LUCIP for the
D-Area Expanded Operable Unit (Consisting of the D-Area Rubble Pit, 431-2D & D-Area Ash Basin, 488-D)

Land Use Control Implementation Plan for the D-Area Expanded Operable Unit

WSRC-RP-2004-4065, Revision.1, July 2005

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United States Department of Energy

Savannah River Site

Land Use Control Implementation Plan (LUCIP) for the D-Area Expanded Operable Unit (DEXOU) (U)

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Revision 1

June 2005

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LIST OF ACRONYMS AND ABBREVIATIONS

ac	acre
ARAR	applicable or relevant and appropriate requirement
CAB	Citizens Advisory Board
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CM	contaminant migration
cm/s	centimeter per second
COC	constituent of concern
DEXOU	D-Area Expanded Operable Unit
488-DAB	488-D Ash Basin
DRP	D-Area Rubble Pit
DSVA	Dead and Stressed Vegetation Area
ECA	Environmental Compliance Authority
ECO	ecological
FFA	Federal Facility Agreement
ft	feet
GMZA	Groundwater Mixing Zone Application
ha	hectare
HAZWOPER	Hazardous Waste Operations and Emergency Response
HH	human health
LUC	Land Use Control
LUCIP	Land Use Control Implementation Plan
LUCAP	Land Use Control Assurance Plan
m	meter
mg/kg	milligram per kilogram
MSL	mean sea level
NCP	National Contingency Priorities
NOID	Notice of Intent to Delist
OU	operable unit
PCB	polychlorinated biphenyl
PCM	Post-Closure Manager
PTSM	potential threat source material

LIST OF ACRONYMS AND ABBREVIATIONS (Continued)

QA	quality assurance
RA	remedial action
RAO	remedial action objective
RCRA	Resource Conservation and Recovery Act
RG	remedial goal
ROD	Record of Decision
SCDHEC	South Carolina Department of Health and Environmental Control
SGCP	Soil and Groundwater Closure Projects
SRS	Savannah River Site
UCL	upper confidence level
USDOE	United States Department of Energy
USEPA	United States Environmental Protection Agency
WSRC	Westinghouse Savannah River Company, LLC
yd	yard

1.0 INTRODUCTION

This Land Use Control Implementation Plan (LUCIP) has been prepared for D-Area Expanded Operable Unit (DEXOU) at the Savannah River Site (SRS). The purpose of the LUCIP is to describe how the land use controls (LUCs) selected in the DEXOU Record of Decision (ROD) will be implemented and maintained. The following LUCs have been selected for this operable unit (OU):

- Provide physical access controls to the DEXOU to prevent trespasser exposure to residual risks at D-Area Rubble Pit (DRP) and 488-D Ash Basin (488-DAB) via existing SRS security gates and perimeter fences.

- Maintain the use of the DEXOU for industrial activities only through property record decisions, restriction of property use, and notices.

- Prevent onsite worker exposure to residual risks at the 488-DAB via the Site Use Program, warning signs, and other existing measures.

The selected remedy leaves hazardous substances in place that pose a potential future risk and will require land use restrictions for an indefinite period of time. As agreed on March 30, 2000, among the United States Department of Energy (USDOE), the United States Environmental Protection Agency (USEPA), and the South Carolina Department of Health and Environmental Control (SCDHEC), SRS is implementing a Land Use Control Action Plan (LUCAP) to ensure that the LUCs required by numerous remedial decisions at SRS are properly maintained and periodically verified (WSRC 2004c). The requirements of that LUCAP also apply to the LUCs that were selected as part of the remedial action (RA) for DEXOU. This additional document, the DEXOU LUCIP, contains the detailed and specific measures required to implement and maintain the LUCs selected as part of this particular remedial decision. The LUCs shall be maintained until the OU is suitable for unlimited exposure and unrestricted use. Approval by USEPA and SCDHEC is required for any modification or termination of the LUCs.

USDOE is responsible for implementing, maintaining, monitoring, reporting, and enforcing the LUCs in accordance with the approved LUCIP. Upon final approval, the LUCIP will be appended to the LUCAP and should be considered incorporated by reference into the DEXOU ROD, establishing implementation and maintenance requirements for the LUCs under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the SRS Federal Facility Agreement (FFA). The LUCIP will remain in effect unless and until modifications are approved by USEPA and SCDHEC as necessary for protection of human health and the environment. This LUCIP will be evaluated for accuracy during the five-year remedy review and any approved LUCIP modification will be appropriately documented for incorporation by reference into the DEXOU ROD.

1.1 Format of LUCIP

The format of this LUCIP is consistent with the FFA protocol format approved by the USEPA and SCDHEC in March 2004.

2.0 OVERVIEW OF THE DEXOU REMEDIAL ACTION

2.1 Description of the DEXOU

The DEXOU is located within D Area at SRS in Barnwell County, South Carolina. Industrial activities associated with the operation of a coal-fired powerhouse (484-D) are expected to continue in D Area until 2015. The DEXOU lies approximately 914 m (3,000 ft) east of the nearest site boundary, the Savannah River, and includes two surface units: the DRP and the 488-DAB (WSRC 2001). The groundwater in D Area is addressed as a separate OU. See Figure 1 for a layout of the DEXOU surface units and subunits.

<u>DRP</u>

The DRP is a 3.2 ha (8-ac) area used from the early 1950s through 1989 for the disposal of construction debris and coal rejects. The DRP is located approximately 305 m (1,000 ft)

northwest of the 488-DAB. The area is heavily vegetated and bounded by a natural drainage (DRP Stream Boundary) both to the east and south of the unit.

Waste at DRP consists of soil mixed with asphalt, coal, paper, metal, plastic, glass fragments, foam insulation, fiberboard, asbestos, roofing materials, wire, road gravel, and other miscellaneous debris. Impacted soil in the northwest portion of DRP (approximately 2.3 ha (5.7 acres) is contaminated typically to a depth of 0.3 m (0-1 ft). The largest area of waste/debris disposal covers approximately 1.7 ha (4.1 ac). Disposed material is present at depths up to approximately 1.8 m (6 ft).

488-DAB

The 488-DAB is an unlined, earthen containment basin located approximately 274 m (900 ft) south of the 484-D powerhouse. The basin received ash-sluice from the 484-D powerhouse from the early 1950s until 1978 when the sluice was diverted to the newly constructed 488-1D and 488-2D ash basins. After 1978, the 488-DAB received dry ash and coal reject material until the early to mid 1990s. The 488-DAB is situated adjacent to the floodplain of the Savannah River on a terrace deposit with low relief. The 488-DAB is approximately 549 m (1,800 ft) long and 183 m (600 ft) wide. The basin was constructed above grade and is up to 5.5 m (18 ft) deep with the bottom near original grade.

The 488-DAB unit includes several subunits that are contaminated by processes related to the basin. These subunits are the 488-DAB (Interior), the 488-D Pooled Basin (within the western end of the basin), the 488-D Drainage, the 488-DAB (Exterior), and the Dead and Stressed Vegetation Area (DSVA). See Figure 1 for the location of these subunits.

