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U.S. DEPARTMENT OF ENERGY FIVE-YEAR REVIEW (TYPE Ia)

Weldon Spring Site Remedial Action Project
Weldon Spring, Missouri

JUNE 1996 **REV. 0**

U.S. Department of Energy
Oak Ridge Operations Office
Weldon Spring Site Remedial Action Project

Prepared by MK-Ferguson Company and Jacobs Engineering Group

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W-fp — 6-6-96
Department Manager — Date

[signature] — 6-7-96
Compliance Department Manager — Date

[signature] for PDC — 6-7-96
Quality Assurance Manager — Date

[signature] — 6-10-96
Project Director (or Deputy Project Director) — Date

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U.S. Department of Energy Five-Year Review (Type Ia)

Revision 0

June 1996

Prepared by

MK-FERGUSON COMPANY
and
JACOBS ENGINEERING GROUP
7295 Highway 94 South
St. Charles, Missouri 63304

for the

U.S. DEPARTMENT OF ENERGY
Oak Ridge Operations Office
Under Contract DE-AC05-86OR21548

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1 INTRODUCTION

1.1 Authority Statement and Purpose

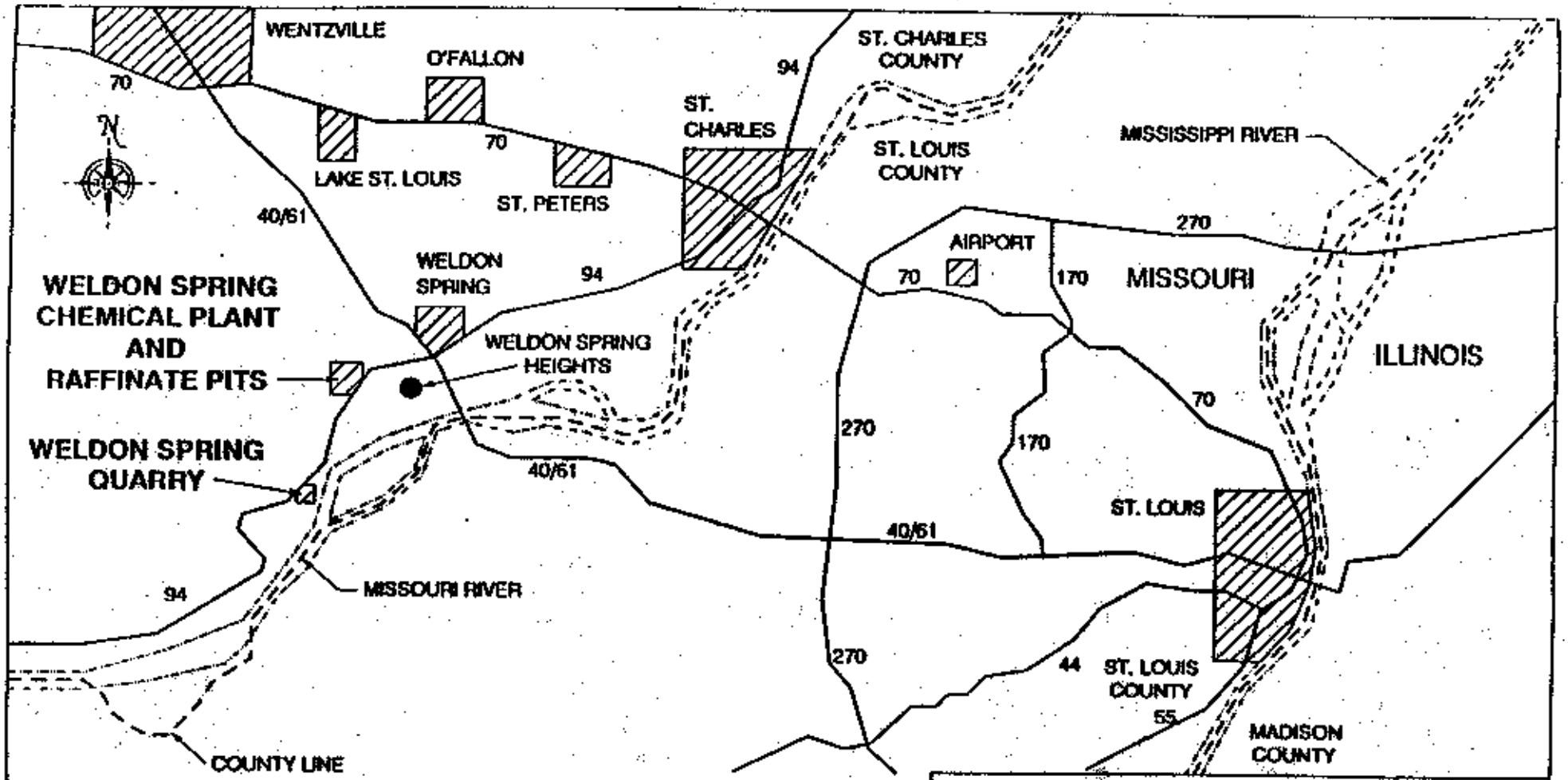
The U.S. Department of Energy (DOE) conducted this review pursuant to *Comprehensive Environmental Response, Compensation and Liability Act* (CERCLA) Section 121(c), National Contingency Plan (NCP) Section 300.430(f)(4)(ii), and Office of Solid Waste and Emergency Response (OSWER) Directives 9355.7-02 (May 23, 1991), and 9355.7-02A (July 26, 1994). This is a statutory review. The purpose of this review is to ensure that the remedial actions established in the *Record of Decision for Management of the Bulk Waste at the Weldon Spring Quarry* (Ref. 1) and the *Record of Decision for the Remedial Action at the Chemical Plant Area of the Weldon Spring Site* (Ref. 2) remain protective of public health and the environment and are functioning as designed. This document will become part of the site file. This review (Type Ia) is applicable to a site at which response is ongoing.

