Explanation of Significant Differences For the TNX Area Groundwater Operable Unit

INTRODUCTION

This Explanation of Significant Differences (ESD) is being issued by the Department of Energy (DOE), the lead agency for the Savannah River Site (SRS), with concurrence by the Environmental Protection Agency-Region IV (EPA) and South Carolina Department of Health and Environmental Control (SCDHEC) to announce changes in the interim remediation strategy selected for the TNX Groundwater Operable Unit. The TNX Area is located adjacent to the Savannah River in the southwestern portion of SRS.

The remedy selected in the Interim Record of Decision (IROD) to achieve the interim action goals was the Hybrid Groundwater Corrective Action (HGCA). The HGCA consisted of a recirculation well system and an air stripper with a series of groundwater extraction wells. The original remediation strategy needs to be modified because the recirculation well system was determined to be ineffective in this area due to geological factors and the nature of the contamination.

The SRS is required by CERCLA Section 117 (c) to publish an ESD whenever there is a significant change to a component of the remedy identified in the IROD. Section 300.435(c)(2)(i) of the National Oil and Hazardous Substances Pollution Contingency Plan requires the lead agency to provide an explanation of the differences and to make the information available to the public in the Administrative Record and information repository. This ESD will become part of the Administrative Record File and will be available for public review during normal business hours at the following information repositories:

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

Thomas Cooper Library
Government Documents Department
University of South Carolina
Columbia, SC, 29208
(803) 777-4866

SUMMARY OF SITE HISTORY, CONTAMINATION PROBLEMS, AND SELECTED REMEDY

Site History

The TNX Area is a pilot scale test facility used to provide technical support to various SRS production areas. Past operations within the TNX Area led to the contamination of the area's groundwater. Several source units have been identified in the TNX Area which contributed to the groundwater contamination. These units include the Old TNX Seepage Basin, the New TNX Seepage Basin, and the TNX Burying Ground. Operations associated with these units as well as leakage from process sewers and leachate from other site activities, contributed to the groundwater contamination. The TNX Burying Ground was created to dispose of the debris of the explosion of an experimental evaporator in 1953. The Old TNX Seepage Basin ceased to operate in 1980 and was backfilled and capped in 1981. In August 1988, wastewater was rerouted from the New TNX Seepage Basin to the TNX Effluent Treatment Facility. The groundwater contamination can be divided into two categories, organic and inorganic contamination.

Contamination Problems

The water table aquifer at TNX is contaminated with chlorinated volatile organic compounds (CVOC), primarily trichloroethylene (TCE), tetrachloroethylene (PCE), and carbon tetrachloride. The CVOC contamination underlays eight acres and has a maximum thickness of 20 feet Trans-1,2-dichloroethylene,

a product of natural aerobic biodegradation of TCE and PCE, has been measured in some of the wells with TCE. The absence of vinyl chloride in the groundwater suggests that the biodegradation is following an aerobic pathway. Figure 1 is a concentration map for TCE which illustrates the lateral extent of CVOC migration. 1,1, 1-trichloroethane and chloroform have also been detected in elevated concentrations, but did not exceed Primary Drinking Water Standards (PDWS). Five inorganic constituents have been detected above PDWS: nitrate, mercury, lead, chromium and gross alpha.

Selected Remedy
The objective of the selected remedy as stated in the IROD (October 1994) is to control the further migration of the groundwater contamination hotspot, prevent the further degradation of the groundwater system, and begin contaminant mass removal from the groundwater contamination hotspot.

The remedy selected in the IROD to achieve the interim action goals was the Hybrid Groundwater Corrective Action (HGCA). The HGCA featured one recirculation well and a series of extraction wells with an air stripper. The air stripper system has four extraction wells with a combined flow rate of up to 80 gallons per minute. The target treatment level for trichloroethylene in the extracted groundwater is 5 µg/L prior to discharge to a NPDES outfall.

DESCRIPTION OF SIGNIFICANT DIFFERENCES AND THE BASIS FOR THOSE DIFFERENCES.

The remedy selected in the IROD is to use one recirculation well and a pump and treat system using four extraction wells and an air stripper. Testing conducted after commencing operations of the recirculation well indicated that a thin low permeable layer impeded movement of water through the highly contaminated layers. These tests indicated that the recirculation well was not effective in removing contaminants and could not be made effective at this specific location. The recirculation well has been shut down and will not be used as part of this interim action. However, as documented in the Post Construction Report for the TNX-GW OU Interim Remedial Action (WSRC-RP-96-0826), Revision. 1, January 1997, the lower conductive zone, which is present locally above the lower screen in the recirculation well, will not affect the efficiency of the groundwater pump and treat remediation system.

The discontinuation of the recirculation well will not impact the overall intent of the IROD, which is to mitigate the further migration of the groundwater plume hotspot while also removing contaminants from the groundwater. The shutdown of the recirculation well will not impact the performance of the air stripper system. Further, the operation of the air stripper system will attain the objectives of the IROD, by preventing the further migration of the plume and remediate the portion of the plume with TCE concentrations greater than 500 µg/L. The intent of the recirculation well was to accelerate the remediation time frame. Recently completed contaminant transport model suggests that the use of a spot treatment technique, e.g. recirculation well, would not reduce the time required for remediation.

The only change between the remedy as stated in the IROD and the currently proposed remedy is to discontinue the operation of the recirculation well.

SUPPORT AGENCY COMMENTS

Agency comments have been incorporated.

AFFIRMATION OF THE STATUTORY DETERMINATIONS

Considering the new information that has been developed and the changes that have been made to the selected remedy, the DOE believes that the remedy remains protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate for this interim remedial action, and is cost-effective. The revised remedy utilizes permanent solutions and alternative treatment technology to the maximum extent practicable for this site.

PUBLIC PARTICIPATION ACTIVITIES

DOE, EPA and SCDHEC encourages the public to review and comment on this document and review other documents contained in the Administrative Records File to gain a comprehensive understanding of the history of the TNX Groundwater Operable Unit.

The public will be informed of the changes in the selected remedy as specified in this document through public notices in the *Barnwell People Sentinel/Allendale Citizen Leader, North Augusta Star, North Augusta Post, Aiken Standard, Augusta Chronicle, The State, Augusta Focus and Metro Courier.*