

EXPEDITING CLEANUP AT THE WELDON SPRING SITE UNDER CERCLA AND NEPA*

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ABSTRACT

The Weldon Spring Site Remedial Action Project is being conducted under the Surplus Facilities Management Program of the U.S. Department of Energy (DOE). The DOE has developed an environmental compliance strategy for this project to meet the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Environmental Policy Act (NEPA). A key element of this strategy was the development of an integrated CERCLA/NEPA process to minimize, to the extent possible, the need to prepare duplicate documentation. Additionally, the project is implementing various expedited response actions to mitigate actual or potential uncontrolled releases of radioactively or chemically hazardous substances to the environment and to minimize potential health and safety risks to on-site personnel and local human and biotic populations. These actions are being conducted concurrently with the implementation of site characterization activities and the preparation of major environmental compliance documentation. The initiation of site cleanup via these response actions has fostered a very positive relationship with the U.S. Environmental Protection Agency Region VII, the state of Missouri, and the affected public.

SUMMARY AND BRIEF HISTORY OF THE WELDON SPRING SITE REMEDIAL ACTION PROJECT

The Weldon Spring Site Remedial Action Project is being conducted as a Major System Acquisition under the Surplus Facilities Management Program (SFMP) of the U.S. Department of Energy (DOE). The major goals of the SFMP are to eliminate potential hazards to the public and the environment that are associated with contamination at SFMP sites and to make surplus real property available for other uses to the extent possible.

The Weldon Spring site is an SFMP site located near Weldon Spring, Missouri, about 48 km (30 mi) west of St. Louis (Fig. 1). It is surrounded by large tracts of land owned by the federal government and the state of Missouri. The site consists of four raffinate pits, an inactive chemical plant, and a contaminated quarry. The raffinate pits and chemical plant are on adjoining land about 3.2 km (2 mi) southwest of the junction of Missouri (State) Route 94 and U.S. Route 40/61, with access from Route 94. The quarry is located in a comparatively remote area about 6.4 km (4 mi) south-southwest of Weldon Spring Missouri the raffinate pits and chemical plant area; the quarry can also be accessed from Route 94. These areas are fenced and closed to the public.

From 1941 to 1944, the U.S. Department of the Army operated the Weldon Spring Ordnance Works, constructed on the land that is now the Weldon Spring site, for production of trinitrotoluene (TNT) and dinitrotoluene (DNT). The Army used the quarry for disposal of rubble contaminated with TNT. In the mid 1950s, 83 ha (205 acres) of the ordnance works property was transferred to the U.S. Atomic Energy Commission (AEC); this is now the raffinate pits and chemical plant area. An additional 6 ha (15 acres) was later transferred to the AEC for expansion

of waste storage capacity. From 1957 to 1966, the AEC operated a uranium-processing facility at the Weldon Spring uranium feed materials plant, which subsequently became the Weldon Spring chemical plant. Ore concentrates and some scrap metal were processed at the plant, and products that included uranium metal were then shipped to other sites. Thorium-containing materials were processed on an intermittent basis. Radioactive raffinates from the processing were placed in four on-site pits. Other radioactive wastes were disposed of in the quarry.

After closure by the AEC, the chemical plant was reacquired by the Army in 1967. The Army partially decontaminated several buildings and dismantled some equipment, disposing of some of this material in the quarry. The Army then began converting the facilities to produce herbicides but in 1969, prior to becoming operational, the herbicide project was canceled. In 1971, the Army returned the 21-ha (51-acre) portion of the site containing the raffinate pits to the AEC. As successor to the AEC, DOE assumed responsibility for the raffinate pits.

In May 1985, DOE designated the control and decontamination of the Weldon Spring site as a Major Project (this project has since been designated as a Major System Acquisition). In October 1985, custody of the chemical plant was transferred from the Army to DOE. A project management contractor for the Weldon Spring Site Remedial Action Project was selected in February 1986, and a DOE project office was established on the site in July 1986. The project management contractor, MK-Ferguson Company, assumed control of the Weldon Spring site on October 1, 1986.

