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Explanation of Significant Difference for the Revision 1 Record of Decision Remedial Alternative Selection for the Wetland Area at Dunbarton Bay in Support of Steel Creek Integrator Operable Unit (U)

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DISCLAIMER

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APPROVAL SHEET

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LIST OF ABBREVIATIONS AND ACRONYMS

~	approximate or approximately
ac	acre
ARAR	applicable or relevant and appropriate requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
+D	plus daughters
ESD	Explanation of Significant Difference
FFA	Federal Facility Agreement
ft	feet or foot
ha	hectare
IOU	Integrator Operable Unit
IWT	Industrial Wastewater Treatment
LLC	Limited Liability Company
LUCs	Land Use Controls
LUCIP	Land Use Control Implementation Plan
m	meter
m^3	cubic meters
NARA	North Ash Remediation Area
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
PAB	P-Area Ash Basin
RCOC	refined contaminant of concern
ROD	Record of Decision
SARA	South Ash Remediation Area
SCDHEC	South Carolina Department of Health and Environmental Control
SRNS	Savannah River Nuclear Solutions, LLC
SRS	Savannah River Site
USDOE	United States Department of Energy
USEPA	United States Environmental Protection Agency
WADB	Wetland Area at Dunbarton Bay
yd^3	cubic yard

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I. INTRODUCTION

This Explanation of Significant Difference (ESD) is being issued by the United States Department of Energy (USDOE), the lead agency for remedial activities at the Savannah River Site (SRS), near Aiken, South Carolina, with concurrence by the United States Environmental Protection Agency (USEPA) – Region 4 and the South Carolina Department of Health and Environmental Control (SCDHEC). The purpose of this ESD is to announce that in lieu of ash excavation and disposal for the ash overflow area at the Wetland Area at Dunbarton Bay (WADB) in support of Steel Creek Integrator Operable Unit (IOU) as selected in the Record of Decision (ROD) issued on June 20, 2018, land use controls (LUCs) will be expanded as the remedial action for the remaining ash in the form of signage and institutional controls. The change to expand the LUC boundary, in lieu of continued excavation of ash, is the result of the discovery of additional ash and the saturated conditions encountered during remedial activities, disposal volume limitations, increased costs for excavation and disposal, and the protectiveness of human health and the environment provided by LUCs.

The WADB is listed as a Resource Conservation Recovery Act 3004(u) Solid Waste Management Unit/ Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Unit in Appendix C of the FFA for SRS (FFA 1993). Under CERCLA Section 117(c), SRS is required to publish an ESD whenever there is a significant change to a component of a remedy specified in a ROD. Sections 300.435(c)(2)(i) and 300.825(a)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) require the lead agency to provide an explanation of the differences and to make this information available to the public in the Administrative Record File (ARF) and information repositories.

The ESD is part of the ARF and is available for public viewing during normal business hours at the following repositories.

U.S. Department of Energy
Public Reading Room
Gregg-Graniteville Library
University of South Carolina – Aiken
471 University Parkway
Aiken, South Carolina 29801
(803) 641-3465

Thomas Cooper Library
Government Information and Maps Department
University of South Carolina
1322 Greene Street
Columbia, South Carolina 29208
(803) 777-4841

The Federal Facility Agreement (FFA) ARF is available electronically at the following address:

http://www.srs.gov/general/programs/soil/arf/arfirf.html.

II. SITE HISTORY AND SELECTED REMEDY

SRS began early infrastructure development between 1951 and 1955 including the construction of P-Reactor (SRNS 2010). P-Reactor operated from 1954 to 1988 and was shut down in 1991. Similar to other reactor areas at SRS, P Area utilized a coal-fired powerhouse to generate steam and electricity with coal ash (coal combustion products) produced as a waste of boiler operations. In P Area, this ash was mixed with water and transferred to P-Area Ash Basin (PAB) via a sluice line. The PAB was an unlined, earthen containment basin that received sluice from 1951 to 1991 (SRNS 2013a) and closed as part of a separate removal action

prior to the WADB remedy implementation. The industrial wastewater permit that was issued in 1981 and associated with the PAB was closed as part of the prior removal action.

