



# **U.S. Department of Energy Portsmouth/Paducah Project Office**

## **Paducah Project Updates**

**Prepared for the PGDP Citizens Advisory Board  
May 2008**



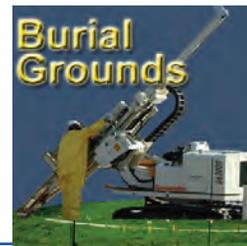
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# U.S. Department of Energy Portsmouth/Paducah Project Office Paducah Project Update Burial Grounds Operable Unit



(May 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.



The C-404 Burial Ground began as a holding pond, then became a low-level waste disposal area.

## KEY MILESTONES ACCOMPLISHED

- RI sample borings completed
- RI/FS Work Plan 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 RI Report to Kentucky and EPA

## Documents Scheduled (D1 versions)



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**Contacts:**

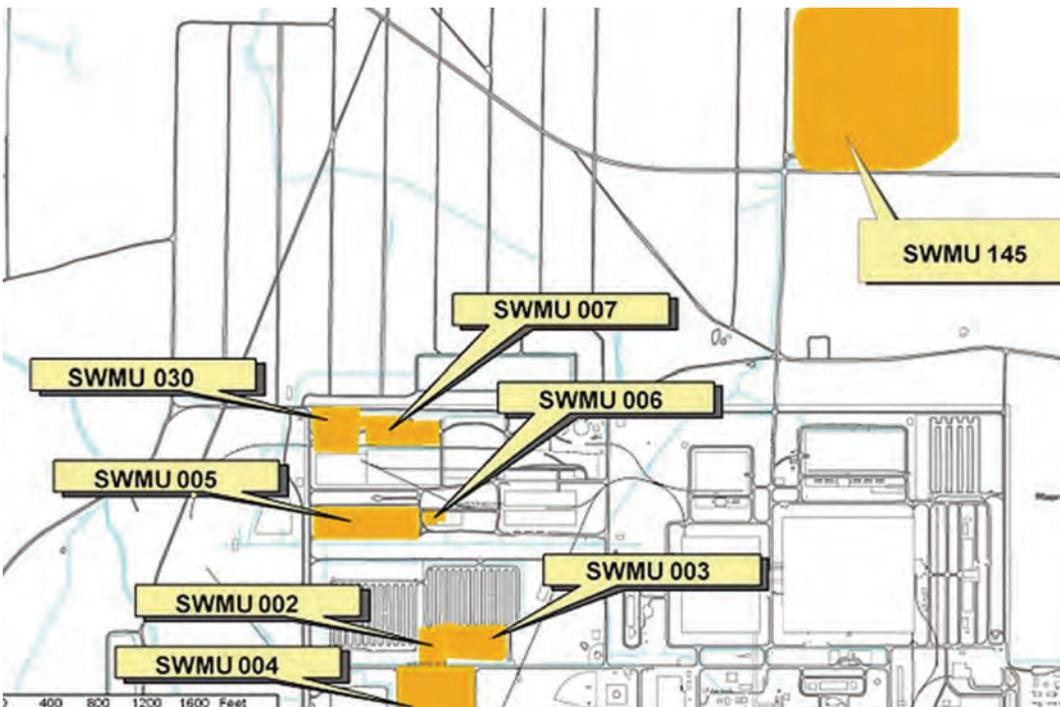
DOE: Jeff Snook  
PRS: Tracey Brindley/Karen Holland  
Kentucky: Ed Winner/Brian Begley  
U.S. EPA: Turpin Ballard

**Next Document:**

Remedial Investigation Report for the  
Burial Grounds Operable Unit, D1 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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# U.S. Department of Energy Portsmouth/Paducah Project Office Paducah Project Update Legacy Waste Disposition

(May 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<sup>3</sup> of legacy waste once stored at the site has been removed. The project is scheduled to be completed in late 2009.



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 removed.



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Kentucky: Ed Winner  
U.S. EPA: Turpin Ballard

**Next Document:**

Site Treatment Plan Quarterly Report,  
July 31, 2008

## FFA MILESTONES

- Wastes listed on Site Treatment Plan Tables 7.1, 7.2, 7.3, and 8 have been dispositioned with the exception of "cylinder wash sludge" that is being evaluated for reuse.

## RECENT

### ACCOMPLISHMENTS

- Completed disposition of STP Milestone wastes except for 3 m<sup>3</sup> of cylinder wash sludge that may have reuse potential.

## UPCOMING WORK

Work planned in next 60 days:

- Treat and discharge wastewater
- Continue disposal of legacy waste



Above, waste is loaded onto a truck for off-site disposal; right a container of the cylinder wash sludge that is being evaluated for reuse potential. The material contains U-235.