On October 15, 1985, the U.S. Environmental Protection Agency (EPA) proposed to include the quarry on the National Priorities List (NPL). This listing occurred on July 30, 1987. On June 24, 1988, EPA proposed to expand

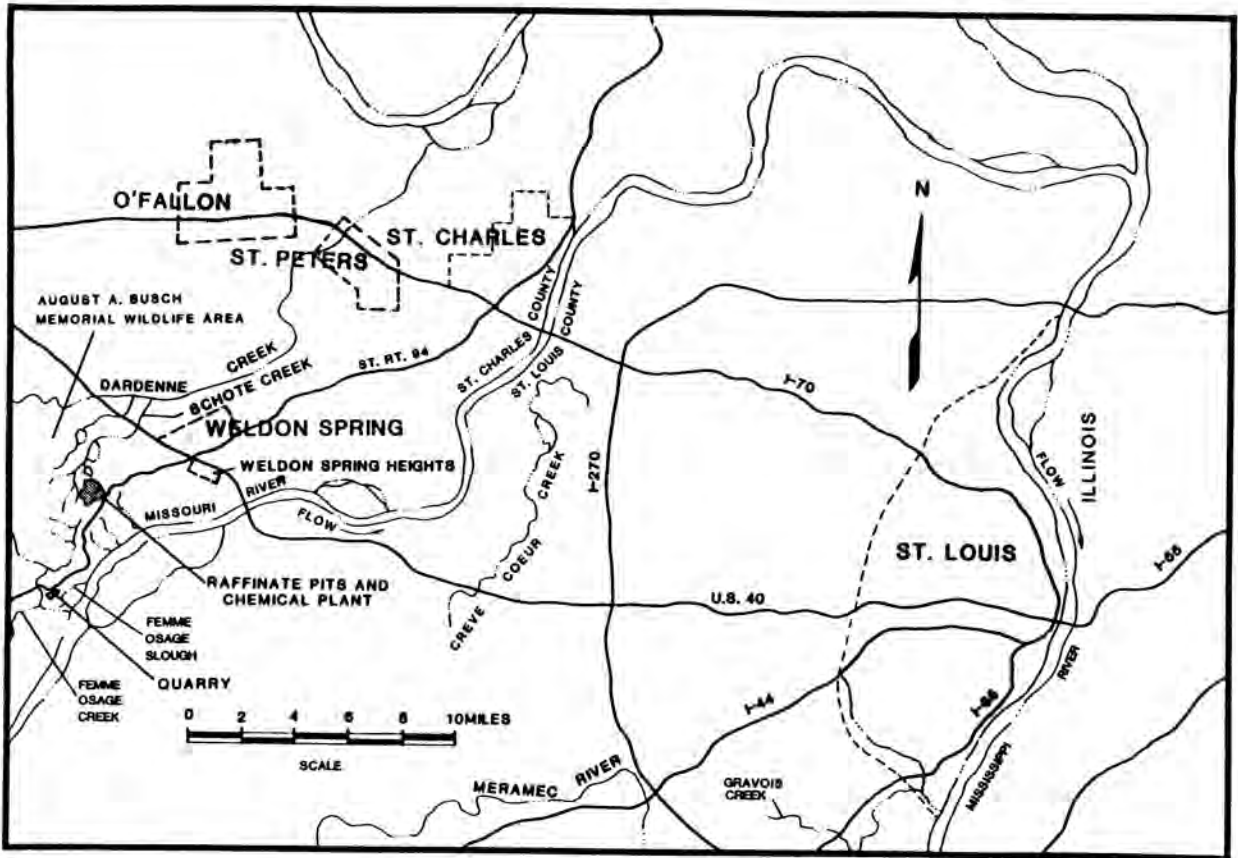


Fig. 1. Area and Vicinity Map of the Weldon Spring Site, Weldon Spring Missouri.

this designation to include the raffinate pits and chemical plant area.

