Removal Action Decision Document for the Management of Contaminated Structures at the Weldon Spring Chemical Plant

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Statement and Basis of Purpose

The purpose of a decision document is to describe a specific removal action proposed for a contaminated site under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended. This decision document presents the removal action selected for managing 30 contaminated structures at the Weldon Spring chemical plant, located in St. Charles, Missouri. The document is based on the administrative record file for this proposed action.

Response actions at the Weldon Spring site are being conducted by the U.S. Department of Energy (DOE) in accordance with the requirements of CERCLA, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), and the National Environmental Policy Act. This decision document is prepared in accordance with the NCP, and it completes the CERCLA compliance process for the proposed action. Issuance of this decision document also closes the administrative record for the action.

Site Background

The Weldon Spring site is located in St. Charles County, Missouri, about 48 km (30 mi) west of St. Louis. It is surrounded by large tracts of land owned by the federal government and the state of Missouri. The site consists of two noncontiguous areas: an 88-ha (217 acre) chemical plant area and a 3.6-ha (9-acre) limestone quarry. The chemical plant area is about 3.2 km (2 mi) southwest of the community of Weldon Spring and the junction of Missouri (State) Route 94 and U.S. Route 40/61. The quarry is about 6.4 km (4 mi) south-southwest of the chemical plant area. Both locations are accessible from Route 94 but are fenced and closed to the public.

In 1941, the U.S. Department of the Army acquired about 7,000 ha (17,000 acres) of land in St. Charles County to construct an ordnance works. The Army produced dinitrotoluene and trinitrotoluene explosives at the ordnance works from 1941 to 1944 and again from 1945 to 1946. In 1955, 83 ha (205 acres) of the former ordnance works property was transferred to the U.S. Atomic Energy Commission (AEC, a predecessor of DOE) to construct a uranium feed materials plant, also referred to as the chemical plant; an additional 6 ha (15 acres) were later transferred to expand waste storage capacity. Uranium and some thorium ore concentrate were processed at the plant from 1957 to 1966. Much of the contaminated solid waste generated by both ordnance works and feed material plant operations and subsequent decontamination efforts was disposed of in the quarry between 1942 and 1969.

The Army reacquired the chemical plant in 1967 following closure by the AEC and began converting the facilities to produce herbicides. Some buildings were partially decontaminated and some equipment was dismantled. In 1969, prior to becoming operational, the herbicide project was canceled. Since that time, the plant has remained essentially unused and in caretaker status. The Army returned part of the chemical plant property to the AEC in 1971 but retained control of the buildings. In 1984, the Army repaired several of these buildings; decontaminated some of the floors, walls, and ceilings; and removed some contaminated equipment to other

areas (e.g., onto the ground outside of the process buildings as well as into certain nonprocess buildings). In 1985, custody of the chemical plant property was transferred to DOE.

The chemical plant originally consisted of 44 buildings and miscellaneous structures, including remnants of an on-site railroad system and subsurface tanks. Some of these facilities were part of the Weldon Spring Ordnance Works, but most were built for AEC operations between 1955 and 1958. The majority were support buildings for the chemical plant; a few were initially constructed to support plant construction activities and were used as warehouses and supply buildings after the plant was completed. Radioactive materials were processed in only a limited number of chemical plant buildings. Of the 44 buildings, 39 were nonprocess buildings (8 of which were general support buildings) and 5 were major process buildings. Several subsurface storage and septic tanks were also used to support plant operations.

The decontamination and dismantlement of certain nonprocess buildings at the chemical plant area have been addressed as separate removal actions. Those actions have already been initiated. The currently proposed action involves the decontamination and dismantlement of the remaining surface structures at the chemical plant area in addition to some subsurface structures (such as tanks and sewer lines). The locations of the structures associated with this action and of the nonprocess buildings that were the subject of previous removal actions are shown in Figure 1.