The 488-DAB (Interior) subunit consists of the waste material within the 488-DAB and the basin berm. The waste material includes ash and coal rejects. The coal rejects are found primarily in the upper 4 ft of the eastern two-thirds of the basin.

Low pH surface runoff across the basin pools in the western end of the basin (488-D Pooled Basin) and is present at times even in drier months. The volume of pooled water is variable; the observed maximum is about 3.8 million liters (1 million gallons).

A standpipe in the western end of the 488-DAB was used to discharge pooled surface water from the 488-D Pooled Basin and to prevent basin overflow. Discharge from the standpipe goes into the 488-D Drainage. The 488-D Drainage is approximately 61 m (200 ft) long by 3 m (10 ft) wide. The standpipe was filled with cement in 1998 to eliminate release of low pH surface water from the Pooled Basin; however, minor pipe leakage continues.

The 488-DAB (Exterior) subunit consists of the area outside of the basin and along its northern perimeter. Stormwater runoff from the 484-D powerhouse is directed through a drainage (D-003 outfall) along the northern edge of the basin. Coal rejects on the north berm have sloughed off of the basin into the D-003 outfall drainage, causing acidification of the stormwater runoff. The low pH water has resulted in the zone of vegetative kill (the DSVA). The impacted area (including the DSVA and the D-003 outfall drainage) consists of about 1.8 ha (4.4 ac) and is contaminated typically to a depth of 0.3 m (1 ft).

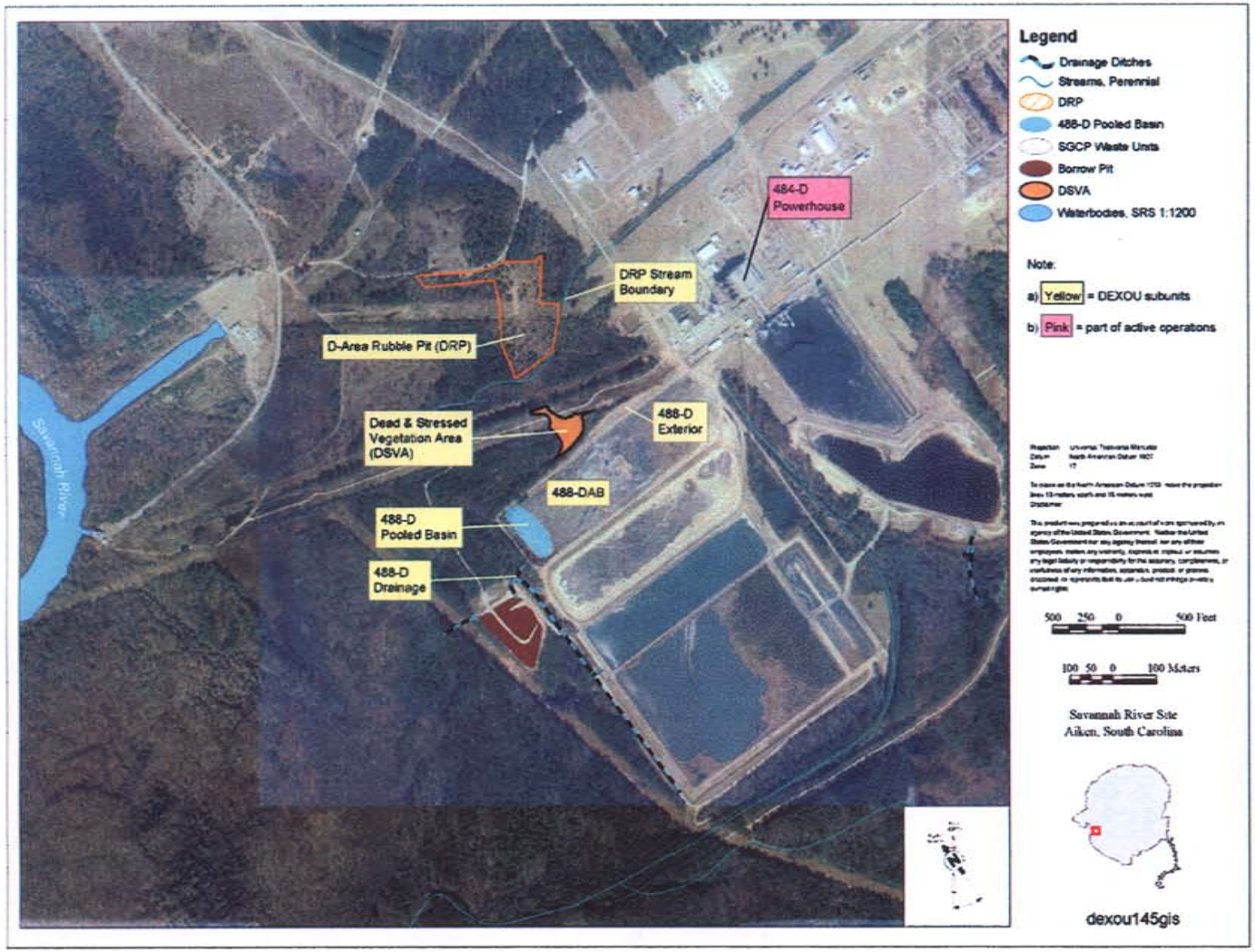

Figure 1. Layout of the DEXOU

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2.2 Nature and Extent of Contamination in the DEXOU

The constituents of concern (COCs) pertinent to the DEXOU, as presented in the ROD (WSRC 2004a), include contaminant migration (CM) COCs, ecological (ECO) COCs, and human health (HH) (for both future residents and industrial workers) COCs. COCs for principal threat source material (PTSM) and applicable or relevant and appropriate requirements (ARARs) have also been identified.

DRP

The surface soils and debris at depth are contaminated with antimony, arsenic, beryllium, selenium, zinc, benzo(a)pyrene, and polychlorinated biphenyls (PCBs). The RA (removal) addresses all ECO, CM, and ARAR COCs. The RA will address HH COCs (arsenic) to the industrial worker remedial goal (RG) of 3.3 mg/kg. Based on pre-design sample results, the 95th upper confidence limit (UCL) of the mean for arsenic in surface soils after implementation of RA is below the industrial RG (95th UCL of the mean is 2.45 mg/kg), which equates to a residual risk of 6×10^{-6}. All contamination below 0.3 m (1 ft) will be removed based on visual extent. LUCs are, therefore, required to restrict residential use.