OVERVIEW OF THE ENVIRONMENTAL COMPLIANCE PROCESS

In February 1987, DOE issued a draft environmental impact statement (EIS) to assess the environmental impacts of alternatives for long-term management of

contaminated materials associated with remedial action at the Weldon Spring site (1). The draft EIS was prepared in accordance with the National Environmental Policy Act (NEPA), as implemented by regulations promulgated by the Council on Environmental Quality (CEQ) and DOE's implementing guidelines. A Notice of Intent to prepare this draft EIS was issued in the Federal Register on March 2, 1984, and a public scoping process was conducted. The draft EIS was prepared taking into account the comments received during the scoping process.

The remedial actions to be carried out by DOE at the Weldon Spring site are subject to EPA oversight under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA). For this

project, the oversight function is being carried out by EPA Region VII. Because preparation of the draft EIS was already in progress when EPA's role in the project was identified, DOE and EPA entered into a Federal Facility Agreement in August 1986 whereby the respective responsibilities of these two agencies were defined. By this agreement, DOE intended to meet EPA's remedial investigation/feasibility study (RI/FS) requirements under CERCLA with the EIS and supporting documentation.

Since publication of the draft EIS in February 1987, water quality investigations have provided significant new information relevant to environmental concerns at the Weldon Spring site (2). In response to this new information (i.e., high concentrations of nitrates and sulfates and significant quantities of nitroaromatics in the groundwater at the site), DOE announced in June 1987 its intent to issue for public comment a revised draft EIS on remedial action at the Weldon Spring site. Since that time, EPA Region VII has formally requested that DOE prepare an RI/FS for this project, pursuant to the requirements of CERCLA. The DOE and EPA have agreed that the appropriate environmental review required by an RI/FS and an EIS can be more expeditiously accomplished by incorporating those

elements required by an EIS into the format of an RI/FS (herein referred to as an RI/FS-EIS). Toward this end, DOE has developed an integrated CERCLA/NEPA process for implementing the Weldon Spring Site Remedial Action Project.

For purposes of investigation and evaluation relevant to the Weldon Spring Site Remedial Action Project, the site has been divided into two separate areas: (1) the raffinate pits and chemical plant area and (2) the quarry. These two areas are considered to be one site for purposes of CERCLA/NEPA compliance. Several distinct response actions may be needed at each of these two areas. The three major actions currently envisioned for the raffinate pits and chemical plant area are management of the contaminated surface structures, raffinate pit wastes, surface water, and soils; assessment of the need to restore contaminated groundwater; and cleanup of contaminated vicinity properties. These three actions will be addressed in the RI/FS-EIS and supported by a single response decision. This decision will also include disposition of the bulk wastes currently in the quarry (Figs. 2 and 3).

Four distinct response actions may be required at the quarry: bulk waste removal, removal of any residual materials following bulk waste removal, groundwater restoration, and cleanup of contaminated vicinity properties. The DOE is proposing to address bulk waste removal as a separate operable unit and will prepare an RI/FS and environmental assessment to support this decision. The need to remove any residual materials following bulk waste removal and the need to restore groundwater at the quarry cannot be determined until the bulk wastes have been removed and the remaining conditions evaluated. The DOE will address this issue following bulk waste removal and will

involve EPA Region VII and the state of Missouri in its determination.

Several areas in the vicinity of the Weldon Spring site, but outside of current fenced boundaries, are radioactively and chemically contaminated as a result of activities previously carried out at the site. The DOE is responsible for the contaminated vicinity properties associated with previous uranium-processing activities. Contamination at these properties consists of radioactive constituents (i.e., uranium, thorium, and radium) and any chemicals associated with the processing of these materials. The DOE is also responsible for any chemical contamination that is mixed with radioactive contamination. The U.S. Department of the Army is responsible for contamination on vicinity properties resulting from previous ordnance production activities. The DOE is continuing to work with the Army in identifying off-site areas contaminated as a result of Army activities. To minimize disturbance of the environment, DOE will coordinate the cleanup of vicinity properties with the Army.

