	-81.65246826	33.25473097
4.	SLP-03	0	1	REG	Soil	Hand auger	Arsenic	-81.65270487	33.25481812
5.	SLP-04	0	1	REG	Soil	Hand auger	Arsenic	-81.65258655	33.25481812
6.	SLP-05	0	1	REG	Soil	Hand auger	Arsenic	-81.6522368	33.25481717
7.	SLP-06	0	1	REG	Soil	Hand auger	Arsenic	-81.65235252	33.25481764
8.	SLP-07	0	1	REG	Soil	Hand auger	Arsenic	-81.65266359	33.25507236
9.	SLP-08	0	1	REG	Soil	Hand auger	Arsenic	-81.652568	33.25507773
10.	SLP-09	0	1	REG	Soil	Hand auger	Arsenic	-81.65224442	33.25508099
11.	SLP-10	0	1	REG	Soil	Hand auger	Arsenic	-81.65235838	33.25508205
12.	SLP-10SPL	0	1	SPL	Soil	Hand auger	Arsenic	-81.65235838	33.25508205
13.	SLP-11	0	1	REG	Soil	Hand auger	Arsenic	-81.65280482	33.25543027
14.	SLP-12	0	1	REG	Soil	Hand auger	Arsenic	-81.65281995	33.25550725
15.	SLP-12FD	0	1	FD	Soil	Hand auger	Arsenic	-81.65281995	33.25550725
16.	SLP-13	0	1	REG	Soil	Hand auger	Arsenic	-81.65300755	33.25542499
17.	SLP-14	0	1	REG	Soil	Hand auger	Arsenic	-81.6529213	33.25550462
18.	SLP-15	0	1	REG	Soil	Hand auger	Arsenic	-81.65303046	33.2556268
19.	SLP-16	0	1	REG	Soil	Hand auger	Arsenic	-81.65290895	33.25562549
20.	SLP-17	0	1	REG	Soil	Hand auger	Arsenic	-81.65279232	33.25580552
21.	SLP-18	0	1	REG	Soil	Hand auger	Arsenic	-81.65279344	33.2557342
22.	SLP-19	0	1	REG	Soil	Hand auger	Arsenic	-81.65313995	33.25570944
23.	SLP-20	0	1	REG	Soil	Hand auger	Arsenic	-81.65312788	33.25579079
24	SLP-20SPL	0	1	SPL	Soil	Hand auger	Arsenic	-81.65312788	33.25579079
25.	SLP-21	0	1	REG	Soil	Hand auger	Arsenic	-81.6528994	33.25587523
26.	SLP-22	0	1	REG	Soil	Hand auger	Arsenic	-81.65300762	33.25587367
27.	SLP-23	0	1	REG	Soil	Hand auger	Arsenic	-81.65330188	33.25592216
28.	SLP-24	0	1	REG	Soil	Hand auger	Arsenic	-81.65336132	33.25570092
29.	SLP-24FD	0	1	FD	Soil	Hand auger	Arsenic	-81.65336132	33.25570092
30.	SLP-25	0	1	REG	Soil	Hand auger	Arsenic	-81.6533316	33.25578039
31.	SLP-26	0	1	REG	Soil	Hand auger	Arsenic	-81.65337942	33.25537428
32.	SLP-27	0	1	REG	Soil	Hand auger	Arsenic	-81.65333375	33.25527483
33.	SLP-28	0	1	REG	Soil	Hand auger	Arsenic	-81.65335279	33.25509755
34.	SLP-29	0	1	REG	Soil	Hand auger	Arsenic	-81.65307751	33.25499877
35.	SLP-30	0	1	REG	Soil	Hand auger	Arsenic	-81.65318281	33.2550871

TABLE B7. SAMPLING MATRIX, CSSLP SOIL AND SEDIMENT SAMPLES *(CONTINUED/END)*

Regular and QA Sample Summary	
Regular Samples	30
Field Duplicates	2
Splits	2
Rinsate Blanks	1
Total Samples	35

TABLE B8. SAMPLING MATRIX, BACKFILL AND TOPSOIL CONFIRMATION SAMPLES

Sample Count	Sample Station	Top Depth *(ft)*	Bottom Depth *(ft)*	Sample Type	Sample Media	Collection Method	Analyte	Proposed Sample Coordinates	
								UTM 83	SRS East
1.	BCKFL-1	TBD	TBD	Confirmation	Soil	Hand Auger	TAL, TCL, Gross Alpha, Non-Volatile Beta	TBD	TBD
2.	BCKFL-2	TBD	TBD	Confirmation	Soil	Hand Auger	TAL, TCL, Gross Alpha, Non-Volatile Beta	TBD	TBD
3.	BCKFL-3	TBD	TBD	Confirmation	Soil	Hand Auger	TAL, TCL, Gross Alpha, Non-Volatile Beta	TBD	TBD
4.	TOPSL-1	TBD	TBD	Confirmation	Soil	Hand Auger	TAL, TCL, Gross Alpha, Non-Volatile Beta	TBD	TBD
5.	TOPSL-1	TBD	TBD	Confirmation	Soil	Hand Auger	TAL, TCL, Gross Alpha, Non-Volatile Beta	TBD	TBD

Regular and QA Sample Summary	
Regular Samples	**5**
Total Samples	**5**

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