WADB is a solid waste management unit within the Steel Creek IOU, and there is no active Industrial Wastewater Treatment (IWT) permit to consider for closeout. In addition, the water closeout regulation does not specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site. For these reasons, the IWT closure criteria (SC R.61-82), were determined to not be an Applicable or Relevant and Appropriate Requirement (ARAR) in the CMS/FS for any of the six alternatives and was not included in any remedial decision documents.

During the years of 1973 to 1974, significant amounts of ash within the PAB were removed and placed around the perimeter of the PAB and to the north along the access road that resulted in downgradient migration of ash. An additional contributor, an outfall north of the PAB (Outfall P-007) received releases of contaminants (cesium-137) from process line discharges that originated from the P-Area Disassembly Basin. In the summer of 2010, the area of ash overflow was discovered during the removal activities at the PAB beginning at the southern edge of the PAB and extending into a downgradient Carolina bay called Dunbarton Bay. Representatives from the USEPA, SCDHEC, and USDOE met on August 5, 2010 to discuss and evaluate the need for a remedial action with regard to the ash overflow area. The three agencies agreed that this ash overflow area was outside the scope of the remedial action for the PAB. The newly discovered ash overflow area was administratively transferred to the Steel Creek IOU as a subunit in 2010 and named the WADB (Figure 1). The WADB is listed as a Resource Conservation Recovery Act 3004(u) Solid Waste Management Unit/ CERCLA Unit in Appendix C of the FFA for SRS (FFA 1993). The WADB is located within the Steel Creek watershed near the headwaters of Meyers Branch and extends into Dunbarton Bay (Figure 1).

A Sampling and Analysis Plan was developed to investigate the nature and extent of ash contamination at the WADB (SRNS 2011). Based on the investigation, the WADB ash deposition area begins on the south side of the PAB and extends in a southerly direction for approximately (~) 762 meters (m) (~2,500 feet [ft]) into Dunbarton Bay, one of many Carolina bays on the SRS. The area of ash deposition is ~15.4 hectares (ha) (~38 acres [ac]) with a total volume of ~61,332 square meters (m^3) (~80,220 cubic yards [yd^3]) of ash (SRNS 2018a) (Figure 1).

The primary source of contamination at the WADB is coal ash from the PAB and runoff from Outfall P-007. Arsenic, cesium-137(+D), potassium-40, radium-226(+D), and uranium-238(+D) were identified as human health refined contaminants of concern (RCOCs) for both the future resident scenario and the future industrial worker scenario. Arsenic, cesium-137(+D), potassium-40, radium-226(+D) were identified as human health RCOCs for both the IOU onsite worker and the trespasser.

The WADB is located in a remote part of SRS and is not within any administrative or industrial areas that are currently designated for industrial land use. The environmental setting (wetland) precludes any residential (unrestricted) or industrial land use in the future. Therefore, the most likely receptor scenario is an onsite worker (i.e., a worker who is conducting

research, collecting samples, performing maintenance, etc.).

The ROD for the WADB (SRNS 2018a) documents the selected alternative for the WADB (Sub-Alternative A-3b) that included excavating 16,820 m^3 (22,000 yd^3) of ash and contaminated soil media from the boundary of the PAB to the edge of the 30-m (100-ft) buffer around the Dunbarton Bay to an approved ex situ containment facility located off SRS property. The remedy also included LUCs for ~10 ha (~25 ac) since the entire volume of ash and contaminated soil was not to be excavated and some materials would be left in place at Dunbarton Bay and the 30-m (100-ft) buffer along the northern edge of the bay. Thus, the sensitive Carolina bay ecosystem would be protected during execution of removal activities.