488-DAB

The basin interior is contaminated with arsenic, other metals, and coal-related radionuclides. Outside the basin and north berm, surface soil is contaminated with arsenic; sediment is contaminated with arsenic and coal-related radionuclides. Low pH surface water is contaminated with arsenic and metals. The distribution of contaminants shows that primary source materials are the ash and coal rejects, as evidenced by the distribution of metals, coal-related radionuclides, and low surface water pH. The RA to treat low pH water addresses all ECO, ARAR and HH COCs for surface water. For soil and sediment outside the basin (the area that will not be under the geosynthetic cover), the RA (removal) addresses all HH (for the future industrial worker), and ECO COCs. The 95th UCL for arsenic in the surface soils outside the basin after implementation of the RA is 1.47 mg/kg compared to 2x the unit-specific

background. Since this demonstrates that the contamination outside the basin has been removed to background levels, LUCs are not required outside the basin.

Though the RA leaves contaminated material in the basin, the geosynthetic cover system will prevent leaching of the contaminants and will limit exposure by ecological receptors and future industrial workers to the contamination. However, contamination left in place under the geosynthetic cover system could potentially pose a risk to industrial workers. Without the cover, the risks associated with arsenic and coal-related radionuclides in the basin interior is 4.7×10^{-4} for the industrial worker. LUCs are, therefore, required at 488-DAB to inspect and maintain the cover system, prevent disturbance of the cover system and detention basin, ensure that industrial activities do not pose unacceptable risks to the workers (control industrial activities), and restrict residential use.

2.3 Remedial Action Selected

The selected remedy for the DEXOU, as established in the ROD and the Corrective Measures Implementation (CMI)/Remedial Action Implementation Plan (RAIP) (WSRC 2004a, WSRC 2004b), is described below.

DRP

- Excavate contaminated soil, coal rejects, and debris containing COCs above RGs.
- Backfill excavated areas with a minimum of 0.3 m (1 ft) of clean fill, regrade and vegetate to minimize erosion.
- Consolidate excavated material with the 488-DAB for inclusion under a geosynthetic cover.
- Implement institutional controls to maintain the area for industrial use only.

488-DAB

- Excavate soil and coal rejects from the 488-DAB Drainage, the DSVA, and the basin exterior.
- Consolidate excavated waste for inclusion under a geosynthetic cover.
- Ensure water that is discharged to the sedimentation/detention basin has a pH of at least 5.
- Backfill excavated areas, excluding the footprint of the detention basin, with a minimum of 0.3 m (1 ft) of clean fill.
- Place an engineered cover system over the entire 488-DAB and consolidated waste (approximately 11 ha [27 acres]). The cover will be designed to 1) require minimal maintenance for the life of the system, 2) promote drainage and minimize erosion or abrasion of the cover, and 3) accommodate settling and subsidence so that the integrity of the cover is maintained.
- Revegetate disturbed areas to minimize erosion.
- Implement institutional controls to maintain the area where waste is left in place and the detention basin for industrial use only, inspect and maintain the geosynthetic cover system, and prevent contact, removal or excavation of buried waste beneath the cover system.

The post-RA conceptual site models (see Appendix C-1 to this LUCIP) show the broken pathways for the DRP and 488-DAB after implementation.

The DEXOU is located in an area that has been recommended for future industrial (non-nuclear) use by the SRS Citizens Advisory Board (CAB). According to the *Savannah River Site Future Use Project Report* (USDOE 1996), residential uses of SRS land should be prohibited. The *Savannah River Site Federal Facility Agreement Implementation Plan* (WSRC 1996) designates

the DEXOU as being within an industrial-use area with an industrial buffer zone. Both the DRP and 488-DAB will have institutional controls that are discussed in Section 4.0.

3.0 LAND-USE CONTROL OBJECTIVES

The DEXOU RA will leave soil contamination at the unit above acceptable levels of residential risk at DRP and above acceptable levels for future industrial workers at 488-DAB. To prevent exposure to the contamination, long-term LUCs must be implemented until the risks are reduced to acceptable levels. Considering the residual risks previously identified and to ensure the protectiveness of the RA, DEXOU LUCs were developed to

- maintain the use of the DRP and 488-DAB for industrial activities only;
- prevent contact, removal, or excavation of waste left in place (beneath the geosynthetic cover) at the 488-DAB;
- prevent unauthorized access to the 488-DAB as long as the waste left in place remains a threat to human health or the environment; and
- provide public notices for disclosing former waste management and disposal activities and RAs taken on the site.

4.0 IMPLEMENTATION OF LAND-USE CONTROLS

This section describes the LUCs selected in the ROD to achieve the objectives stated in Section 3.0. A summary of the types of controls is provided in Table 1. USDOE will implement and maintain the LUCs required for the DEXOU.

The DRP and 488-DAB will be maintained as an industrial use area by implementation of property record notices (Section 4.1) and restrictions (Section 4.2), and the use of a certified LUC survey plat (Section 4.3).

The Site Use Program (Section 4.4) will be implemented to prevent onsite worker exposure to contamination left in place at the 488-DAB. Other existing measures (i.e., Site Clearance Program, worker training, health and safety requirements, work controls) will also be used to ensure worker safety at the 488-DAB.

Physical access controls (Section 4.5) are implemented at the SRS boundary to control and restrict public and trespasser access to the DRP and 488-DAB.

Signs at the 488-DAB will be maintained to alert onsite workers that the area is used to manage hazardous substances. The signs will also convey the restriction of unauthorized personnel.

Table 1. Land Use Controls for the D-Area Expanded Operable Unit

Type of Control	Purpose of Control	Duration	Implementation	Affected Areas[a]
1. Property Record Notices[b]	Provide notice to anyone searching records about the existence and location of contaminated areas	Until the concentration of hazardous substances associated with the unit have been reduced to levels that allow for unlimited exposure and unrestricted use	Notice recorded by USDOE in accordance with state laws at County Register of Deeds office: 1) if the property or any portion thereof is ever transferred to non-federal ownership or 2) upon submittal of Notice of Intent to Delist (NOID) the OU from the National Contingency Priorities (NCP) List.	All waste management areas and other areas where hazardous substances are left in place at levels requiring land use restrictions (DRP and 488-DAB)
2. Property record restrictions[c]: A. Land Use	Restrict use of property by imposing limitations	Until the concentration of hazardous substances associated with the unit have been reduced to levels that allow for unlimited exposure and unrestricted use	Drafted and implemented by USDOE upon transfer of affected areas. Recorded by USDOE in accordance with state law at County Register of Deeds office.	All waste management areas and other areas where hazardous substances are left in place at levels requiring land use (DRP and 488-DAB)
3. Other Notices[d]	Provide notice to county/city about the existence and location of waste disposal and residual contamination areas for zoning/planning purposes	Until the concentration of hazardous substances associated with the unit have been reduced to levels that allow for unlimited exposure and unrestricted use	Notice recorded by USDOE in accordance with state laws at County Register of Deeds office: 1) if the property or any portion thereof is ever transferred to non-federal ownership or 2) upon submittal of NOID the OU from the NCP List.	All waste management areas and other areas where hazardous substances are left in place at levels requiring land use restrictions (DRP and 488-DAB)
4. Site Use Program[e]	Provide notice to worker/developer)(i.e., permit requestor) on extent of contamination and remedial structures. Prohibit or limit excavation and penetration activity	As long as property remains under USDOE control	Implemented by USDOE. Initiated by permit request.	Cover system at 488-DAB