1.2 Site Characteristics

The Weldon Spring site is located in southern St. Charles County, Missouri approximately 30 mi west of St. Louis (Figure 1-1). The site consists of two main areas, the Weldon Spring Chemical Plant and raffinate pits, and the Weldon Spring Quarry, both located along Missouri State Route 94. Access to both the site and quarry is restricted by locked chain link fences and on-site security.

From 1941 to 1945, the U.S. Department of the Army produced trinitrotoluene (TNT) and dinitrotoluene (DNT) at the Weldon Springs Ordnance Works, which covered 17,233 acres of land that now includes the Weldon Spring site. Two hundred five acres of the former ordnance works property were transferred in May 1955 to the Atomic Energy Commission (AEC) for construction of the Weldon Spring Uranium Feed Materials Plant (WSUFMP), now referred to as the Weldon Spring Chemical Plant. Considerable explosives decontamination was performed by the Atlas Powder Company and the Army prior to WSUFMP construction.

From 1958 until 1966, the WSUFMP converted processed uranium ore concentrates to pure uranium trioxide, intermediate compounds, and uranium metal. A small amount of thorium



LOCATION OF THE WELDON SPRING SITE

FIGURE 1-1

REPORT NO.: [redacted]	DRAWING NO.: A/VP/013/0293	
ORIGINATOR: JAB	DRAWN BY: GLN	DATE: 8/27/93

was also processed. Wastes generated during these operations were stored on site in four raffinate pits, which cover approximately 26 acres. These pits are radiologically contaminated with uranium and thorium residues and chemically contaminated with nitrate, fluoride, polychlorinated biphenyls (PCBs), and various heavy metals. Buildings were contaminated with asbestos, hazardous chemical substances, and small quantities of uranium and thorium. Radiological and chemical (PCBs, nitroaromatic compounds, metals and inorganic ions) contaminants can also be found in the soil in several areas around the site.

The Weldon Spring Quarry is a former 9 acres limestone quarry located south-southwest of the chemical plant. Prior to 1942, the quarry was mined for limestone aggregate used in the construction of the ordnance works. The Army used it after 1942 for burning wastes from the manufacture of TNT and DNT and disposal of TNT-contaminated rubble during the operation of the ordnance works. In 1958, the AEC acquired title to the Weldon Spring Quarry from the Army and used it from 1963 to 1969 as a disposal area for building rubble and soils from the demolition of a uranium ore processing facility in St. Louis and from the chemical plant. Other wastes disposed of in the quarry included drummed radioactive materials, uncontained wastes, and contaminated process equipment. The bulk waste contained radiological and chemical contaminants including uranium, radium, thorium, metals, nitrates, PCBs, semivolatile organic compounds, nitroaromatics, and asbestos.