Previous Actions

The design for the implementation of the selected remedy for the WADB OU consisted of two distinct areas of ash excavation: the North Ash Remediation Area (NARA) and the South Ash Remediation Area (SARA) (Figure 2). The volume of ash removed from the NARA and SARA is presented in the Post Construction Report (SRNS 2020). The remedial action for the NARA is complete and supports unrestricted land use. Excavation activities in the SARA were intended to be executed beginning with the section adjacent to the buffer area. However, following initial excavation activities in the SARA, a status meeting was held in June 2019 with the Core Team (i.e., USDOE, USEPA, and SCDHEC) to discuss field conditions due to the discovery of the presence of shallow perched water and additional ash discovered outside of the limits of the SARA ash boundary (Figure 3). The area of additional ash was delineated to be ~0.4 ha (~1 ac). The additional ash discovered would exceed the capacity of the disposal cell that was constructed at the waste receiving facility. The volume of ash remaining outside of the wetlands and buffer area is estimated to be 16,820 m^3 (22.000 yd^3). Due primarily to the saturated conditions in the remediation area, but also the discovery of additional ash and restrictions on disposal volume and moisture content that were imposed by the disposal facility, the decision was made to suspend further excavation of the remaining SARA (SRNS 2020).

The Core Team agreed to defer the remediation of the SARA until disposition alternatives for all coal combustion residual units listed in the FFA were evaluated. A scoping meeting with the USEPA, SCDHEC, and USDOE was held on April 19, 2022, to present a proposed comprehensive remedial approach for the remaining coal ash/coal fine units at the SRS. Following the meeting, the USDOE submitted the *Preferred Remedial Action and Regulatory Strategy for Remaining Savannah River Site's Coal Ash and Fines Operable Units (U)* to USEPA and SCDHEC on

July 21, 2022 (USDOE 2022). As stated in the strategy letter, the preferred remedial action for the remaining ash at the WADB is LUCs which would be documented in an ESD to the WADB ROD (USDOE 2022).

Selected Remedial Action

The remedial action addressed in this ESD requires an expanded LUC boundary for the WADB beyond the initial LUC area established for Dunbarton Bay. The expanded LUCs are being implemented to include the ash deposits remaining in the SARA and the additional ash discovered outside of the boundary of the SARA

(Figure 4). LUCs include both institutional controls (i.e., excavation permit restrictions, deed restrictions, health and safety plans for entry, etc.) and physical access controls (i.e., physical barriers, warning signs, no trespassing signs, access controls, and/or fencing, etc.) to minimize the potential for human exposure to contaminants by limiting land access or resource use.

An expanded LUC boundary is required since the remedy leaves hazardous substances in place, beyond the existing LUC boundary, that pose a potential future risk and includes required land use restrictions until the concentrations of hazardous substances in the ash/soil media are at levels suitable for unrestricted use and exposure. Access control warning sign locations will be placed and/or repositioned to include the expanded LUC boundary. The signs are intended to alert onsite workers to the presence of hazardous substances and convey the restrictions of unauthorized personnel.

III. BASIS FOR THE EXPLANATION OF SIGNIFICANT DIFFERENCE

The ROD for the WADB (SRNS 2018a) employed LUCs for 10 ha (25 ac) since the entire volume of waste was not to be excavated and some material would be left in place. The initial LUC boundary is shown in Figure 2. The purpose of this ESD is to document expanded LUCs that include the SARA, the additional ash discovered outside of the SARA, as well as the initial LUC boundary protective of and within the Dunbarton Bay.

Further excavation at the SARA was suspended due to the additional ash discovered, saturated sub-surface conditions encountered in the SARA, and disposal volume limits established by the waste receiving facility (SRNS 2013b). The extremely wet conditions hampered excavation and required stockpiling and drying of the ash to meet landfill acceptance criteria, resulting in a significant cost increase due to the presence of hydric soils withing the SARA and additional ash area.

IV. DESCRIPTION OF SIGNIFICANT DIFFERENCE

The ROD for the WADB was issued June 20, 2018 (SRNS 2018a). The significant difference described in this ESD is to expand the LUC boundary to include the SARA and additional ash to the east of the SARA. Expansion of the LUC boundary will be protective of human health and the environmental without additional excavation and disposal of the ash. The additional ash is located between Powerline Road and Dunbarton Bay (Figure 3).