Table 1. Land Use Controls for the D-Area Expanded Operable Unit (Continued)

Type of Control	Purpose of Control	Duration	Implementation	Affected Areas[a]
5. Physical Access Controls[f] (e.g., fences, gates, portals)	Control and restrict access to workers and the public to prevent unauthorized access.	Until the concentration of hazardous substances associated with the unit have been reduced to levels that allow for unlimited exposure and unrestricted use	Controls maintained by USDOE	At SRS boundary and select locations throughout SRS. Not required at the DEXOU
6. Warning Signs[g]	Provide notice or warning to prevent unauthorized uses.	Until the concentration of hazardous substances associated with the unit have been reduced to levels that allow for unlimited exposure and unrestricted use	Signage maintained by USDOE	At select locations throughout SRS boundary. Spaced at regular intervals around 488-DAB and DRP
7. Security Surveillance Measures	Control and monitor access by workers/public.	Until the concentration of hazardous substances associated with the unit have been reduced to levels that allow for unlimited exposure and unrestricted use	Established and maintained by USDOE Necessity of patrols evaluated upon completion of RAs	Patrol of selected area throughout SRS, as necessary

[a]Affected areas – Specific locations identified in the SRS LUCIP or subsequent post-ROD documents.

[b]Property Record Notices – Refers to any non-enforceable, purely informational document recorded along with the original property acquisition records of USDOE and its predecessor agencies that alerts anyone searching property records to important information about residual contamination; waste disposal areas in the property.

[c]Property Record Restrictions – Includes conditions and/or covenants that restrict or prohibit certain uses of real property and are recoded along with original property acquisition records of Doe and its predecessor agencies.

[d]Other Notices – Includes information on the location of waste disposal areas and residual contamination depicted on a survey plat, which is provided to a zoning authority (i.e., city planning commission) for consideration in appropriate zoning decisions for non-USDOE property.

[e]Site Use Program – Refers to the internal USDOE/USDOE contractor administrative program(s) that requires the permit requestor to obtain authorization, usually in the form of a permit, before beginning any excavation/penetration activity (e.g., well drilling) for the purpose of ensuring that the proposed activity will not affect underground utilities/structures, or in the case of contaminated soil or groundwater, will not disturb the affected areas without the appropriate precautions and safeguards

[f]Physical Access Controls – Physical barriers or restrictions to entry

[g]Signs – Posted command, warning or direction

4.1 Property Record Notices

In the long term, if the property is ever transferred to non-federal ownership, the U.S. Government will take those actions necessary pursuant to Section 120(h) of CERCLA. Those actions will include a deed notification disclosing former waste management and disposal activities as well as RAs taken on the site. The contract for sale and the deed will contain the notification required by CERCLA Section 120(h).

The deed notification shall, in perpetuity, notify any potential purchaser that the property has been used to manage and dispose of waste. This requirement is consistent with the intent of Resource Conservation and Recovery Act (RCRA) deed notification requirements at final closure of a RCRA facility if contamination will remain at the unit.

4.2 Property Record Restrictions

The deed shall also include restrictions precluding residential use of the property and/or any other property record restrictions necessary to achieve the LUC objectives. The deed shall contain provisions to ensure that appropriate land use controls remain with the affected areas at DRP and 488-DAB upon any and all transfers. USDOE shall provide a copy of the executed deeds to the regulatory agencies as soon as practicable after the transfer of fee title, but no later than 30 days. However, the need for these deed restrictions may be re-evaluated at the time of transfer in the event that exposure assumptions differ and/or the residual contamination no longer poses an unacceptable risk under residential use. Any re-evaluation of the need for the deed restrictions will be done though an amended ROD.

USDOE shall provide USEPA and SCDHEC six months notice prior to transfer to ensure that USEPA and SCDHEC can be involved in discussions to ensure that appropriate provisions are included in the transfer terms or conveyance documents to maintain effective institutional controls. If it is not possible for the facility to notify USEPA and SCDHEC at least six months prior to any transfer or sale, then the facility will notify USEPA and SCDHEC as soon as possible but no later than 60 days prior to the transfer or sale of any property subject to

institutional controls. In addition to the land transfer notice and discussion provisions above, USDOE further agrees to provide USEPA and SCDHEC with similar notice, within the same time frames, as to federal transfer of property.

4.3 Other Public Notices

The LUCIP identifies the proposed area under land use restriction via a pre-construction survey plat (SK-C-53223 provided in Appendix A) for the DRP and 488-DAB. After construction completion, a final survey plat will be prepared to document the as-built arrangement of the institutional controls and area subject to LUCs. This post-construction survey plat will be certified by a professional land surveyor and will be submitted to USEPA and SCDHEC concurrently with the Post-Construction Report (PCR)/Final Remediation Report (FRR).

In addition, if the site is ever transferred to non-federal ownership, a professional land surveyor-certified survey plat of the OU will be prepared at or near the time of conveyance to support the LUCIP-required restrictive covenants on land use and will be recorded with the appropriate county recording agency.

4.4 Site Use Program

Under USDOE Order 430.1A, *Life Cycle Management* (USDOE 1998), SRS is required to implement an asset management program for the use, maintenance, and disposal of physical assets, including real estate. SRS complies with this order through its Site Use Program, which is conducted in accordance with WSRC 1D, *Site Infrastructure and Services Manual*, Procedure 3.02, "Site Real Property Configuration Control" (WSRC 2003a). All employees, contractors, and visitors at SRS are required to adhere to the Site Use Program. This program ensures authorization of any work performed at SRS if the work adds, modifies, or removes features portrayed on the SRS development maps. No land use (e.g., excavation) shall be undertaken without prior approval documented by a Site Use Permit. To obtain this authorization, a Site Clearance Request Form must be completed. In accordance with WSRC 1D, Procedure 3.02, all work at SRS that adds to or modifies features or facilities portrayed on SRS development maps (i.e., plot plans of facilities/utilities at SRS) will be authorized by a Site Clearance Permit before

any activities are conducted. All Site Clearance Requests will be reviewed to verify that either an approved Site Use Permit has been obtained or that the request is sanctioned by an existing Site Use Permit. All land use requirements applicable for the OU will be provided to the Site Use Program for use in determining issuance of Site Clearance permits. In addition, the Site Use permit must be amended when the geographic configuration or buffer zone used to establish the permit boundary changes or there is a change to the permitted land use.

SRS is responsible for updating, maintaining, and reviewing site maps, including FFA (1993) OU identifications. If a Site Clearance Request potentially impacts an FFA OU, the Site Clearance Request Form is sent to the appropriate FFA OU reviewer for approval. The roles and responsibilities of each individual are detailed in WSRC 1D, Procedure 3.02. Before a Site Clearance Permit is issued, verification of USDOE approval for intended land use must be obtained. The site use and site clearance processes are applicable to all activities and personnel on site (including subcontractors). USEPA and SCDHEC will be notified within 30 days of any changes to the Site Use Program that impacts actual land use requirements by USDOE via a revision to the LUCAP. The processes are controlled within the SRS Quality Assurance (QA) Program in accordance with WSRC 1Q Manual, *Quality Assurance* (WSRC 2003b). The SRS QA program governs all SRS activities.

