U.S. Department of Energy

Portsmouth/Paducah Project Office

Paducah Project Updates

Prepared for the PGDP Citizens Advisory Board

July 2008

EM Environmental Management

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Paducah Project Update

Burial Grounds Operable Unit

(July 2008)

Project Scope

The scope for the Burial Grounds Operable Unit (BGOU) includes a Remedial Investigation (RI), Feasibility Study (FS), baseline risk assessment, evaluation of remedial alternatives, remedy selection, and implementation of actions, as necessary, for protection of human health and the environment.

The material in the burial grounds includes hazardous radioactive and pyrophoric wastes.

For a list of the burial grounds included in the unit, see the map on the reverse side.

A sample boring is taken during the Burial Grounds Operable Unit Remedial Investigation.

Recent Accomplishments

- RI sample borings completed
- RI/FS Work Planimplementation complete

Background:

An RI/FS Scoping Document and Work Plan have been developed utilizing information collected on and around PGDP over the course of the last 10 years. The BGOU includes Solid Waste Management Units (SWMUs) 2, 3, 4, 5, 6, 7, 30, and 145. Sample borings drilled for the RI/FS Work Plan are complete.

Upcoming Work

Work planned in next 60 days:

- Submit D1 RI Report to Kentucky and EPA on 7/25/08
- Continue scoping for FS

Documents Scheduled (D1 versions)

RI/FS Work Plan → Remedial Investigation → RI Report (Jul '08) → Feasibility Study (Feb '09) → Proposed Plan (Sep '09) → Record of Decision (2010) → Remedial Action → Remedial Action Completion Report (Sep '19)

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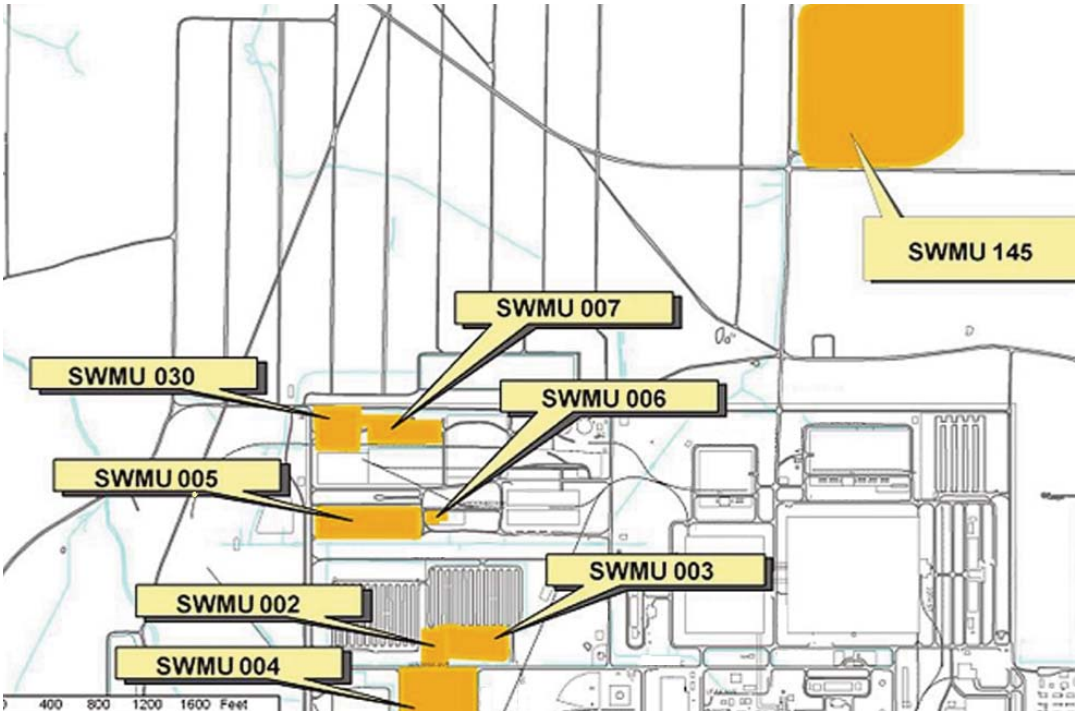
PRS: Tracey Duncan/Karen Holland
Kentucky: Ed Winner/Brian Begley
U.S. EPA: Turpin Ballard

Next Document:
D1 RI Report for the BGOU due July 25, 2008.

