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United States Department of Energy

Savannah River Site

Explanation of Significant Difference (ESD) for the A-Area Burning/Rubble Pits (731-A/1A) and Rubble Pit (731-2A) (ABRP) (U)

WSRC-RP-2001-4281

Revision 1

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Introduction

This Explanation of Significant Difference (ESD) is being issued by the United States Department of Energy (USDOE), the lead agency for the Savannah River Site (SRS) remedial activities, with concurrence by the United States Environmental Protection Agency (USEPA) – Region IV and the South Carolina Department of Health and Environmental Control (SCDHEC). The purpose of this ESD is to announce an expansion of the soil vapor extraction (SVE) portion of the remedy described in the *Interim Record of Decision Remedial Alternative Selection for the A-Area Burning/Rubble Pits (731-A/1A) and Rubble Pit (731-2A) (U),* WSRC-RP-2000-4001 which was approved on November 17, 2000.

The ESD and interim record of decision (IROD) are part of the Administrative Record File and are available for public review during normal business hours at the following information repositories.

U.S. Department of Energy
Public Reading Room
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Summary of Site History, Contamination Problems, and Selected Remedy

The A-Area Burning/Rubble Pits (731-A/1A) and Rubble Pit (731-2A) (ABRP) operable unit (OU) is located in the northwest portion of SRS, approximately 2.4 kilometers (1.5 miles) south of the A/M Area operations.

Between 1951 and 1973, Pits 731-A and 731-1A were used to burn paper, plastics, wood, rubber, rags, cardboard, oil, degreasers, and solvents. Combustible materials were burned monthly. After burning was discontinued in 1973, Pits 731-A and 731-1A were also converted to rubble pits and used to dispose of concrete rubble, bricks, tile, asphalt, plastics, metal, wood products, and rubber until about 1978. When the pits were filled to capacity, they were covered with compacted clay-rich native soils and vegetation was established. Pit 731-2A was only used as a rubble pit until 1983 after which the area was backfilled and seeded.

Two other potential source areas within the OU were investigated and found to be clean. The water table aquifer (M-Area aquifer) was also investigated.

The *RCRA Facility Investigation (RFI)/Remedial Investigation (RI) Report with Baseline Risk Assessment (BRA) for the A-Area Burning/Rubble Pits and Rubble Pit* (WSRC-RP-96-168, Rev. 1.2, June 1997) concluded that surface soil at Pit 731-2A is contaminated with benzo(a)pyrene (BaP) at levels that exceed limits of acceptable risk levels. Groundwater in the M-Area aquifer beneath the ABRP is contaminated with the volatile organic compounds (VOCs) methylene chloride, tetrachloroethylene (PCE), and trichloroethylene (TCE) at concentrations exceeding maximum contaminant levels (MCLs) as a result of past disposal practices at the unit. No subsurface VOC contamination was found beneath the Burning/Rubble Pits (731-A/1A) or the Rubble Pit (731-2A).

The remedial action objectives (RAOs) established for the ABRP OU (as presented in the IROD) are as follows:

- Surface Soil - prevent direct contact with and ingestion of BaP-contaminated surface soils.

- Groundwater – 1) mitigate any further plume growth; 2) reduce concentration of the contaminant plume within the 100 µg/L VOC contaminated plume isopleth; 3) evaluate the effectiveness of the remedial system and its impact on the aquifer system; and 4) reduce the uncertainty of commingling of plumes between the two aquifer systems.

The selected remedial action (final) for the ABRP surface soil as stated in the IROD is the installation of a one-foot thick soil cover over Pit 731-2A and institutional controls.

The selected interim remedial action for the ABRP groundwater consists of an air sparging (AS)/SVE system installed in two stages. The purpose of a two-stage approach is to obtain sufficient information on optimum air sparging configuration/performance (i.e., radius of influence, system efficiency, optimum air sparging levels, etc.).

Stage 1 consists of 10 air sparging wells, each with three PSVE (BaroBall®) extraction wells strategically positioned to address the "hot spot" area of the plume (>500 µg/L). The locations of the AS, PSVE, and monitoring wells are presented in Figure 1. Operating and effectiveness monitoring data will be collected and assessed during the initial twelve months of operation of the Stage 1 system. This data will be evaluated to determine the requirements for Stage 2 of the groundwater remediation effort which will address the >100 µg/L VOC plume.