The Weldon Spring site was in caretaker status from 1967 through 1985. In 1985, the DOE designated control and decontamination of the chemical plant, raffinate pits, and quarry as a major project. A Project Management Contractor (PMC) for the Weldon Spring Site Remedial Action Project (WSSRAP) was selected in February 1986. In July 1986, a DOE project office was established on site, and the PMC, MK-Ferguson Company and Jacobs Engineering Group, Inc., assumed control of the site on October 1, 1986. The quarry was placed on the Environmental Protection Agency's National Priorities List (NPL) in July 1987. The DOE redesignated the site as a Major System Acquisition in May 1988. The chemical plant and raffinate pits were added to the NPL in March 1989.

For purposes of CERCLA compliance, the WSSRAP has been broken into four operable units (OUs). The quarry is addressed by the Bulk Waste OU, which addresses the excavation, transportation, and temporary storage of bulk waste materials; and the Quarry Residuals OU, which will address any contamination remaining in the quarry area following bulk waste

removal. The Chemical Plant OU addresses the final disposal of the quarry bulk waste, chemical plant, and vicinity property materials in an engineered land disposal facility. The Groundwater OU addresses contamination in the groundwater of the area surrounding the chemical plant site.

The history of the Chemical Plant and the Quarry is summarized in the following table:

TABLE 1-1 History of Operations

CHEMICAL PLANT	YEAR	QUARRY
Army Ordnance Works begins operations	1941	
	1942	Army begins burning waste and dumping rubble
Army Ordnance Works ends operations	1945	
Majority of Ordnance Works property transferred to State of Missouri	1949	Army stops quarry activity
Chemical plant site transferred to AEC	1955	
Uranium Feed Materials Plant operations begin	1958	AEC acquires quarry title
	1963	AEC begins waste disposal in quarry
Uranium Feed Materials Plant operations end	1966	
Chemical plant site transferred to Army	1967	AEC stops waste disposal at quarry
Army begins building decontamination and equipment removal	1968	Army starts waste disposal in quarry
	1969	Army stops waste disposal in quarry
Army transfers raffinate pits to AEC	1971	
DOE designates Weldon Spring Site Remedial Action Project as a Major Project	1985	DOE designates Weldon Spring Site Remedial Action Project as a Major Project
PMC selected (February) DOE/PMC establish site office (July) PMC assumes site control (October)	1986	

TABLE 1-1 History of Operations (Continued)

CHEMICAL PLANT	YEAR	QUARRY
	1987	Quarry placed on NPL
WSSRAP designated as Major Systems Acquisition	1988	WSSRAP designated as Major Systems Acquisition
Chemical plant and raffinate pits added to NPL	1989	
	1990	*Record of Decision for Management of the Bulk Waste at the Weldon Spring Quarry*
	1991	Quarry bulk waste excavation support activities begin
Remedial Investigation/Feasibility Study for Chemical Plant complete	1992	
Record of Decision for Remedial Action at the Chemical Plant Area of the Weldon Spring Site	1993	Quarry bulk waste excavation begins
	1995	Quarry bulk waste excavation complete

2 DISCUSSION OF REMEDIAL OBJECTIVES; AREAS OF NONCOMPLIANCE

This five-year review encompasses the *Record of Decision (ROD) for the Management of Bulk Wastes at the Weldon Spring Quarry* (*Quarry Bulk Waste ROD*) (Ref. 1) and the *Record of Decision for Remedial Action at the Chemical Plant Area of the Weldon Spring Site* (*Chemical Plant ROD*) (Ref. 2). The two remaining Weldon Spring Site Remedial Action Project (WSSRAP) operable units (OUs), Quarry Residuals and Chemical Plant Groundwater, are in the remedial investigation stage and are not addressed in this review.

2.1 Quarry Bulk Waste Remedial Objectives

As discussed in the *Quarry Bulk Waste ROD* summary (Ref. 1), the major components of the quarry bulk waste remediation were:

- Removing bulk wastes from the quarry using standard equipment and procedures.
- Transporting the bulk wastes along a dedicated haul road to the chemical plant area of the Weldon Spring site.
- Placing the bulk wastes in controlled storage in an engineered temporary storage area (TSA).