The C-404 Burial Ground (SWMU 3) as it appears today.



This map shows the SWMUs included in the BGOU.

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Paducah Project Update

Legacy Waste Disposition

(July 2008)

Project Scope

DOE is responsible for dispositioning and/or recycling legacy wastes (wastes generated at the PGDP prior to establishment of USEC on July 1, 1993); wastes generated from ongoing DOE projects; and a limited amount of waste generated by USEC.

After characterization to assure selection of the appropriate disposition method, nonhazardous and nonradioactive wastes are disposed of in the DOE Solid Waste Contained Landfill. *(See C-746-U Landfill fact sheet.)*

Hazardous and radioactive wastes are treated, if necessary, and shipped off-site to approved DOE or commercial disposal facilities.

Wastewater (collected from sumps in diked areas in DOE waste storage facilities at PGDP) is treated and discharged in accordance with the Kentucky Pollutant Discharge Elimination System permit.

Nearly two-thirds of the about 572,000 ft^3 of legacy waste once stored at the site has been removed. The project is scheduled to be completed 9/30/09.

Above, the C-746-B storage facility is shown before and after recent shipments. Part of the disposal effort included 45 shipments of PCB-contaminated debris.

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U.S. EPA: Turpin Ballard

Next Document:

Site Treatment Plan Quarterly Report, July 31, 2008

Milestones

- Completion of non-transuranic legacy wastes by 9/30/09 (Site Treatment Plan milestone).

Recent Accomplishments

- Sampled 3 m^3 of cylinder wash sludge that may have reclamation potential to support Expression of Interest.

Above, waste is loaded onto a truck for off-site disposal.

Upcoming work

Work planned in next 60 days:

- Treat and discharge wastewater
- Continue disposal of legacy waste
- Will issue Expression of Interest to potential vendors for reuse of cylinder wash sludge

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Surface Water Operable Unit

(July 2008)

Project Scope

The Surface Water Operable Unit (On-Site) Project includes a site investigation to identify contamination zones posing unacceptable risks in ditches and outfalls, including Sections 3, 4, and 5 of the North-South Diversion Ditch.

The site investigation scope also includes an evaluation of whether additional sediment control measures are needed, as well as actions for potential legacy releases associated with the storm sewer system.

Project documents that have been submitted to regulators include a Site Investigation and Baseline Risk Assessment Report and a Non-Time-Critical Removal Notification. These will be followed by an Engineering Evaluation/Cost Analysis, Action Memorandum, and Removal Action Work Plan.

A Surface Water (Off-Site) action will follow. This action will focus on creeks and contaminant migration from internal ditches and will include an ecological risk assessment.

Outfall 15 is one of the areas where DOE is evaluating an action to remove contamination "hot spots."

Upcoming work

Work planned in next 60 days:

- Issue the D2 EE/CA
- Continue development of Removal Action Work Plan

FFA Milestones

The regulatory milestone for the Action Memorandum is October 2008; the Removal Action Work Plan milestone is December 2008.

Key Milestones Accomplished

Issued the D1 Engineering Evaluation/Cost Analysis issued to Kentucky and EPA on 2/10/08
Site Investigation and Baseline Risk Assessment approved February 2008

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Contacts:
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U.S. EPA: Jennifer Tufts

Next Document:

D2 EE/CA 8/02/08

Included in the scope of the "hot spot" evaluation are portions of the North-South Diversion Ditch located outside the plant security fence. Portions inside the fence previously were remediated.

Documents Scheduled (D1 versions)

SI Work Plan → Site Investigation → SI/RA Report → EE/CA → Action Memo (Sept '08) → Removal Action Work Plan (Jan '09) → Removal Action (June '09) → Removal Action Completion Report (August '10)

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Groundwater Operable Unit

(July 2008)

Project Scope

This project addresses environmental remediation of groundwater contamination on a sitewide basis at PGDP.

The main contaminants of concern are trichloroethene (TCE) and technetium-99 (Tc-99). The contaminants are present in three "plumes": Northeast, Northwest, and Southwest.

Remedial/removal actions will be designed and implemented after completion and signing of Records of Decision (RODs).