The actions described herein are documenting an expanded LUC boundary for the WADB from Powerline Road to the 30-m (100-ft) buffer along the northern edge of Dunbarton Bay. The LUC boundary maintains the previously designated LUC area within the 30-m (100-ft) buffer and within Dunbarton Bay (Figure 3). The entirety of the expanded LUC boundary consists of ~16 ha (~39 ac) (Figure 4). The expanded LUCs are estimated to cost approximately $50,000. It is estimated that pursuing continued excavation and offsite disposal of the SARA and additional ash would cost approximately $5.8 Million due to the saturated field conditions along with an escalation factor from 2019 to 2023 dollars. This additional cost would result in a total remedial cost for the WADB that exceeds the ROD estimate.

V. STATUTORY DETERMINATIONS

The nine criteria used to compare alternatives were derived from the statutory requirements of CERCLA Section 121. The NCP [40 Code of Federal Regulations Section 300.430 (e) (9)] sets forth nine evaluation criteria that provide the basis for evaluating alternatives and selecting a remedy. Because LUCs were selected as part of the remedy for the WADB (SRNS 2018a), an additional comparison of remedial alternatives is not required. The modified remedy remains protective of human health and the environment and satisfies CERCLA §121, 42 United States Code §9621.

This ESD expands the LUC area previously described in the ROD but does not otherwise change an active remedy component; therefore, reconsideration of Applicable or Relevant and Appropriate Requirements (ARARs) is not required.

The selected remedial action for the WADB leaves hazardous substances in place that pose a potential future risk and will require land use restrictions. LUCs, implemented as part of the remedial action, will be maintained until the concentration of hazardous substances in the soil are at such levels to allow for unrestricted use and exposure. An addendum to the existing Land Use Control Implementation Plan (LUCIP) (SRNS 2018b) will be prepared by the USDOE that describes the expanded LUC boundary and sign locations. The USDOE is responsible for implementing, maintaining, monitoring, reporting upon, and enforcing the LUCs selected under this ESD. The LUCIP will remain in effect unless, and until, modifications are approved by USEPA and SCDHEC as needed to be protective of human health and the environment.

In accordance with Section 121(c) of CERCLA and NCP Section 300.430(f)(5)(iii)(c), a statutory review will be conducted within five years after initiation of the remedial action to ensure that the remedy is, and will continue to be, protective of human health and the environment.

VI. PUBLIC PARTICIPATION

The public will be informed of the changes to the selected remedy as specified in this ESD through the *SRS Environmental Bulletin*, a newsletter sent to approximately 3,500 citizens in South Carolina and Georgia, and through the *Aiken Standard*, the *Allendale Citizen Leader*, the *Barnwell People Sentinel*, *The State*, and the *Augusta Chronicle* newspapers.

To obtain more information concerning this ESD, contact:

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VII. REFERENCES

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

SRNS, 2010. *Record of Decision Remedial Alternative Selection for the P-Area Operable Unit (PAOU) (U)*, SRNS-RP-2009-01368, Revision 1, Savannah River Nuclear Solutions, LLC, Savannah River Site, Aiken, SC

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SRNS, 2013a. *Focused Corrective Measures Study/Feasibility Study (CMS/FS) Report for the Wetland Area at Dunbarton Bay in Support of Steel Creek Integrator Operable Unit (U)*, SRNS-RP-2012-00252, Revision 1.1, Savannah River Nuclear Solutions, LLC, Savannah River Site, Aiken SC.

SRNS, 2013b. *Post-Construction Report (PCR) for the P-Area Operable Unit (U)*, SRNS-RP-2011-01582, Revision 1.1, Savannah River Nuclear Solutions, LLC, Savannah River Site, Aiken, SC

SRNS, 2018a. *Record of Decision Remedial Alternative Selection for the Wetland Area at Dunbarton Bay in Support of Steel Creek Integrator Operable Unit (U)*, SRNS-RP-2013-00730, Revision 1, Savannah River Nuclear Solutions, LLC, Savannah River Site, Aiken SC.

SRNS, 2018b. *Land Use Control Implementation Plan for the Wetland Area at Dunbarton Bay of the Steel Creek Integrator Operable Unit (U)*, SRNS-RP-2018-00479, Revision 1, Savannah River Nuclear Solutions, LLC, Savannah River Site, Aiken, SC.