SRS identifies all buildings and facilities on maps used in the Site Use Program. This waste unit is identified on these maps as a CERCLA facility. At DRP, there are no restrictions on industrial use. For 488-DAB, the area subject to LUCs (the geosynthetic cover system and detention basin) requires control of industrial activities.

Any work proposed in the 488-DAB LUC area (such as maintenance or groundwater monitoring for the D-Area Groundwater OU) will be strictly controlled, and workers will be appropriately trained and briefed about health and safety requirements if maintenance work is deemed necessary. No change in land use at DRP or 488-DAB or excavation at the 488-DAB shall be undertaken without USEPA and SCDHEC approval. USDOE shall seek prior concurrence of USEPA and SCDHEC before any anticipated action that could disrupt the effectiveness of the land use controls or any action that could alter or negate the need for land use controls.

4.5 Physical Access Controls

There are no physical access controls required at DEXOU; however, physical access controls are provided at the SRS boundary as mentioned in Table 1, item 5.

4.6 Warning Signs and Monuments

To meet ROD requirement and prevent unknowing entry and to ensure inappropriate use of the 488-DAB and DRP does not occur while the unit is under ownership of the government, access control warning signs will be posted at 488-DAB and DRP. The signs will be legible for a distance of at least 25 feet. The signs will read as follows:

For 488-DAB:

- D-Area Expanded Operable Unit, 488-D Ash Basin
- "Danger – Unauthorized Personnel Keep Out. This waste unit was used to manage hazardous substances. Do not dig or excavate. Do not enter without contacting the waste unit custodian."
- Custodian: Manager, Post-Closure Maintenance
- **Phone: (803) 725- 7243 Pager ID: 19192**

For DRP:

- D-Area Expanded Operable Unit, D-Area Rubble Pit
- "Danger – Unauthorized Personnel Keep Out. This waste unit was used to manage hazardous substances. Do not dig or excavate. Do not enter without contacting the waste unit custodian."
- Custodian: Manager, Post-Closure Maintenance

Phone: (803) 725- 7243 Pager ID: 19192

Custodial responsibilities for maintenance and inspection of the 488-DAB and DRP will be maintained by the Post-Closure Maintenance Group within Soil and Groundwater Closure Projects (SGCP). See Appendix D for a figure showing the standard warning sign for the 488-DAB and DRP. Monuments will be placed at the corners of the 488-DAB cover system.

4.7 Other Access Controls and Security/Surveillance Measures

While under the ownership of USDOE, access control of the entire SRS will be maintained in accordance with the 1992 RCRA Part B Permit Renewal Application, Volume I, Section F.1. This section describes the 24-hour surveillance system (R.61-79.264.14(b)(1)), artificial or natural barriers (R.61-79.264.14(b)(2)(I)), control entry systems (R.61-79.264.14(b)(2)(ii)), and access control warning signs (R.61-79.264.14(c)) in place at the SRS boundary to comply with the security requirements for a RCRA-permitted facility.

4.8 Field Inspection and Maintenance for Institutional Controls

After remediation of the DEXOU, only inspection and maintenance activities will be required by this RA at the 488-DAB and DRP.

The 488-DAB and DRP will be inspected per the Field Inspection Checklist. A preliminary checklist is provided in Appendix B. Field inspections will be performed annually. Additional inspections may be necessary in the event of unusual weather or any other condition warranting inspection. Inspections will be performed to ensure that the 488-DAB is developing a self-sustaining vegetative cover and/or has not been subject to erosion, subsidence, or intrusion by burrowing animals. For DRP, inspections will be performed to ensure that signs are in place and DRP is developing self-sustaining vegetation. Inspection records will be kept in the operations record file for future access.

Maintenance (including site inspections, mowing, general housekeeping, repair of erosion damage) will be performed as needed at 488-DAB in perpetuity. Necessary repairs for erosion

control damage will be performed for the geosynthetic cover system, including vegetation, the drainage system, and cover slopes. Necessary upkeep of the access control signs for 488-DAB and DRP will be performed.

USEPA and SCDHEC will be notified by USDOE of any events and/or actions that indicate potential compromise of the institutional controls and the proposed action to address the potential compromise within 30 days of identification. The FFA Annual Progress Report, submitted to the regulatory agencies by USDOE, will provide the status of the institutional controls and describe how any institutional control deficiencies or inconsistent uses have been addressed. In the event of property transfer or lease, the Annual Report will cite findings on the following: whether the use of the property is affected by the deed or lease restrictions and controls; whether property use conforms with the deed or lease restrictions and controls; and whether the owners and state/local agencies have been notified regarding the deed or lease restrictions and controls.

All other routine maintenance activities will be documented and maintained in files subject to USEPA and SCDHEC review and audit. A copy of the completed inspection form is maintained in the SGCP Document Control Center. The DEXOU LUCs shall be maintained until the concentration of hazardous substances associated with the unit has been reduced to levels that allow for unlimited exposure and unrestricted use.

The waste unit inspectors are to be trained in Hazardous Waste Operations and Emergency Response (HAXWOPER), RCRA Well Inspections (SGCP specific training), SGCP RCRA Waste Unit Inspections, Radiological Worker Training, etc., as applicable for the specific activity. They will also be trained based on the individual requirements of the regulatory approved closure documents for each waste unit. Over the years, different personnel may conduct the inspections and grass cutting operations.

This unit-specific LUCIP, including the preliminary checklist (Appendix B), will be appended to the SRS LUCAP upon final regulatory approval. After completion of the PCR, the preliminary checklist in the LUCAP will be replaced with the final, approved checklist.

5.0 REFERENCES

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

USDOE, 1996. *Savannah River Site Future Use Project Report*, Stakeholder-Preferred Recommendations for SRS Land and Facilities, USDOE Savannah River Operations Office, January

USDOE, 1998. DOE Order 430.1A, *Life Cycle Management* (Approved October 14, 1998)

WSRC 1996. *Federal Facility Agreement Implementation Plan*, Westinghouse Savannah River Company, Savannah River Site, Aiken, SC

WSRC, 2001. *RCRA Facility Investigation/Remedial Investigation Report with Baseline Risk Assessment for the D-Area Expanded Operable Unit (U),* Redline Rev. 12, WSRC-RP-2001-4162, Savannah River Site, Aiken, SC

WSRC, 2003a. WSRC Procedure Manual 1D, *Site Infrastructure and Services Manual (U)*, Procedure 3.02, "Site Real Property Configuration Control," Westinghouse Savannah River Company, Savannah River Site, Aiken, SC

WSRC, 2003b. WSRC Procedure Manual 1Q, *Quality Assurance (U)*, Westinghouse Savannah River Company, Savannah River Site, Aiken, SC