At the present time, the Bulk Waste OU is substantially complete with 116,200 bank cu yd of bulk waste material excavated, transported over the dedicated haul road, and placed in interim controlled storage. Characterization performed as part of the remedial investigation for the Quarry Residuals Operable Unit detected a pocket of radiologically contaminated soils along the northeast rim of the quarry. To remediate this area, which poses a threat of recontaminating the quarry proper, the U.S. Department of Energy (DOE) requested an extention of the Bulk Waste OU completion date from March 31, 1996, to July 15, 1996. The U.S. Environmental Protection Agency (EPA) Notice of Project Complete is scheduled for December 27, 1996.

Bulk waste excavation involved the removal, transport, and placement of approximately 140,500 yd^3 of soil and rubble and 3,500 yd^3 of metals (as measured by stockpile-measure at the

TSA). The materials were heterogeneously mixed and included rubble, drummed waste, sludge, and soil contaminated with radionuclides and chemicals.

Approximately 90% of the excavation was performed in cuts varying from 10 ft to 40 ft in depth. The waste removal operation involved excavation of the bulk wastes in layers or lifts in a sequence that was the approximate reversal of the sequence in which the wastes were placed in the quarry. The general operating plan consisted of using a backhoe on the working bench excavating waste from a working face below the backhoe. Spotters, located a safe distance from the working face, assisted the backhoe operator in identifying items to be excavated and warned the operator of any materials requiring special handling. The spotters maintained two-way radio contact with the backhoe operator.

The excavated waste was placed in a sort pile, the lay down area, or directly into containers, depending upon the type of waste found. After the large materials and selected hazardous materials were removed from the sort pile, the remaining debris was put through a 6-in mesh screen to separate the material into soil (6-in minus) and debris. Most of the materials were sorted using equipment; however, some limited manual operations, such as rigging, were occasionally required. The waste was then loaded onto separate roll-off containers, or, after January 1995, Terex trucks for transport to the TSA.

Some wastes received specialized handling because of safety or regulatory issues. These wastes were generally placed in a laydown area or placed directly into a roll-off container. These wastes included transformers, cylinders, drums, and equipment, and required field sampling prior to transport to the TSA. Materials requiring additional sizing were also transported to the laydown area and sized. Except when specified to the contrary to prevent spread of contamination, most large waste (equipment, steel, concrete) had all gross mud and debris hosed off prior to placement in the truck. This was done to reduce the amount of particulates that could become airborn at the TSA during placement and storage of the wastes.

All waste capable of fitting into roll-off containers or onto trucks was transported in these containers with wind-tight covers. Wastes too large for the roll-off containers were tightly covered/wrapped, placed in secondary containment, and transported on a flat-bed truck or by other approved methods. Directly loaded and tarped Terex trucks were scanned and had removable contamination removed prior to leaving the quarry. Transport was over the dedicated

haul road to special dump stations in the TSA. Similar scanning and decontamination was performed at the TSA before trucks could return to the quarry via the haul road.

Dust and other emissions were controlled at the TSA, the quarry, and along the haul road, and all facilities equipment and roadways were maintained.

2.2 Quarry Bulk Waste Areas of Noncompliance

There were no areas of non-compliance relating to the *Record of Decision for the Management of Bulk Wastes at the Weldon Spring Quarry* (Ref. 1). As detailed in Table 2-1, four changes to the remedial action were classified as Non-Significant per U.S. Environmental Protection Agency (EPA) guidance. Notifications for the first three Non-Significant Changes were made through transmittal letters. The final notification was made using a form developed by the WSSRAP for change notifications.

TABLE 2-1 Changes to the Bulk Waste ROD

CATEGORY OF CHANGE	DATE	DESCRIPTION OF CHANGE
Non-Significant	5/23/93	Wood materials from the quarry would be stored at the chemical plant wood storage area rather than at the TSA.
Non-Significant	5/27/94	Compliance with Rn-222 flux standards contained in 40 CFR 61 Subpart Q and 40 CFR 192.02(b) will not be met during operations at the quarry and TSA; they will be met when bulk wastes have been placed in controlled storage.
Non-Significant	10/14/94	Direct loading of trucks would replace roll-off box transfer system for transport of bulk wastes.
Non-Significant	9/29/95	A short distance of Missouri State Route 94 would be used to transport a limited quantity of soils from the Northeast Slope of the quarry to the haul road.