SRNS, 2020. *Post-Construction Report for the Wetland Area at Dunbarton Bay in Support of Steel Creek Integrator Operable Unit (U)*, SRNS-RP-2020-00003, Revision 1, Savannah River Nuclear Solutions, LLC, Savannah River Site, Aiken, SC

USDOE, 2022. Letter, B. Hennessey (USDOE) to S. Fulmer (SCDHEC) and J. Richards (USEPA), *Preferred Remedial Action and Regulatory Strategy for Remaining Savannah Rivers Site's Coal Ash and Coal Fines Operable Units (U)*, IACD-22-166, dated July 21, 2022, United States Department of Energy-Savannah River, Savannah River Site, Aiken, SC.

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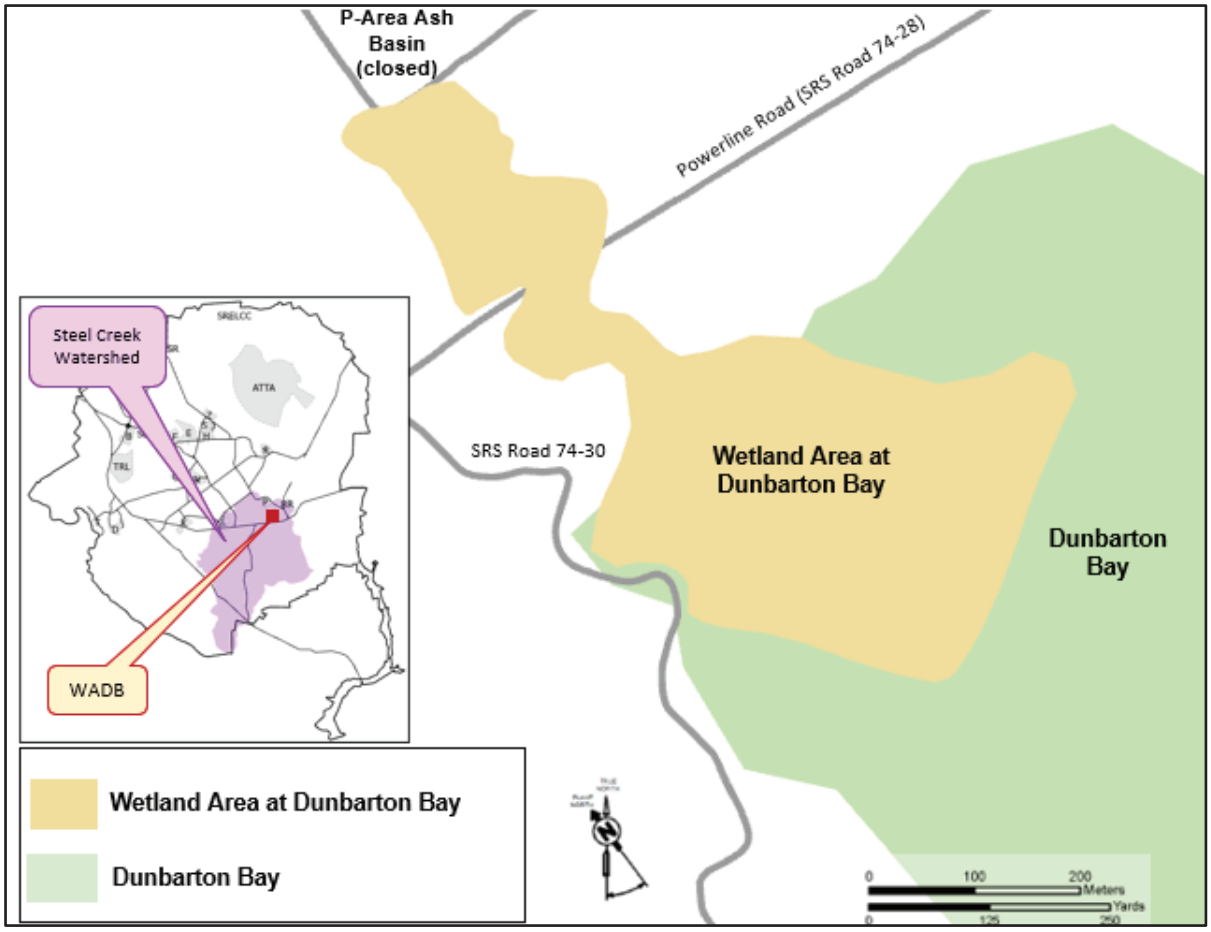