WSRC, 2004a, *Record of Decision for the D-Area Expanded Operable Unit* (U), WSRC RP-2004-4007, Rev. 0, Westinghouse Savannah River Company, Savannah River Site, Aiken, SC

WSRC, 2004b, *Corrective Measures Implementation/Remedial Action Implementation Plan (CMI/RAIP) for D-Area Expanded Operable Unit (U),* WSRC-RP-2004-4042, Westinghouse Savannah River Company, Savannah River Site, Aiken, SC

WSRC, 2004c, *Land Use Control Assurance Plan for the Savannah River Site*, WSRC-RP-98-4125, Rev. 1.1, Updated April 30, 2004. Westinghouse Savannah River Company, Savannah River Site, Aiken, SC

APPENDIX A

PROPOSED SURVEY PLAT

SK-C-53223 LAND USE CONTROL IMPLEMENTATION PLAN PROPOSED SURVEY PLAT

2. ALL ELEVATIONS ARE REFERENCED FROM MEAN SEA LEVEL.

3. ALL AREAS WITHIN THE PROPOSED BOUNDARY MARKERS (▽) CONTAIN WASTE OR BURIED WASTE.

ALL N65000

36"RCP

4913
9522

412
522

ICAL)

0 100 200 300

1" = 100'

THIS DRAWING IS PLOTTED AT 2/3 SCALE

D-AREA EXPANDED OPERABLE UNIT (DEXOU) REMEDIATION

DEXOU PRELIMINARY LAND USE CONTROL IMPLEMENTATION PLAN (U)

SCALE	SKETCH NO.	SHEET NO.	LATEST REVISION
AS NOTED	SK-C-53223	1 OF 1	1

DRAWN BY (ORIG): P CALAIS LAST CADD REV. BY: FREEMAN
DATE: 06/12/05

Scale shown on this drawing is only applicable when plotted at 30"x42" (actual drawing size)

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APPENDIX B

FIELD INSPECTION PRELIMINARY CHECKLIST

FOR THE D-AREA EXPANDED OPERABLE UNIT

FIELD INSPECTION PRELIMINARY CHECKLIST

FOR D-AREA EXPANDED OPERABLE UNIT, 488-DAB

☐ **SCHEDULED** ☐ **UNSCHEDULED**

A= Satisfactory X= Unsatisfactory (Explanation required)	A or X	Observation of Corrective Action Taken
1. Verify that the roads are accessible.		
2. Verify that the waste unit signs (6) are in acceptable condition, have the correct information, and are legible from a distance of 25 feet.		
3. Verify that there are no excavation, digging, or construction activities on the 488-DAB cover system.		
4. Verify that the integrity of drainage system, and required land grading for proper drainage is maintained and that they are free of excessive erosion, sediment buildup, and any debris restricting water flow.		
5. Verify that no woody vegetation is growing on the 488-DAB cover system.		
6. Verify that grass density of the vegetation cover has no bare spots more than 3 by 3 feet in area. The height of the vegetative cover should not impair the visual inspection of the soil cover. This verification will be determined by the inspector.		

FIELD INSPECTION PRELIMINARY CHECKLIST

FOR D-AREA EXPANDED OPERABLE UNIT, 488-DAB (Continued)

7. Verify monuments have not been damaged.		
8. Verify that the soil cover at 488-DAB has no signs of unacceptable erosion or depressions (subsidence).		
9. Verify that signs of burrowing animals on the 488-DAB are not present.		
10 Other		

Inspected by:

_____ / _____ Date:_____
(Print Name) (Signature)

Post-Closure Manager:

_____ / _____ Date:_____
(Print Name) (Signature)

CAUTION: The inspector shall notify the Post-Closure Manager (PCM) and Environmental Compliance Authority (ECA) **IMMEDIATELY** if there has been a breach or compromise of the institutional controls of this waste unit. The notification shall be in accordance with SRS post-closure inspection procedures.

FIELD INSPECTION PRELIMINARY CHECKLIST

FOR D-AREA EXPANDED OPERABLE UNIT, DRP

☐ **SCHEDULED** ☐ **UNSCHEDULED**

A= Satisfactory X= Unsatisfactory (Explanation required)	A or X	Observation of Corrective Action Taken
1. Verify that the roads are accessible.		
2. Verify that the unit signs (8) are in acceptable condition, have the correct information, and are legible from a distance of 25 feet.		
3. Visually verify that DRP area is developing self-sustain vegetation.		

Inspected by:

_____ / _____ Date:_____
(Print Name) (Signature)

Post-Closure Manager:

_____ / _____ Date:_____
(Print Name) (Signature)

CAUTION: The inspector shall notify the Post-Closure Manager (PCM) and Environmental Compliance Authority (ECA) **IMMEDIATELY** if there has been a breach or compromise of the institutional controls of this waste unit. The notification shall be in accordance with SRS post-closure inspection procedures.