2.3 Chemical Plant Remedial Objectives

According to the *Chemical Plant ROD* (Ref. 2), the major components of the remedial action are:

- Dredge sludge from the raffinate pits, excavate sediment from Frog Pond and Ash Pond and three off-site lakes, and excavate soil from specific locations (including two former dump areas, locations adjacent to the chemical plant buildings on site, and 10 vicinity properties off site) using standard construction equipment and procedures.

- Remove material stored at the temporary facilities on site (including bulk waste excavated from the quarry, treatment residuals from the water treatment plants at the quarry and the chemical plant area, and building material from the chemical plant area) using standard construction equipment and procedures.

- Certain contaminated materials such as the raffinate pit sludges and portions of quarry soil will be treated on site by chemical stabilization/solidification (CSS). Treated and untreated materials will be disposed of on site in a facility designed and constructed specifically for the Weldon Spring site wastes.

- Continued evaluation of vitrification as a contingency treatment option (Ref. 2).

Initial remedial activities at the chemical plant site consisted of a series of Interim Response Actions (IRAs) authorized through the use of Engineering Evaluation/Cost Analysis (EE/CA) reports. Table 2-2 contains a list of WSSRAP IRAs. Electrical transformers, electrical poles and lines, and overhead piping and asbestos were removed as IRAs as an immediate threat to workers or the environment. An isolation dike was built to divert runoff around the contaminated Ash Pond area to reduce the concentration of contaminants going off site in surface water. The Debris Consolidation IRA involved detailed characterization of on-site debris, separation of radiological and nonradiological debris, and transport of the materials to designated staging areas for interim storage. A separate IRA addressed handling, stabilizing, transporting, and disposing of the hazardous and nonhazardous chemicals at the site; this IRA

will remain open until all chemicals stored at the on-site *Resource Conservation Recovery Act* (RCRA) storage facility are disposed of.

Two major activities addressed by IRAs were treatment of water and dismantlement of the chemical plant buildings. Separate EE/CAs were prepared for the site and quarry water treatment plants. Water was treated at both sites to remove chemical and radiological contaminants, tested prior to batch discharge, and released. As of May 20, 1996, 128 million gallons of water meeting National Pollutant Discharge Elimination System (NPDES) discharge criteria have been treated and released.

Another on-site activity was the dismantlement of the chemical plant buildings through four individual IRAs. Each of the actions involved

- Manual removal of radioactive contamination from surfaces (e.g., by aggressively vacuuming/wiping equipment exteriors and building interiors/exteriors).

- Removal of all PCB-contaminated material, with transport of all nonradiologically PCB-contaminated material to an approved commercial treatment/disposal facility (radiologically contaminated PCB wastes were shipped to the Oak Ridge *Toxic Substance Control Act* (TSCA) incinerator in 1996).

- Isolation of asbestos containing material with storage on site pending final disposal in the on-site cell.

- Follow-on decontamination of structural surfaces, as appropriate, to remove loose radioactive contamination.

- Dismantlement of structures, with further decontamination of previously inaccessible surfaces.

TABLE 2-2 WSSRAP Interim Response Actions

NUMBER	DESCRIPTION	STATUS
1	Electrical Transformer Removal	Complete
2	Ash Pond Diversion Dike	Complete
3	MSA (Moved to IRA 15)	Cancelled
4	Army Property 7	Complete
5	Busch Wildlife Areas 3,4,5,8	Cancelled
6	Overhead Piping/Asbestos Removal	Complete
7	Containerized Chemicals	Complete
8	Electrical Pole/Overhead Line Removal	Complete
9	Consolidate Loose Yard Debris	Complete
10	Building 409 Dismantlement	Complete
11	Building 401 Dismantlement	Complete
12	Construct a dike on SE Drainage	Cancelled
13	Army Reserve Properties 1,2,3,7	Cancelled
14	Non-Process Building Dismantlement(Moved to IRA 15-19)	Cancelled
15	Non-Process Building Dismantlement	Complete
16	Non-Process Building Dismantlement(Moved to IRA-18)	Cancelled
17	Non-Process Building Dismantlement (Moved to IRA 18)	Cancelled
18	Process Building Dismantlement	Complete
19	Decontamination Facility	Cancelled
20	Site Water Treatment Plant	On-going
21	Quarry Water Treatment Plant	On-going
22	Quarry Construction Staging Area (Incorp. into BW ROD)	Cancelled
23	Southeast Drainage Soil Removal	On-going

- Placement of material in a controlled area for temporary storage.