Figure 1. Location of the Wetland Area at Dunbarton Bay

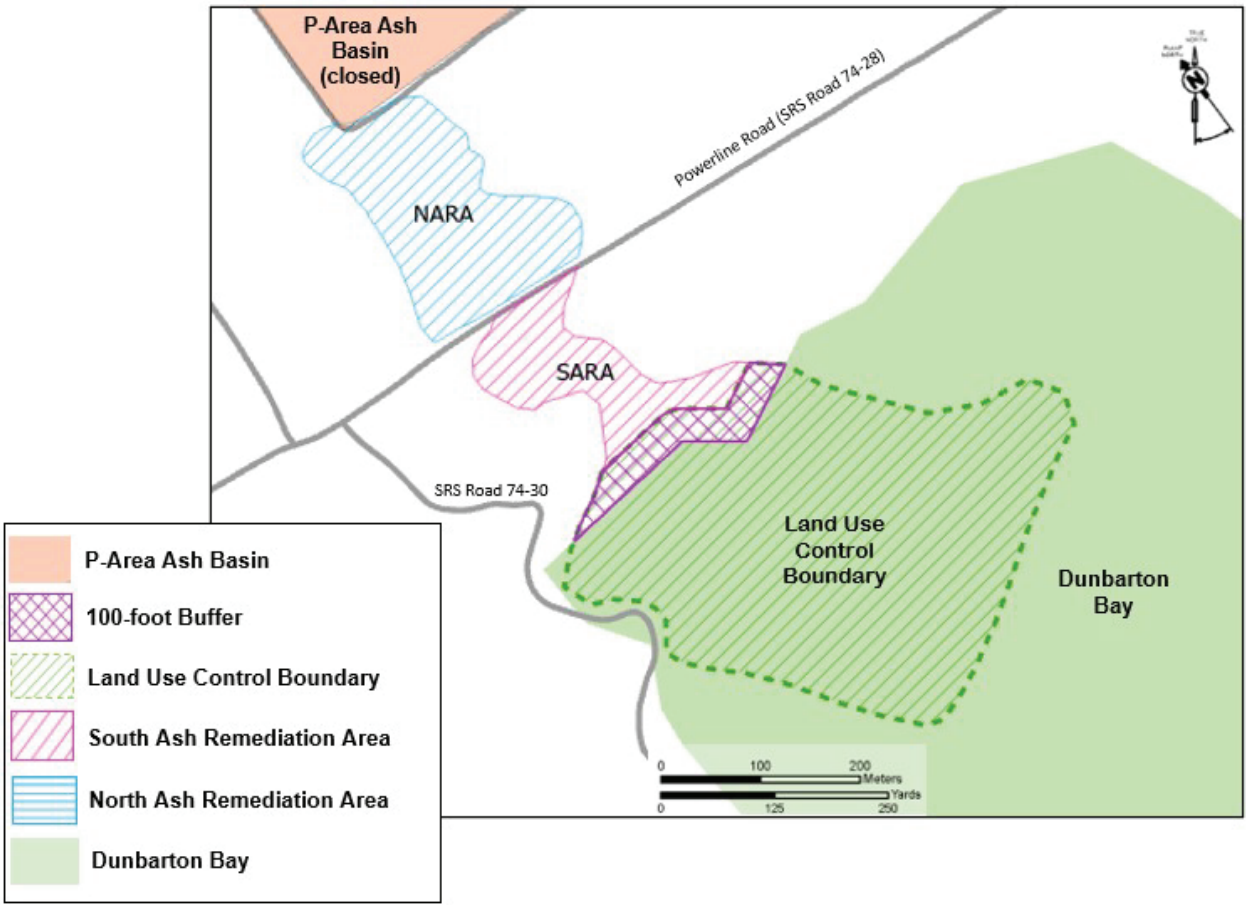

Figure 2. WADB Project Area (Showing Previous Land Use Control Boundary)