Specific projects include:

- **Northeast and Northwest Plumes Pump and Treat -** Treatment systems that extract contaminated groundwater from the Northwest and Northeast Plumes and return it to beneficial use
- **Southwest Plume -** A decision on addressing contamination for the third plume is being developed *(see reverse side for more detail)*
- **C-400 Interim Remedial Action -** In 2009, operation begins of a system that will significantly reduce the amount of TCE under the surface at the major source of off-site contamination
- **Dissolved-Phase Plumes Remedy -** DOE has begun the process of determining the best long-term solution for off-site contamination. This includes a study TCE degradation in the groundwater.

Overhead power lines are run to the area where a treatment system is to begin extracting TCE from beneath the surface and significantly reduce the site's largest source of off-site contamination.

Upcoming Work

Work planned in next 60 days:

- Obtain regulatory approval of the Remedial Design Report (submitted 7/9/08)
- Obtain regulatory approval of the D2 Remedial Action Work Plan (submitted 6/20/08)
- Hold scoping meetings with EPA and KY to discuss Southwest Plume Focused Feasibility Study
- Continue TCE Degradation Study

Recent Accomplishments

- D2 C-400 Source Reduction design submitted February 2008
- D2 Land Use Control Implementation Plan submitted February 2008

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Contacts:
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PRS: Tracey Duncan/Mike Clark/Bryan Clayton
Kentucky: Edward Winner
U.S. EPA: Turpin Ballard

Next Document:
Final approval of the Remedial Design Report and the Remedial Action Work Plan

Power to the C-400 treatment system will be supplied by both overhead and underground transmission lines.

C-400 Documents Scheduled (D1 versions)

Remedial Investigation → GWOU Feasibility Study → Treatability Study → Proposed Plan → Record of Decision → Remedial Design Work Plan → ■ Remedial Design Report ■ LUCIP ■ Remedial Action Work Plan (Mar '08) → Remedial Action (2008-2009) → Remedial Action Completion Report (Oct '10)

Southwest Plume Documents Scheduled

Site Investigation → Feasibility Study (Dec '08) → Proposed Plan → Record of Decision (Feb '10) → Remedial Design Work Plan → ■ Remedial Design Report ■ LUCIP ■ Remedial Action Work Plan → Remedial Action → Remedial Action Completion Report (2014)

Dissolved-Phase Plume Documents Scheduled

Previous Remedial Investigation → TCE Degradation Analysis → Natural Attenuation Report → Treatability Study → Proposed Plan → Record of Decision (2011) → Remedial Action Work Plan → Remedial Action Completion Report

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Paducah Project Update

D&D Operable Unit

(July 2008)

Project Scope

The scope of this project includes decontamination and decommissioning of inactive PGDP facilities that have no reuse potential. To date, 21 facilities have been designated for removal and 12 of those have been removed.

Major projects within the scope of the D&D project include the following:

- Infrastructure (piping, equipment, and material) removal and demolition of the C-410/C-411/C-420 Feed Plant Complex (ongoing)
- Infrastructure removal and demolition of the C-340 Metals Plant (planned)
- Surveillance and maintenance of the C-340 Metals Reduction Facility (ongoing)
- Demolition of inactive facilities, including the C-746-A West End Smelter (complete); the C-342 Ammonia Facility (under way); and the C-611-M and N Sanitary Water Storage Tanks (planned for 2008)

Workers remove pipes leading to process equipment located inside C-342.

Current Status - West End Smelter Removal

The C-746-A West End Smelter was built as a storage facility in the early 1950s. Two furnaces later were added for smelting metals, including gold, nickel, and aluminum. The facility continued operation through the 1970s.

The structure was demolished in April 2008. Prior to demolition, loose material, debris, equipment, furnaces, and interior offices had to be removed.

New Documentation Process

Work is continuing on a proposed new process for comprehensive D&D Removal Action documentation. The proposed new process will streamline gaining regulatory approval prior to implementing D&D activities. The process will save time and money now spent on writing regulatory documents. Similar processes are used at other DOE sites. DOE, Kentucky, and EPA are meeting to discuss the proposal.

FFA Milestones

Regulatory approval of Removal Action Completion Reports (RACR) for Incinerator and West End Smelter, 2008; Generic EE/CA, 2/2/10.