- Salvage or transport off-site of certain nonradioactively contaminated material for treatment/disposal at an approved facility, as appropriate.

Two IRAs addressed off-site activities: IRA-4 for Vicinity Property 7, included cleanup of approximately 1.5 yd^3 of radiologically contaminated soils in 1988. The Southeast Drainage EE/CA, which addresses hot-spot cleanup in a drainage way leaving the chemical plant site, is currently being written. The preliminary schedule is for remediation to begin by early CY 1997.

Activities addressing the requirements of the *Chemical Plant ROD* (Ref. 2) include construction of a chemical stabilization/solidification (CSS) pilot plant to determine the viability of the technology and operating parameters for stabilizing/solidifying raffinate pit sludges. The CSS process will produce a grout like product by mixing sludges with fly ash and cement binder. Based on the results of the pilot plant, full scale dredging of the raffinate sludge and stabilization/solidification is scheduled to begin in 1999. In conjunction with the pilot facility, test pads were constructed to evaluate the effectiveness of the CSS process, analyze the leachate, and evaluate sludge transport and placement techniques.

Waste management activities associated with the *Chemical Plant ROD* (Ref. 2) that are ongoing at the time of this report include removal of the chemical plant building foundations, underground utilities, and associated contaminated soils. An estimated quarter-million cu yd of this material will be excavated and placed in interim storage facilities designated for this purpose. Drainage control structures and sedimentation basins have been constructed to minimize off-site migration of sediments and contaminants. In addition, the off-site Vicinity Property 9 on the Busch Wild Life Area was remediated to meet ROD requirements.

Several other activities are underway that will support construction of the disposal cell and disposal facility construction. The site of a 170-acre borrow area that will provide uncontaminated soils for use as back fill has been cleared and grubbed and erosion control measures and support facilities have been constructed. A realignment of Missouri State Route 94 with an overpass is part of the dedicated 1.5 mi haul road to be used for transporting borrow material without interfering with local traffic. An 18 acre area at the northern portion of the

chemical plant has been remediated and is being graded for use as construction material staging area (CMSA) for storage of building materials.

The primary focus of the WSSRAP project since the *Chemical Plant ROD* (Ref. 2) is the construction of the on-site disposal cell. Design of this facility is nearing completion, and construction is scheduled to start in the first quarter of CY 1997. With a 1.1 million cu yd capacity, the cell, including appurtenant dikes, perimeter road, and buffer zone, will cover 62 acres. The cell will provide long-term isolation of contaminated materials - quarry bulk waste, raffinate pit soils, sludges, slag, metals, building debris, and radiologically/chemically contaminated materials from the chemical plant and vicinity properties. Up to 60,000 yd^3 of contaminated waste from the adjacent Army Ordnance Works Remediation Project Reserve Area will also be placed in the disposal cell.

Table 2-3 lists the requirements described in the major components of the remedy as described in the *Record of Decision for Remedial Action at the Chemical Plant Area of the Weldon Spring Site* (Ref. 2).

The WSSRAP will also continue to monitor the environment, as required under DOE Order 5400.1, *General Environmental Protection*. An *Environmental Monitoring Plan* and a site environmental report addressing appropriate contaminants and media are prepared annually until the project is completed.

TABLE 2-3 Chemical Plant ROD Requirements

REQUIREMENT	ACTIVITY	WP NOTICE TO PROCEED	WP CLOSEOUT
Dredge Sludge from Raffinate Pits	WP-465 Raffinate Pits Sludge Dredging System	6/97	10/28/99 (SC Complete)
Excavate Sediment from Frog Pond	WP-437 Disposal Cell Construction and Cell Operations	3/3/97	3/30/02

TABLE 2-3 Chemical Plant ROD Requirements (Continued)