APPENDIX C

POST-REMEDIAL ACTION CONCEPTUAL SITE MODELS

FOR THE D-AREA EXPANDED OPERABLE UNIT POST-REMEDIAL ACTION

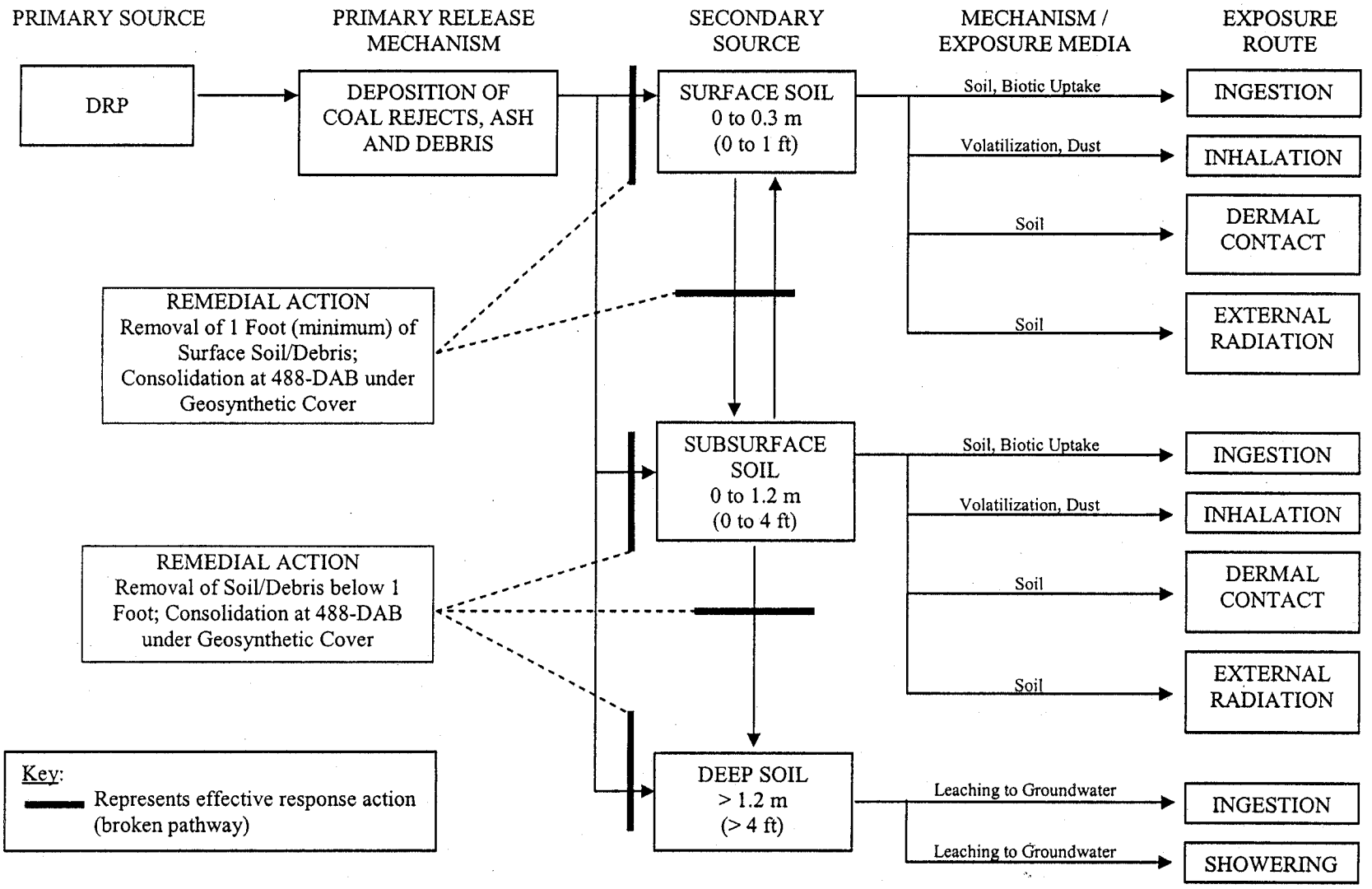

Figure C-1. Post-Remedial Action Conceptual Site Model for DRP

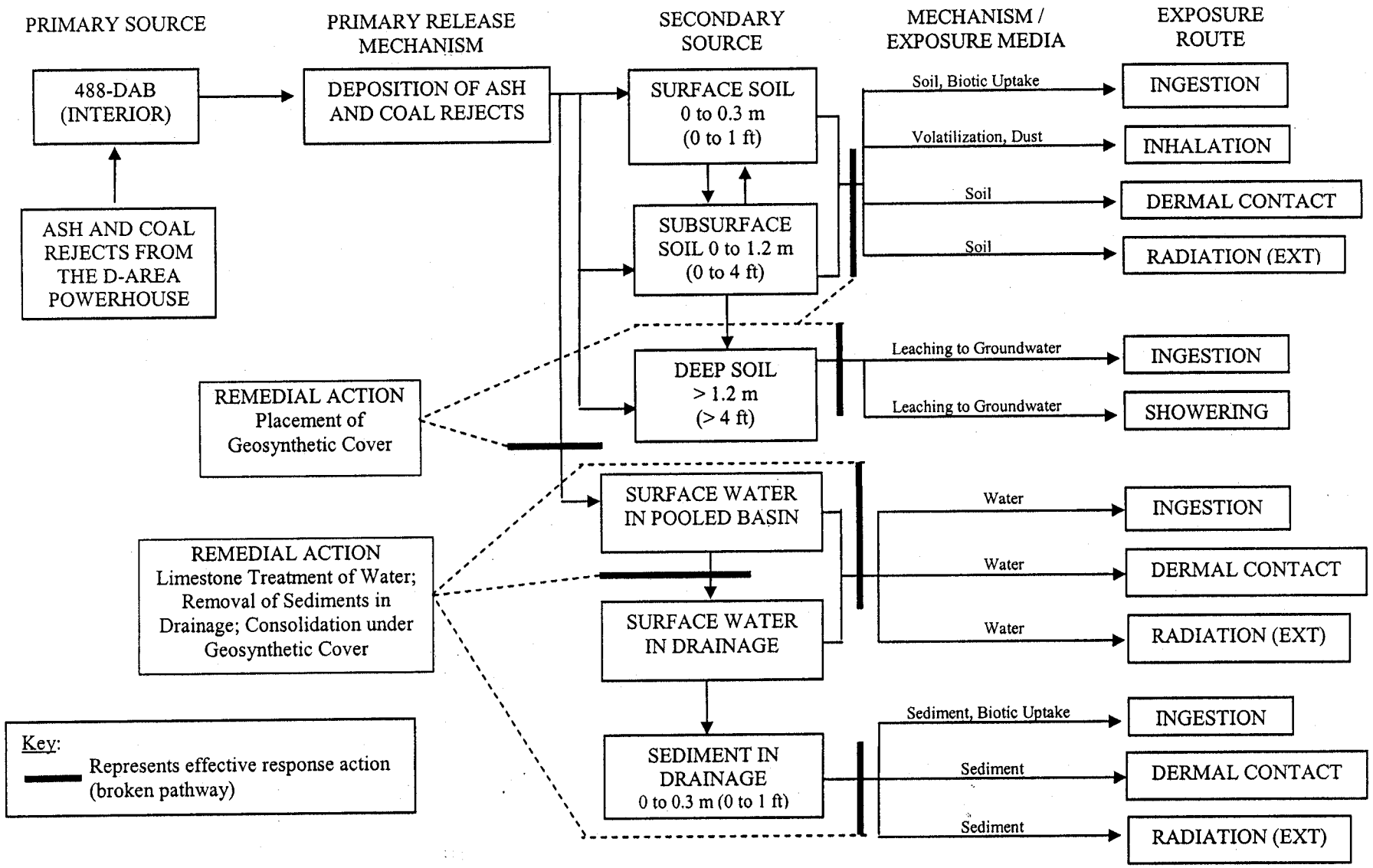

Figure C-2. Post-Remedial Action Conceptual Site Model for 488-DAB (Interior)