The 30 structures addressed in this removal action contain varying degrees of radioactive and chemical contamination. The 5 major process buildings are the most heavily contaminated. Although most of the other buildings were not used for the direct processing of radioactive materials, some became radioactively contaminated during the operational period of the chemical plant or subsequent to plant closure. During the operational period, building contamination may have resulted from (1) routine plant operations (e.g., processing of radioactive materials, tracking of contaminants from process areas to nonprocess areas, and temporary relocation of contaminated equipment for repair), (2) processing support activities (e.g., waste handling), and (3) surficial deposition of airborne particulates. Contamination of underground tanks may also have resulted from past operations. Following plant closure, building contamination may have resulted from (1) relocation of some contaminated equipment from process buildings into nonprocess buildings during prior cleanup activities and (2) transport of contaminated material by environmental factors (e.g., wind) and local biota (e.g., wasps that built nests with contaminated mud).

Assessment of the Contaminated Structures

Since closure of the chemical plant more than 20 years ago, the various structures have deteriorated considerably. Many of the windows are broken, some metal walls have separated from the floors, floors have begun to break apart, and roofs have deteriorated to the extent that they leak badly during rainstorms. The polychlorinated biphenyl (PCB) contamination of floors and the radioactive contamination of various surfaces (e.g., associated with interior dust, equipment, building surfaces, and roofing material) currently represent potential exposure hazards to on-site personnel. As building deterioration continues, this contamination could