Of the vicinity properties for which it is responsible, DOE is planning to clean up those that pose an unacceptable risk to public health and the environment. Management of the resulting contaminated materials will be included in the record of decision (ROD) for disposition of the raffinate pits and chemical plant area (including the bulk quarry wastes). Appropriate CERCLA/NEPA compliance documentation will be prepared prior to cleanup of the vicinity properties. Those vicinity properties cleaned up prior to the ROD will be addressed through a flexible engineering evaluation/cost analysis process. The cleanup of any remaining vicinity properties at the raffinate pits and chemical plant area will be included in the RI/FS-EIS. A

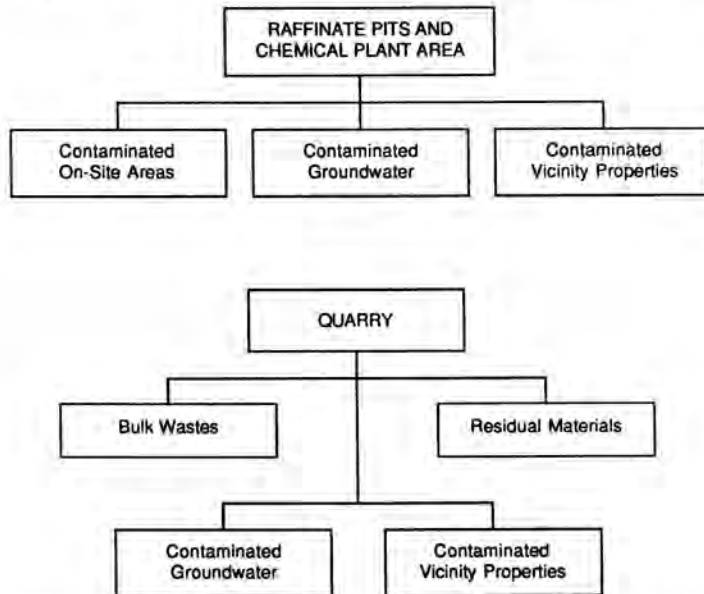


Fig. 2. Environmental Compliance Components for the Weldon Spring Site Remedial Action Project.

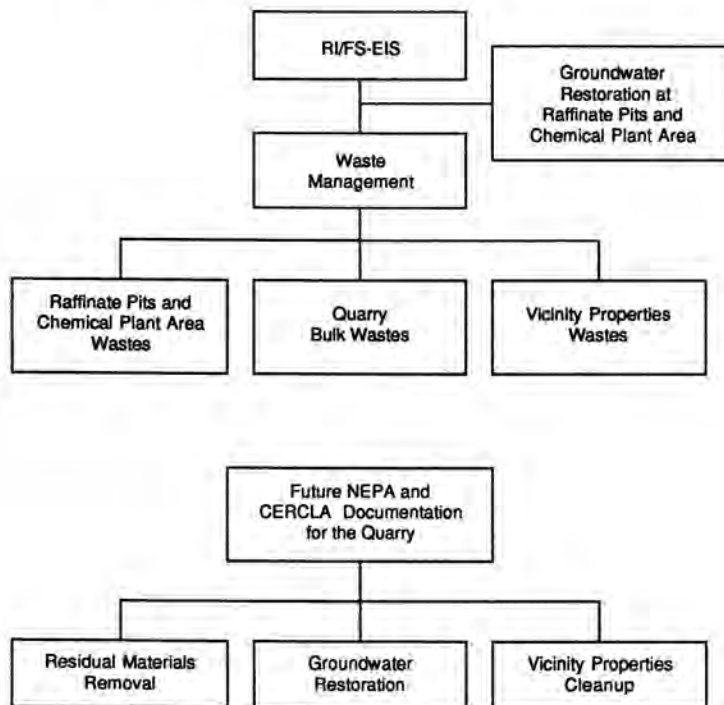


Fig. 3. Environmental Compliance Documentation for the Weldon Spring Site Remedial Action Project.

thorough study of the need for additional cleanup of vicinity properties in the quarry area will be part of the CERCLA/NEPA processes for the residual materials and the groundwater restoration operable units at the quarry.