Basis for the Explanation of Significant Difference

The purpose of this ESD is to document a Post-IROD change to the remedy selected for the ABRP. The significant difference from the original remedy is to operate four new SVE wells in the "trench/pit area" (ASH-06, AHT-05, AHT-06, and ABV-01) as shown in Figure 1 to remediate vadose zone contamination [TCE, PCE, and 1,2-dichloroethylene (1,2-DCE)] which has been determined to be at levels which would leach to groundwater above MCLs. As

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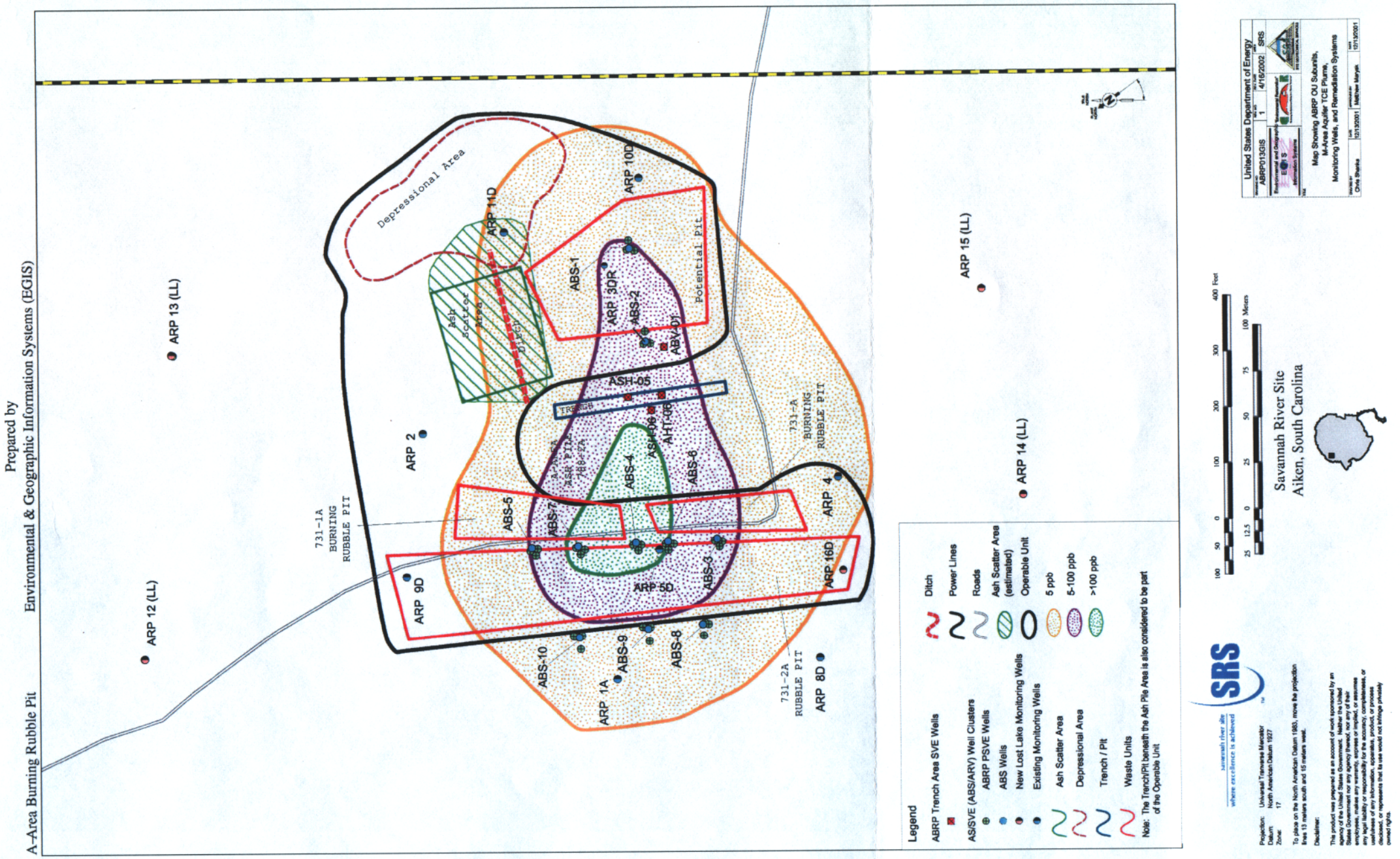