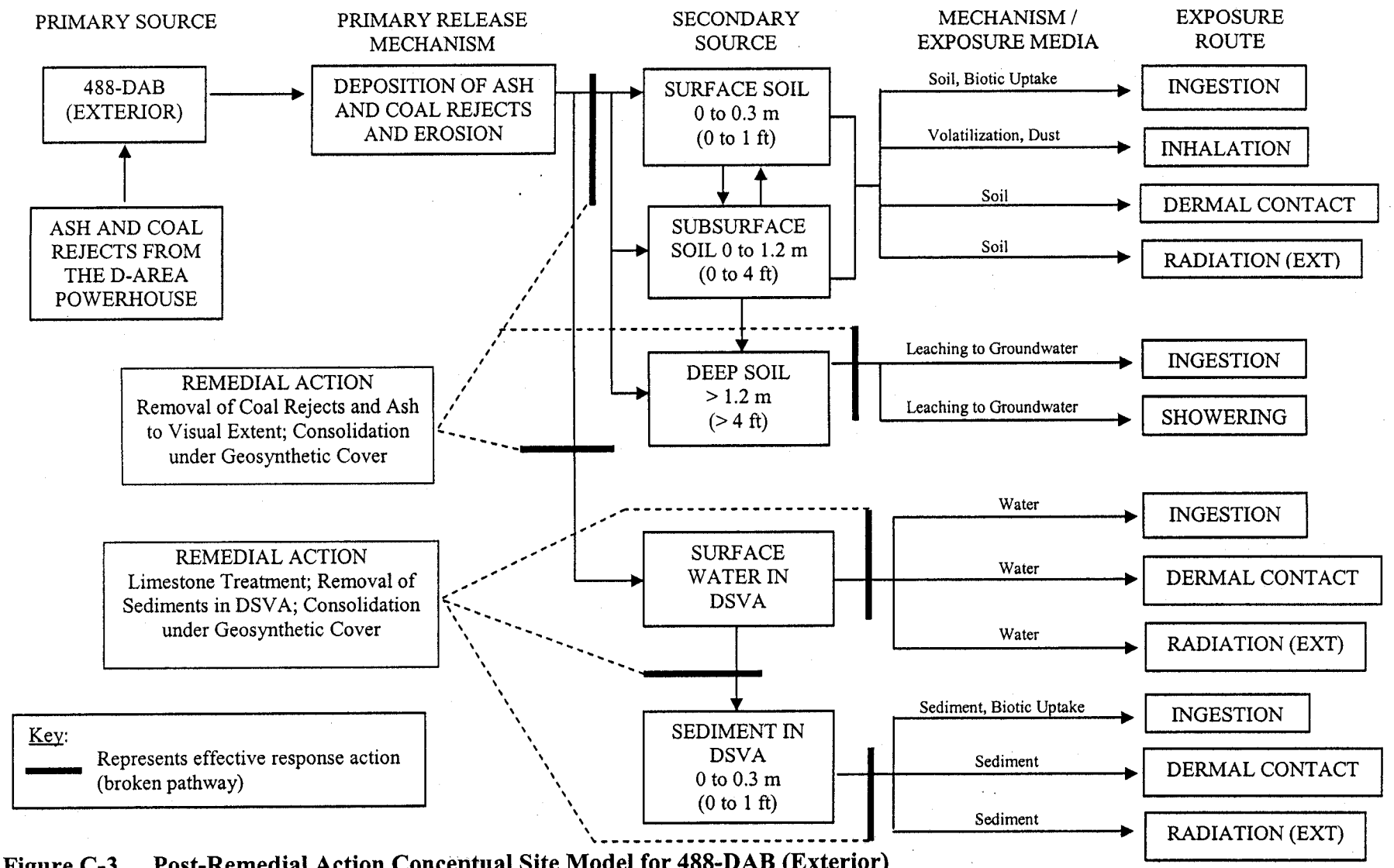

Figure C-3. Post-Remedial Action Conceptual Site Model for 488-DAB (Exterior)

APPENDIX D

ACCESS CONTROL WARNING SIGN

D-Area Expanded Operable Unit

488-D Ash Basin

DANGER

UNAUTHORIZED PERSONNEL KEEP OUT

THIS WASTE UNIT WAS USED TO MANAGE HAZARDOUS SUBSTANCES.

DO NOT DIG OR EXCAVATE.

DO NOT ENTER WITHOUT CONTACTING THE

WASTE UNIT CUSTODIAN.

CUSTODIAN: MANAGER, POST-CLOSURE MAINTENANCE

Phone: (803) 725- 7243 Pager ID: 19192

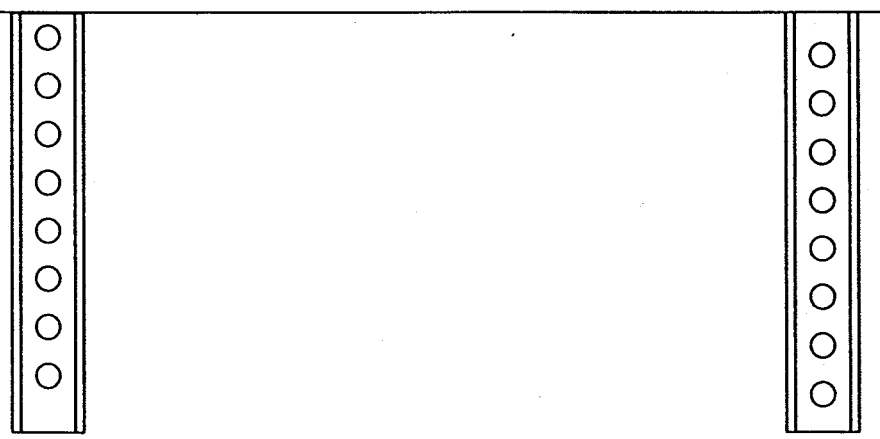

Figure D-1. Access Control Warning Sign for 488-DAB

D-Area Expanded Operable Unit

D-Area Rubble Pit

DANGER

UNAUTHORIZED PERSONNEL KEEP OUT

THIS WASTE UNIT WAS USED TO MANAGE HAZARDOUS SUBSTANCES.

DO NOT DIG OR EXCAVATE.

DO NOT ENTER WITHOUT CONTACTING THE

WASTE UNIT CUSTODIAN.

CUSTODIAN: MANAGER, POST-CLOSURE MAINTENANCE

Phone: (803) 725- 7243 Pager ID: 19192

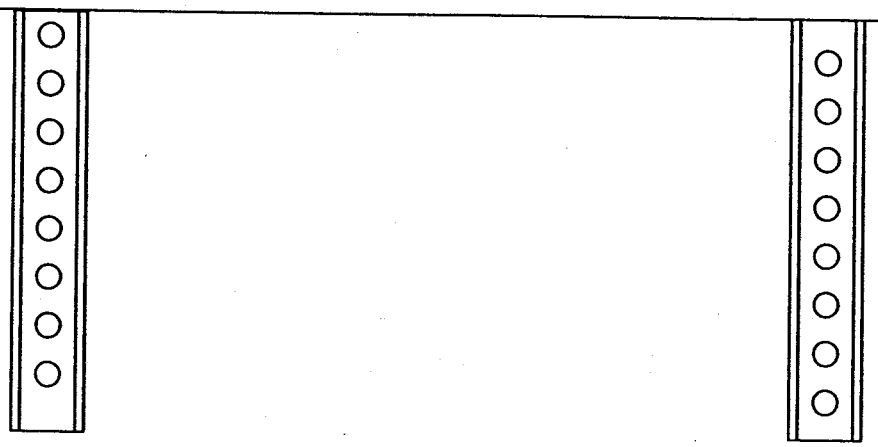

Figure D-2. Access Control Warning Sign for DRP

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