The multifaceted approach being implemented by DOE at the Weldon Spring site also includes a thorough site characterization program, the results of which will be documented in an RI report that will provide the level of environmental information required to support decisions under both CERCLA and NEPA. Concurrent with site characterization, a baseline risk assessment is being prepared to determine the potential threats to public health and the environment in the absence of any remedial action at the site. The results of this assessment will be included as the near-term impacts for the no-action alternative in the FS-EIS. Various alternatives for remedial action at the site will be analyzed in the FS-EIS consistent with the requirements of CERCLA and NEPA.

This comprehensive approach has several advantages: (1) because the RI/FS-EIS will be in a format providing the level of detail required by both CERCLA and NEPA, separate documentation will not be required, and DOE in cooperation with EPA Region VII and the state of Missouri will ensure that all CERCLA and NEPA requirements are contained within the RI/FS-EIS; (2) a single ROD will be issued by DOE and EPA; (3) the appropriate degree of public participation will take place, as required under CERCLA and NEPA; (4) limited response actions can be initiated prior to the ROD for the project to minimize or

preclude off-site releases of contaminants and to ensure the health and safety of on-site personnel; and (5) expedited removal of the bulk wastes from the quarry will reduce the risk to public health and the environment by eliminating the primary source of contamination in this area and reducing the potential for migration. This approach has allowed DOE to meet the requirements of both CERCLA and NEPA and to begin cleanup of the Weldon Spring site.

IMPLEMENTATION OF EXPEDITED RESPONSE ACTION ACTIVITIES

Various expedited response actions will be performed prior to issuance of the ROD for the Weldon Spring site. The primary purpose of these actions is to mitigate actual or potential uncontrolled releases of radioactively or chemically hazardous substances to the environment. The scope of these actions will be limited to those that can be performed under CERCLA and within the constraints of CEQ regulations for NEPA, i.e., actions will be limited to those that do not have adverse environmental impacts or limit the choice of reasonable alternatives for the ultimate disposition of the site.

Some of these intermediate actions are currently under way at the site, and some have already been completed. These actions include removing power lines and poles, flushing inactive PCB transformers, removing overhead pipes that contain asbestos, dismantling buildings, and consolidating containerized chemicals that remain on-site from the plant's operational period. All of the nonradioactively

contaminated materials resulting from these actions have been or will be transported off-site for disposal. In addition, a limited vicinity properties (soil) cleanup has been completed and a dike/diversion system is under construction to reduce contaminant releases via surface water runoff. Finally, contaminated water in the quarry and in the raffinate pits will be treated and released off-site under separate response actions. Additional expedited actions are in the planning stage, and others will be identified, as appropriate, as the project proceeds.

The aggressive approach to site cleanup being taken by the project has been very important in establishing the positive relationship that currently exists with EPA Region VII, the state of Missouri, and the public. Implementing expedited response actions is the means by which the project has been able to begin cleanup concurrently with the implementation of site characterization studies and the preparation of major environmental compliance documentation. Not only has this approach resulted in substantial benefits in terms of increased external involvement and support, implementing removal actions also represents a significant accomplishment for DOE remedial action programs. Initiation of cleanup activities at waste sites often begins up to 10 years following initiation of the

RI/FS process. The Weldon Spring project began the RI/FS-EIS process only within the last 1.5 years but has already developed an environmental compliance strategy consistent with both CERCLA and NEPA that has enabled cleanup activities to commence. These activities are having a significant impact on reducing the potential threat to human health and the environment associated with site conditions. In addition, preparation of environmental compliance documentation is proceeding on schedule. The most optimistic assumptions identify a 2- to 3-year time period following RI/FS initiation before an ROD is issued, and the Weldon Spring project is on schedule toward meeting this optimistic goal.

REFERENCES

1. U.S. DEPARTMENT OF ENERGY, "Draft Environmental Impact Statement, Remedial Action at the Weldon Spring Site," DOE/EIS-0117D, Assistant Secretary for Nuclear Energy (Feb. 1987).
2. U.S. DEPARTMENT OF ENERGY, "Water Quality Phase I Assessment," DOE/OR/21548-003, prepared by MK-Ferguson Company, St. Charles, Mo., for Oak Ridge Operations, Weldon Spring Site Remedial Action Project Office St. Charles, Mo. (Dec. 1987).