Recent Accomplishments

- Removed C-410 HF Tank Farm
- Removed Hydrogen Holder Tank
- Removed C-603 Nitrogen Complex
- Removed C-402 Lime House
- Removed C-405 Incinerator
- Removed C-746-A West End Smelter
- Removed C-612 Clamshell

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Current Status - C-410 Complex D&D

The C-410 Feed Plant Complex consists of nine facilities covering nearly 200,000 ft^2. It was built in 1955 to convert reactor returns from other DOE facilities to uranium hexafluoride.

The facility, which is contaminated with various radionuclides, operated until 1977.

D&D work involves three phases that must be completed before structural demolition can begin. These phases overlap. The phases are as follows:

1. Removal of pipes, wiring, loose equipment, and debris - Work continues to dispose of loose material once stored inside the facility.

2. Asbestos abatement - More than five miles of asbestos insulation was used inside the complex. Removal work continues.

3. Removal of installed equipment and potentially hazardous chemical residue inside the old process equipment - This phase begins in the second half of 2008. Building demolition is scheduled to begin by 2012.

Upcoming Removals

The C-342 Ammonia Dissociator Complex (two facilities) now is scheduled for demolition in late July or early August 2008. Loose material removal in the complex has been completed and asbestos abatement is continuing.

The C-611 M&N Water Towers located in the West Kentucky Wildlife Management Area will be demolished later in 2008. A contract for a demolitions company to topple the towers is pending. Plans call for the towers to be removed before hunting season starts in the WKWMA.

Contacts:
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U.S. EPA: Turpin Ballard

Left, one of the C-611 Water Towers located in the West Kentucky Wildlife Management Area. A contract to demolish the towers is pending.

Below left, one of two 20,000-gallon tanks in the C-342 Ammonia Dissociator facility. The tanks will be removed, refurbished, and sent to the C-746-U Landfill for use as leachate storage tanks.

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DOE Material Storage Areas

(July 2008)

Project Scope

The 160 DMSAs are nonleased areas inside buildings, as well as outdoor areas. DOE accepted the return of the areas and the material and equipment they contained from USEC on December 31, 1996, to facilitate Nuclear Regulatory Commission certification of the plant.

At that time, most of the contents needed detailed inventory, characterization, and disposition.

Since then, DOE and its contractors have been documenting contents; resolving environmental concerns, such as draining and disposing of oils from old equipment; and segregating and disposing of wastes.

The DMSAs initially contained more than 800,000 ft^3 of material that needed characterization and about 600,000 ft^3 of material that needed dispositioning.

Drums of waste are loaded onto a pallet for shipment.

A worker labels asbestos samples.

Upcoming Work

Work planned in next 60 days:

- Continued characterization and packaging of DMSA materials in C-335, C-400, C-337, and C-310.
- Disposition remaining 19 of 42 process motors to NTS.

Milestones

Complete characterization of Priority "C" DMSAs by 9/30/09

Key Accomplishments

- Completed characterization of Priority "A" DMSAs by 9/30/2004
- Completed characterization of Priority "B" DMSAs by 9/30/2006

(NOTE: DMSAs were separated into three categories for characterization and disposition. The "A" areas were those with the greatest risk, followed by "B" and "C," depending on potential for risks to human health and the environment.)

Characterization -- 93 percent complete

Disposition -- 88 percent complete

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Current Status

- Characterization is 93% finished; completion estimated in December 2008.
- Disposition is 88% finished; completion estimated in March 2009.

The lid of a waste container is rigged for removal so that the contents can be inventoried prior to disposition.

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Soils Operable Unit

(July 2008)

Project Scope

The short-term objectives of the Soils Operable Unit include evaluation of newly identified areas of possible contamination and the removal of three inactive facilities where soil contamination is present. These are the facilities:

- C-218 Firing Range
- C-403 Neutralization Pit
- C-410-B Sludge Lagoon

Planning for the removal of the facilities has begun and the first phase of sampling for the soil and rubble pile areas has been completed.

Long-term, the project includes a Remedial Investigation to identify any soils contaminated with PCBs or radioactivity. That will lead to a 2012 ROD and a Removal Action for contaminated soils above action levels. That action will be completed by 2016.

The C-403 Neutralization Pit is one of three inactive facilities with soil contamination included in the Soils Operable Unit.