Figure 1. Map Showing ABRP OU Subunits, M-Area Aquifer TCE Plume, Monitoring Wells, and Remediation Systems

discussed in the "Explanation of Significant Changes" section of the IROD, recently geo-referenced aerial photographs from the 1950s through the 1980s, revealed the potential presence of additional subunits. A "trench/pit" underlying the A-Area Ash Pile (788-2A), an elongated "ditch" to the north of the "trench/pit", and an area where ash or other material was scattered adjacent to the ditch were identified. Characterization in these areas has since revealed that elevated concentrations of PCE, TCE, and 1,2-DCE are present in the base of the "trench/pit" and extend into the vadose zone beneath the trench to the water table. This "trench/pit" and the associated VOC contamination is believed to be the source of existing groundwater contamination beneath it in the M-area aquifer. These contaminants, if left untreated, are present at concentrations that will further contribute to groundwater contamination above MCLs in the future.

Description of Significant Differences and the Basis for those Differences

The initial remedial investigation (RI) characterization of the area, documented in *RCRA Facility Investigation/Remedial Investigation Report with Baseline Risk Assessment for the A-Area Burning/Rubble Pits and Rubble Pit (U)* (WSRC-RP-96-168), indicated that these VOCs were not present in or beneath Pits 731-A/1A or 731-2A at levels that would reach groundwater at concentrations that exceed their respective MCLs.

The original approved remedy as identified in Revision 1 of the IROD (2000), WSRC-RP-2000-4001 includes a soil cover and AS AS/PSVE as a groundwater remedy. The vadose zone was not targeted for remediation because previous investigations did not reveal contaminant concentrations in the vadose zone at levels that would exceed soil leachability standards or acceptable human health risk values.

The significant difference of the modified remedy from the original remedy is to operate the additional four SVE wells in the trench area to remediate vadose zone contamination (TCE, PCE, and 1,2-DCE) present at levels which would leach to groundwater above MCLs (See Figure 1).

The four trench area wells (ASH-06, AHT-05, AHT-06, and ABV-01) will be evaluated and tested, as necessary, for application of microblowers which are a promising non-passive extraction method. These microblowers will connect directly to the wellhead. The blowers will operate during daylight hours when there is enough solar energy available to supply the necessary power. At other time, the wells will operate passively with a check valve. The effectiveness of the microblower will depend on the permeability of the screened sediments for each well. Hence, if the permeability of the sediments limits the performance of the microblower for a particular well, that well will be operated in a passive mode (with a check valve) only. The operation of SVE wells in the trench area is a modification from the original groundwater AS/SVE remedy because the four new SVE wells target VOC contamination present in the vadose zone. The original ten

PSVE cluster wells are used to offgas VOCs generated by air sparging of the saturated zone below.

The RAOs for the vadose zone treatment will consist of reducing the mass of VOCs in order to limit the impact to the M-Area aquifer. The final remedial goals will be included in the final ROD. Additionally, the existing air permit exemption will be reviewed to ensure offgas limits are not exceeded before operation of the SVE wells.

The additional cost for the four trench area wells is insignificant as compared to overall remedy, since PSVE wells and microblowers have essentially no operating costs.

Statutory Determinations

The modified remedy meets the requirements specified in CERCLA Section 121 to :

- Protect human health and the environment
- Comply with applicable or relevant and appropriate requirements
- Be cost-effective
- Utilize permanent solutions and alternative treatment technologies to the maximum extent practicable
- Satisfy the preference for treatment as a principal element

As-built drawings of the remediation well layout will be included in the Post Construction Report.

The USEPA and SCDHEC concur with the modification of the remedy as described in this ESD.

Public Participation Activities

The public has been notified of this ESD through mailing of 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 or to submit written comments, contact:

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