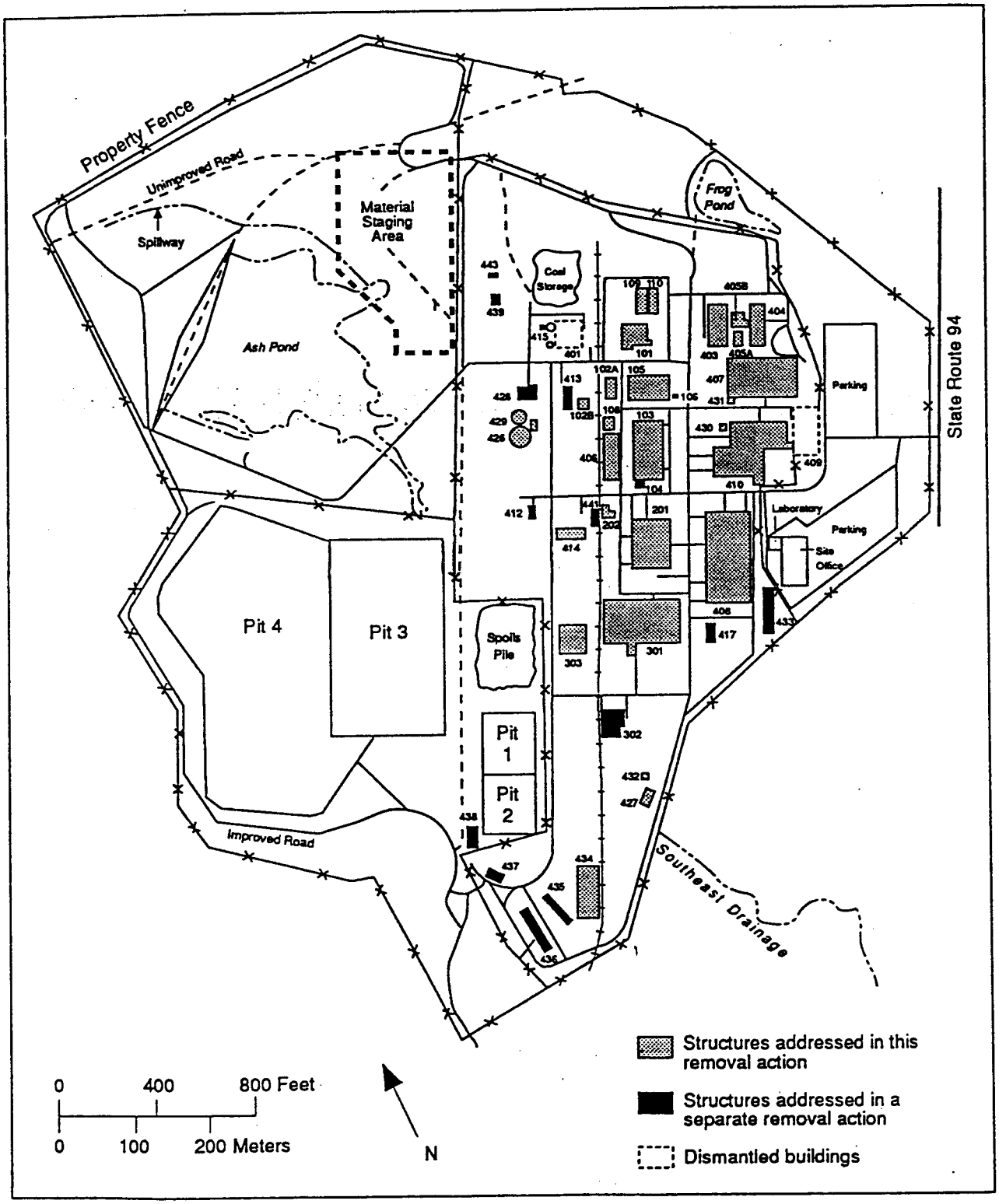

FIGURE 1 Site Layout Showing the Locations of Contaminated Structures

threaten the general public and the environment off-site, e.g., via tracking, surface water runoff, or wind dispersal. In addition, the panels, tiles, and protective coverings of asbestos-containing material in the buildings could continue to deteriorate, thereby increasing the potential for asbestos release and exposure. The subsurface tanks and sewer lines may also have deteriorated over time, with an associated potential for contaminant release.

The potential for health and safety threats on-site and for contaminant releases off-site will increase over time if deterioration of these structures remains unchecked. Expedited dismantlement of these structures would reduce associated occupational hazards on-site as well as potential threats to human health and the environment from off-site releases of chemical and radioactive contaminants.

Scope and Objectives

The scope of the proposed removal action can be broadly defined as management of the remaining contaminated structures at the Weldon Spring site. The primary purpose of the action is to limit the potential for contaminant releases into the environment from these structures. The specific objectives of this action are to:

- Reduce the potential health and environmental hazards of radiation exposure associated with radioactively contaminated dust, equipment, building surfaces, and roofing material;
- Reduce the potential health and environmental hazards of chemical exposure associated with PCB-contaminated floors and asbestos-containing siding, ceiling, roofing, floor tile, pipe insulation, and equipment wrapping;
- Minimize the potential health and safety hazards to on-site personnel due to deterioration of the contaminated structures;
- Minimize potential health and environmental hazards associated with releases from subsurface structures (such as tanks and sewer lines); and
- Facilitate subsequent response activities at the Weldon Spring site by allowing for additional characterization of the waste material associated with these structures and removing a physical impediment to comprehensive site cleanup.

Removal Action

The removal action selected for the remaining contaminated structures at the chemical plant area is expedited dismantlement with temporary on-site storage of all resultant material. Most of the material will be stored at the material staging area (MSA), where it will be sorted into potentially releasable and nonreleasable components. (Releasable components are those that can be managed or utilized without restrictions due to radioactive or chemical contamination.)

Additional characterization of this material could be safely performed, as needed, to support future waste management and disposal decisions. The only material that may be transported off-site as part of this action is that which meets criteria for release without radiological restrictions and has a resource recovery value.

The removal action will involve (1) removing loose radioactively and chemically contaminated material to the extent feasible, (2) removing equipment and other material from the structures, (3) dismantling the structures using conventional techniques, and (4) placing the resultant material in temporary storage on-site. An observational approach will be used to implement the proposed action. Under this approach, the exact sequence of procedures used to decontaminate and dismantle the structures will be dictated by field conditions. That is, work plans will be prepared prior to initiating activities, and the detailed procedures identified in these plans will be adjusted in response to changing conditions as the work proceeds. This approach will allow for waste segregation as the structures are being dismantled and for interactive use of engineering controls to minimize airborne releases, e.g., by implementing activity-specific controls as indicated by monitoring results. Use of this approach will also reduce the likelihood for occupational injuries and fatalities because it will permit responsiveness to ongoing health and safety concerns as work progresses.