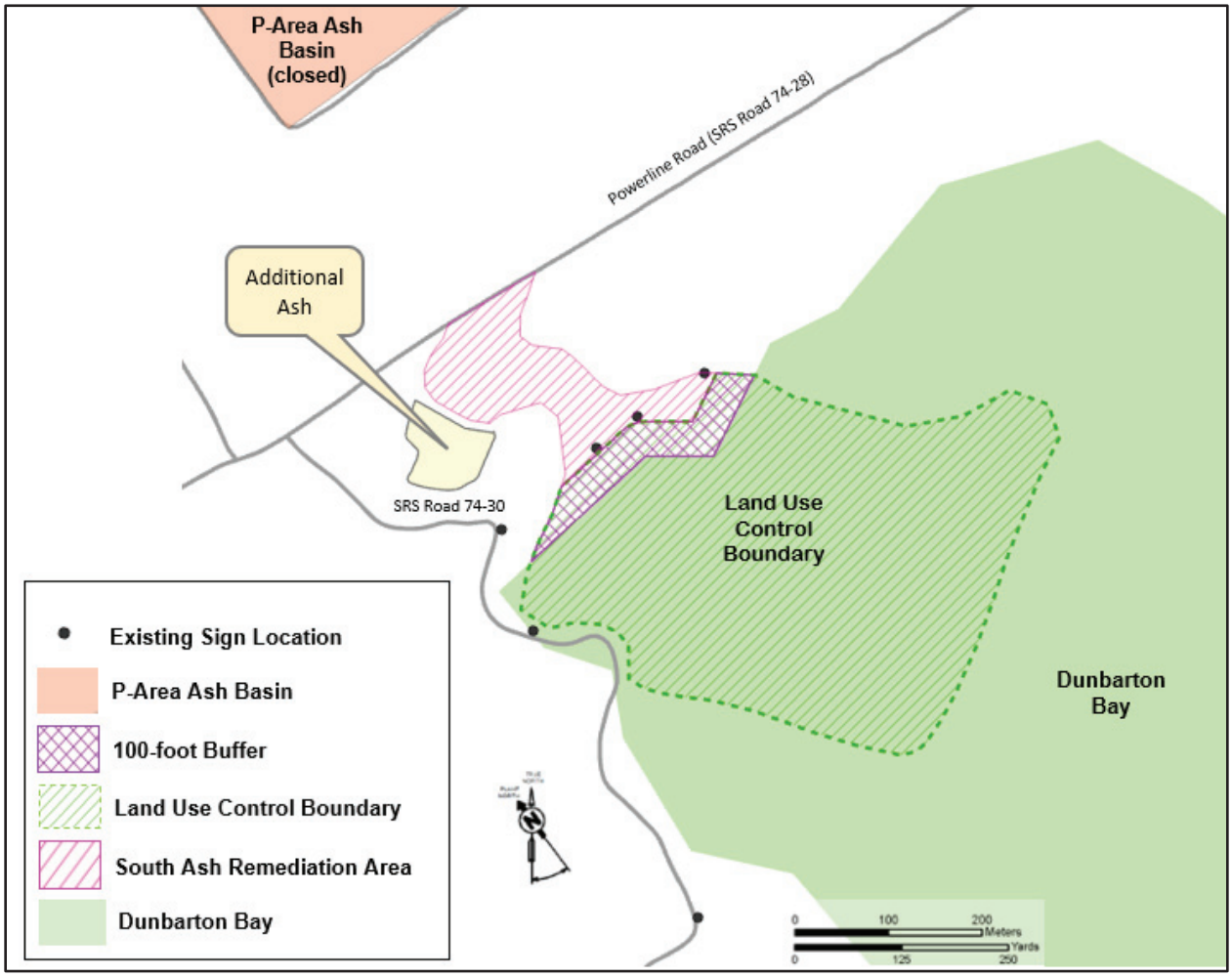

Figure 3. Location of Additional Ash, Existing Sign Locations, and Existing Land Use Control Boundary