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# U.S. Department of Energy Portsmouth/Paducah Project Office Paducah Project Update Surface Water Operable Unit



(May 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.

Project deadlines are specified in the Federal Facility Agreement (FFA), which is an agreement among DOE, Kentucky, and the EPA that controls cleanup at Paducah.

## UPCOMING WORK

Work planned in next 60 days:

- Complete the D1 Action Memo

## FFA MILESTONES

The regulatory milestone for the Action Memorandum has been extended to September 24, 2008. The Removal Action Work Plan milestone is now January 2009.



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

## 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:**

DOE: David Dollins  
PRS: Tracey Brindley/Craig Jones/Jana White  
Kentucky: Ed Winner  
U.S. EPA: Jennifer Tufts

**Next Document:**

D2 EE/CA, June 12, 2008



**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)**

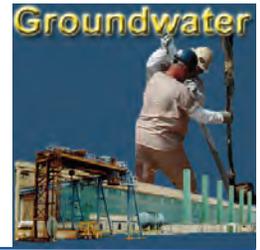


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# U.S. Department of Energy Portsmouth/Paducah Project Office Paducah Project Update Groundwater Operable Unit



(May 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 these:

- **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 late 2008, 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



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 comments on the D2 C-400 Design Report and Land Use Control Implementation Plan
- Submit D2 Work Plan for Kentucky and EPA review May 27, 2008
- Begin preparation of the Southwest Plume Focused Feasibility Study

## KEY MILESTONES ACCOMPLISHED

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



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**Contacts:**

DOE: David Dollins  
PRS: Mike Clark/Bryan Clayton  
Kentucky: Edward Winner  
U.S. EPA: Turpin Ballard

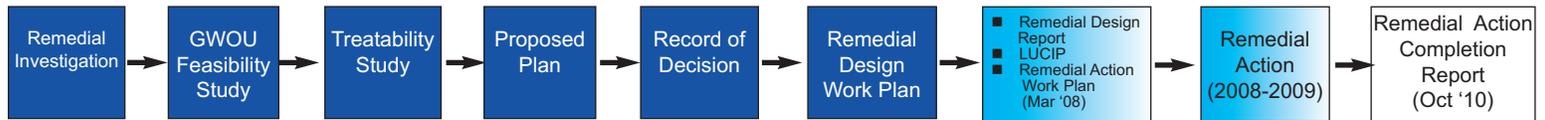
**Next Document:**

D2 Work Plan for the C-400 Source  
Reduction Action, May 27, 2008

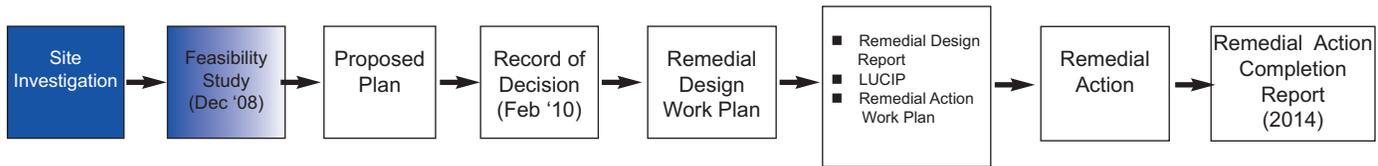


**Power to the C-400 treatment system will be supplied by both overhead and underground transmission lines.**

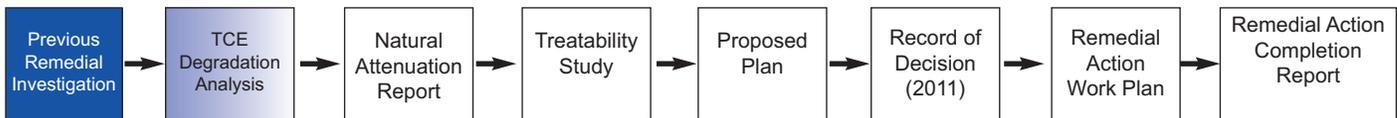
**C-400 Documents Scheduled (D1 versions)**



**Southwest Plume Documents Scheduled**



**Dissolved-Phase Plume Documents Scheduled**



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# U.S. Department of Energy Portsmouth/Paducah Project Office Paducah Project Update D&D Operable Unit



(May 2008)

## PROJECT SCOPE

The scope of this project includes decontamination and decommissioning of inactive PGDP facilities that have no reuse potential. To date, 20 facilities have been designated for removal and 10 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 (ongoing); the C-342 Ammonia Facility (planned for 2008); and the C-611-M and N Sanitary Water Storage Tanks (planned for 2009)



A worker sorts and segregates the contents of a drum stored inside the C-410 Complex.

## 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

Removal Action Completion Reports for Incinerator and West End Smelter, 2008; complete C-410/C-411/C-420 Feed Plant, C-340 Metals Plant, and inactive facilities demolition by September 30, 2017.