Decontamination activities will consist of removing loose contamination from the structures by aggressively vacuuming and wiping horizontal surfaces such as floors, windowsills, and overhead beams as well as the exteriors of equipment, piping, and other accessible areas where dust has accumulated. Vacuum equipment will exhaust through high-efficiency-particulate-air filters in order to minimize the airborne release of contaminants during dust-removal activities. After removing loose contamination from the structures, surfaces contaminated with PCBs will be cleaned using a solvent wipe procedure. Asbestos-containing material will then be removed from the structures and containerized (e.g., in plastic bags or boxes). Contaminated material resulting from these activities will be transported to on-site temporary storage areas (e.g., the MSA and Building 434), consistent with the site's waste management plan.

The equipment remaining within each structure (e.g., large process vessels and hoppers) will be surveyed for contamination, decontaminated or sealed to prevent the spread of removable contamination, and moved to the MSA for temporary storage; some large pieces of equipment might be removed concurrently with structure dismantlement. The procedures used to remove the equipment will depend upon the size and physical characteristics of individual components. For example, pipes will be cut into manageable lengths to facilitate removal to the MSA whereas process vessels will likely be removed intact. The structures will be kept as clean as possible during this process (i.e., areas that are currently inaccessible due to the presence of process equipment or stored material will be decontaminated as the equipment and material are removed); local ventilation will be used as needed. The work area will be continuously monitored for airborne contaminants, and engineering controls will be increased as indicated.

After removing equipment from the structures and decontaminating the various surfaces, the structures will be dismantled using standard engineering procedures and equipment. Maximum use will be made of heavy equipment to minimize the likelihood of occupational

injuries and fatalities during dismantlement activities. In general, the buildings will be brought to the ground as expeditiously as possible; additional dismantlement activities will be performed (e.g., cutting) to allow for movement of material to on-site temporary storage areas. All contaminated material resulting from the proposed action will be controlled and stored on-site pending the comprehensive disposal decision which will be included in the remedial investigation/feasibility study-environmental impact statement (RI/FS-EIS) currently being prepared for cleanup of the chemical plant area.

Highlights of Community Participation

An engineering evaluation/cost analysis (EE/CA) report was prepared to analyze alternatives for managing the remaining contaminated structures at the chemical plant. This EE/CA was issued for public review and comment on May 24, 1991. A notice of availability of the EE/CA was published in the *St. Louis Post-Dispatch* and in the *St. Charles Journal* on May 24. The public comment period extended from May 24 through June 24. No written comments were received on the proposed action. Small group meetings were also held with interested members of the community; no significant comments were received at the meetings.

The EE/CA and related characterization and engineering reports are included in the administrative record file for this action. The file is available to the public in the reading room at the Weldon Spring site. Copies of these documents have also been made available at five other nearby information repositories: Memorial Arts Building at Lindenwood College (St. Charles, Missouri), Kathryn M. Linneman Branch of the St. Charles City/County Library (St. Charles, Missouri), Spencer Creek Branch of the St. Charles City/County Library (St. Peters, Missouri), Kisker Road Branch of the St. Charles City/County Library (St. Peters, Missouri), and Francis Howell High School (St. Charles, Missouri).

Declaration of Statutory Determinations

The removal action selected for managing the remaining contaminated structures at the Weldon Spring chemical plant -- i.e., expedited dismantlement and controlled storage of resultant material on-site pending upcoming disposal decisions for the project -- is protective of human health and the environment. In addition, the action can be implemented with standard technologies, it is cost-effective, and it is consistent with and will contribute to the efficient performance of the overall remedial action for the Weldon Spring site.

In accordance with CERCLA and the NCP, the action complies with federal and state requirements that are legally applicable or relevant and appropriate to the removal action, to the extent practicable. This action also utilizes permanent solutions and resource recovery technologies to the maximum extent practicable, given its limited scope. Because the final disposition of material resulting from dismantlement of these structures is not a part of this action, the statutory preference for treatment as a principal element of the remedy is outside of its scope. Potential treatment technologies and disposal decisions will be addressed in the RI/FS-EIS that is currently being prepared for cleanup of the chemical plant area of the Weldon Spring site. The need for a 5-year site review will be assessed in the record of decision for the RI/FS-EIS.