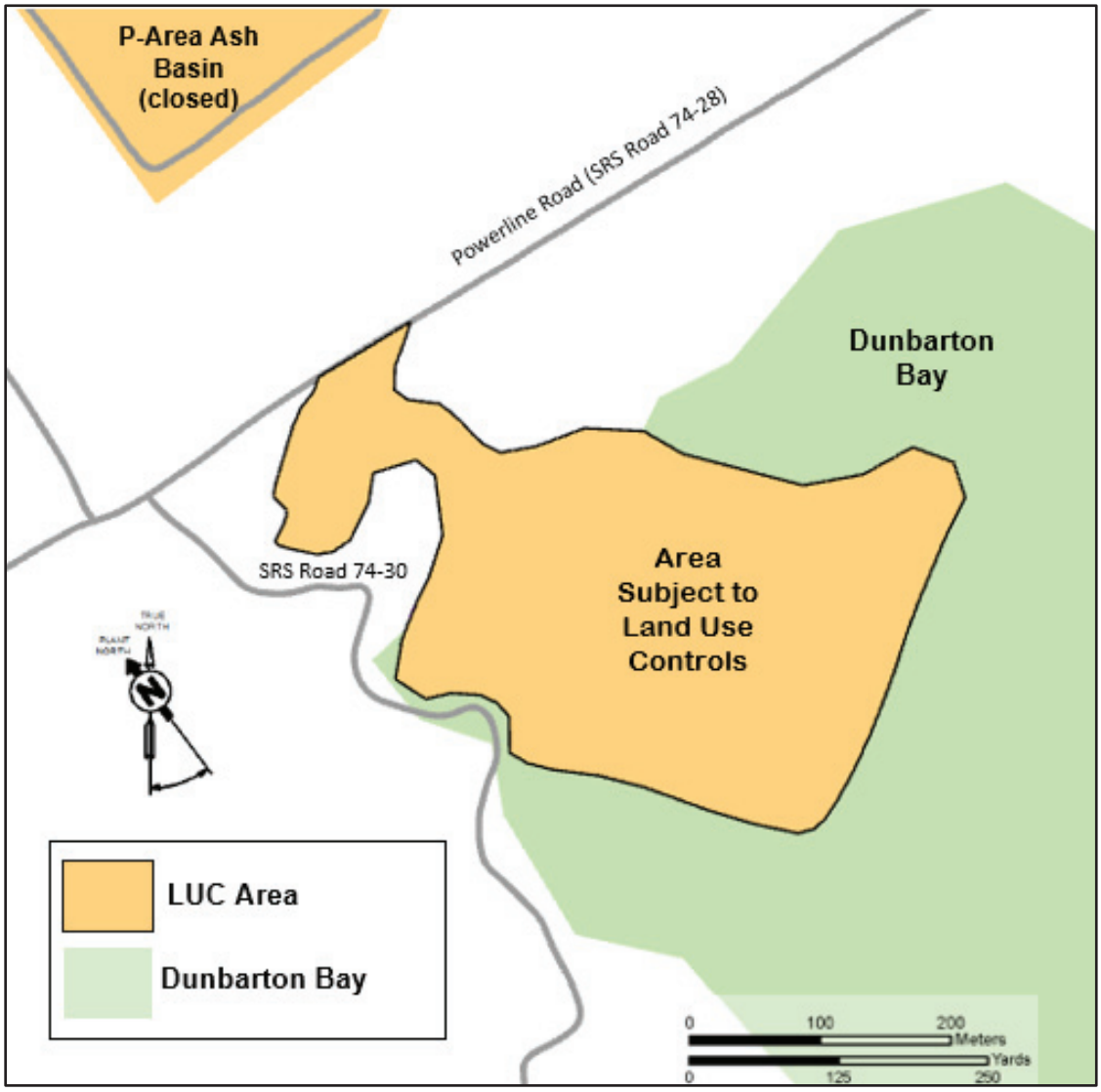

Figure 4. Expanded Area Subject to Land Use Controls