Upcoming Work

Work planned in next 60 days:

- Issue D2 EE/CA for the removal of three inactive facilities with soil contamination
- Continue development of Action Memorandum for inactive facility removal
- Issue Site Evaluation Report for Phase I sampling of soil areas (7/18/08)
- Removal of five DOE rubble piles currently is being planned as a maintenance action to be implemented in Aug/Sept.

Recent Accomplishments

- Issued D1 Engineering Evaluation/Cost Analysis for the three inactive facilities on 3/24/08
- EPA and Kentucky approved Sampling and Analysis Plan (SAP) 1A for the soil piles
- Issued Rubble Piles SAP on 5/19/08
- D2 Addendum 1-B and 2 issued on 6/16/08

FFA Milestones

- 4th quarter 2011 – D1 Removal Decision Document
- 3rd quarter 2012 – D1 ROD
- September 30, 2015 – D1 Remedial Action Completion Report

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Contacts:
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Next Document:
D2 Soils Inactive Facilities Engineering Evaluation/Cost Analysis, July 27, 2008

Above, sampling one of the Soil Pile areas along Little Bayou Creek; above right, the C-410-B Sludge Pit; below right, the C-218 Firing Range.

Soils Removal Action Documents Scheduled (D1 versions)

Removal Notification (Feb 07) → EE/CA (Mar '08) → Action Memo (Oct '08) → Removal Action Work Plan (Feb '09) → Removal Action (June '09) → Removal Action Completion Report (June '10)

Soil/Rubble Areas Documents Scheduled (D1 versions)

Site Evaluation Reports (Jan '09) | EE/CA (Jun '09) | Action Memo (Nov '09) | Removal Action Work Plan (Nov '09) | Removal Action (2010) | Removal Action Completion Report (Feb '11)

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C-746-U Contained Landfill

(July 2008)

Project Scope

The C-746-U Contained Landfill and support facilities are located on 60 acres of DOE property near Ogden Landing Road, operating under a permit from the Kentucky Division of Waste Management.

Landfill disposal operations began in 1997. DOE uses the landfill for disposal of solid waste generated from its operations at the Paducah site.

Examples of wastes accepted include nonhazardous soil and debris from DOE projects, such as protective clothing worn by workers, paper, packaging, and landfill office wastes.

No material classified as hazardous waste or low-level radioactive waste is accepted.

The C-746-U Contained Landfill also receives non waste materials produced by USEC operations at the Paducah Gaseous Diffusion Plant. The materials are used by landfill operations for daily cover."

Recent Accomplishments

Continued accepting waste and debris from DOE and USEC operations; treated and discharged leachate; submitted minor permit modification to add leachate storage capacity.

The water level in one of the landfill's 31,000-gallon leachate storage tanks is measured.

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Waste Disposal Options Project

(July 2008)

Project Scope

DOE is evaluating waste management options for the disposal of wastes generated at PGDP from CERCLA response actions and PDGP D&D.

The intent of this evaluation will be to support a comprehensive sitewide decision for the disposal of hazardous,low-level radioactive, and mixed waste resulting from CERCLA response actions at PGDP and PDGP D&D.

Waste disposal action alternatives that will be evaluated in the RI/FS are expected to include off-site and on-site disposal and combinations of these alternatives.

The waste disposal options will be considered by following the RI/FS evaluation and decision documentation process required by CERCLA.

DOE has sought early public input in the evaluation process.

Background

An estimated 3.7 million yd^3 of waste will be generated during CERCLA response actions and D&D. In order to more effectively manage these wastes, a sitewide waste management strategy is being examined to determine a reliable protective solution for the disposal of those wastes.

The CERCLA RI/FS process will be used to identify and evaluate waste management alternatives.

By following the CERCLA decision and documentation process, documents prepared after the scoping document will include an RI/FS Work Plan, RI/FS Report, Proposed Plan, and Record of Decision.

Recent Accomplishments

- Issued D1 Scoping Document April 7, 2008

Contacts:
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U.S. EPA: Turpin Ballard

Upcoming work

Work planned in next 60 days:

- Continue meetings with KY and EPA to discuss the project
- Continued drafting RI/FS Work Plan
- Continue developing material for first planned planned public meeting

Next Document:
RI/FS Work Plan,
November 18, 2008

Documents Scheduled (D1 versions)

Scoping Document (Apr '08) → RI/FS Work Plan (Nov '08) → RI/FS Report (July '09) → Proposed Plan (Feb '10) → Record of Decision (Oct '10)

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