## KEY MILESTONES

### ACCOMPLISHED

- 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 West End Smelter



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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<sup>2</sup>. 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 is underway and will be completed in 2009.

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



**Left, workers remove the roof of the West End Smelter; below right, stanchions are installed to support a water line leading to a sprinkler system in an adjacent building; below left, the site after the smelter was demolished.**



**Contacts:**

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# U.S. Department of Energy Portsmouth/Paducah Project Office Paducah Project Update DOE Material Storage Areas



(May 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<sup>3</sup> of material that needed characterization and about 600,000 ft<sup>3</sup> of material that needed dispositioning.



Drums of waste are loaded onto a pallet for shipment.

## 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

## 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
- 60 DMSAs returned to use by USEC or for common use

(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.)



A worker labels asbestos samples.

Characterization -- 92 percent complete

Disposition -- 81 percent complete



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**Contacts:**

DOE: Jeff Snook  
PRS: John Samples  
Kentucky: Leo Williamson  
U.S. EPA: Turpin Ballard

**Next Document:**

Final Inventory Characterization  
Reports for DMSAs 334-02/06/07,  
May 26, 2008



**Waste material from a DMSA is loaded for shipment to a disposal facility.**

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# U.S. Department of Energy Portsmouth/Paducah Project Office Paducah Project Update Soils Operable Unit

(May 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 an 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:

- Gain approval of Engineering Evaluation/Cost Analysis for the three Inactive Facilities
- Soil Pile "I" Site Investigation Report, due to KY and EPA, June 5, 2008
- Issue the Rubble Pile Sampling and Analysis Plan for regulatory approval, May 17, 2008
- Obtain regulatory approval of SAP Addendum 1B (soil areas along Little Bayou Creek) and Addendum 2 (soil piles along Bayou Creek)
- Begin mobilizing for field work; date depends on regulatory approval

## RECENT ACCOMPLISHMENTS

- Issued the D1 Engineering Evaluation/Cost Analysis for the three Inactive Facilities on March 24, 2008
- EPA and Kentucky have approved Sampling and Analysis Plan 1A for the soil piles

## FFA MILESTONES

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



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**Contacts:**

DOE: David Dollins/Rick Bonczek  
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U.S. EPA: Turpin Ballard

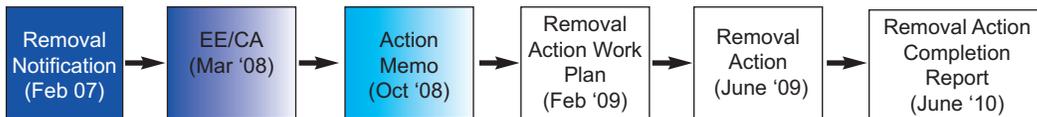
**Next Document:**

Soil Areas - Soil Pile "I" Site Investigation Report, June 5, 2008  
Inactive Facilities - D2 EE/CA, June 22, 2008



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

**Documents Scheduled (D1 versions)**



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# U.S. Department of Energy Portsmouth/Paducah Project Office Paducah Project Update C-746-U Contained Landfill

(May 2008)



## PROJECT SCOPE

The C-746-U operating 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 receives soil and debris produced by operations at the Paducah Gaseous Diffusion Plant.

## RECENT WORK

Continued accepting waste and debris from DOE and USEC operations; treated and discharged leachate.



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

### Contacts:

DOE: Jeff Snook  
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Paul Gagnon  
Kentucky: Todd Hendricks  
U.S. EPA: Turpin Ballard



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# U.S. Department of Energy Portsmouth/Paducah Project Office Paducah Project Update Waste Disposal Options Evaluation

(May 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 Remedial Investigation/Feasibility Study (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<sup>3</sup> of waste will be generated during CERCLA response actions. 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.

## KEY MILESTONES ACCOMPLISHED

- Issued D1 Scoping Document April 7, 2008

## UPCOMING WORK

Work planned in next 60 days:

- Conduct a series of conference calls to prepare for a Scoping Meeting with Kentucky and EPA
- Conduct the Scoping Meeting in mid-June

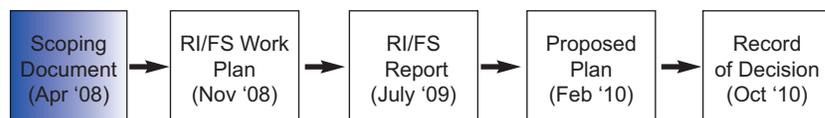
### Contacts:

DOE: Jeff Snook  
PRS: Fraser Johnstone  
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U.S. EPA: Turpin Ballard

### Next Document:

RI/FS Work Plan,  
November 18, 2008

## Documents Scheduled (D1 versions)



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