REQUIREMENT	ACTIVITY	WP NOTICE TO PROCEED	WP CLOSEOUT
Excavate Sediment from Ash Pond	WP-437 Disposal Cell Construction and Cell Operations	3/3/97	3/30/02
Excavate Sediment from three [Busch] Lakes	WX-613 Busch Lakes	4/19/97	7/14/00
Excavate Soil from 2 Former Dump Areas	WP-437 Disposal Cell Construction and Cell Operations	3/3/97	3/30/02
Excavate Soil from Locations Adjacent to Chemical Plant Buildings	WP-420 Foundations and Contaminated Soils Removal	10/26/95	10/9/97
Excavate Soil from 10 Vicinity Properties	WP-461 MDOC #9 Remediation WP-457 Army Prop 1,2,&3 and MDOC Prop 3,4,5 Remediation	12/11/95 7/22/97	6/24/96 4/8/98
Remove Material Stored at the Temporary Facilities on site	WP-437 Disposal Cell Construction and Cell Operations	3/3/97	3/30/02
Treat Contaminated Material by CSS	WP-460 CSS Operations and Maintenance Services	6/26/98	1/10/00
Design and Construct a Disposal Facility for site Wastes	WP-437 Disposal Cell Construction and Cell Operations	3/3/97	3/30/02
Continue to Evaluate Vitrification	Closed after completion of Conceptual Design		

2.4 Chemical Plant Areas of Noncompliance

There are no areas of noncompliance within the chemical plant area. Two changes to the *Record of Decision for Remedial Action at the Chemical Plant Area of the Weldon Spring Site* are listed in Table 2-4. The first change was a Non-significant change extending the free-liquids waiver for the CSS grout that was to fill voids in dismantlement debris to all the CSS grout placed in the disposal cell. This change will allow the optimum use of cell space and still be protective of human health and the environment. The U.S. Environmental Protection Agency (EPA) and Missouri Department of Natural Resources (MDNR) concurred with these changes July 11, 1995.

A significant change allowed the acceptance of up to 60,000 yd^3 of waste from the Army Ordnance Works National Priorities List (NPL) site adjacent to the chemical plant site. The EPA, MDNR, and other stakeholders have endorsed this disposal option contingent upon the Army's certification that their waste meets waste acceptance criteria established for the U.S. Department of Energy (DOE) disposal facility.

TABLE 2-4 Changes to Chemical Plant ROD

CATEGORY OF CHANGE	DATE	DESCRIPTION OF CHANGE
Non-Significant	7/11/95	All grout placed in the disposal cell will be waived from meeting free liquids requirements if it meets other criteria.
Significant	12/1/95	Up to 60,000 yd^3 of waste will be accepted from the adjacent Army NPL site if it meets land disposal and site waste acceptance criteria.

3 RECOMMENDATIONS

The remedial activities prescribed in the *Record of Decision for the Management of the Bulk Wastes at the Weldon Spring Quarry* (Ref. 1) have essentially been completed. The bulk waste is stored at the engineered storage area on the site and will be disposed under the provisions of the *Chemical Plant ROD* (Ref. 2).

The remedial alternative chosen in the *Record of Decision for the Remedial Action at the Chemical Plant Area of the Weldon Spring Site* (Ref. 2) - dredging the raffinate pit sludge, excavating contaminated soils, removing materials from on-site storage areas, treating certain portions of the waste with chemical solidification/stabilization (CSS), and placing the materials in an on-site disposal cell remains protective of human health and the environment. It also complies with all Applicable and/or Relevant and Appropriate Requirements (ARARs) not waived in the ROD, is effective in the short and long term, reduces contaminant mobility, is implementable, and is the most cost effective of the alternatives evaluated during the Feasibility Study/Record of Decision (FS/ROD) process. This remains the best alternative for Weldon Spring Site Remedial Action Project (WSSRAP) wastes.

The WSSRAP should continue execution of the remedial activities as prescribed in the *Record of Decision for Remedial Action at the Chemical Plant Area of the Weldon Spring Site* (Ref. 2). Priorities should continue to include remediation of off-site properties; prevention of contaminant migration through isolation dikes, retention ponds, on-site storage facilities, and on-site water treatment plants; and waste isolation through construction of CSS treatment plant and the on-site disposal facility. The Groundwater and Quarry Residuals RODs should be completed as scheduled.

4 NEXT FIVE-YEAR REVIEW

The next five-year review will be conducted by June 29, 2001.

5 REFERENCES

1. Argonne National Laboratory. *Record of Decision for the Management of the Bulk Wastes at the Weldon Spring Quarry*, Rev. 0. DOE/OR/21548-317. St. Charles, MO. September 1990.

2. U.S. Department of Energy. *Record of Decision for Remedial Action at the Chemical Plant Area of the Weldon Spring Site*. DOE/OR/21548-376. Oak Ridge Field Office. St. Charles, MO. September 1993.