



PADUCAH GASEOUS DIFFUSION PLANT CITIZENS ADVISORY BOARD

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Paducah Gaseous Diffusion Plant Citizens Advisory Board Meeting Minutes November 17, 2005

The Citizens Advisory Board (CAB) met at the CAB office in Paducah, Kentucky, November 17, 2005, at 6 p.m.

Board members present: John Anderson, Allen Burnett, Chad Kerley, Bobby Lee, Linda Long, Janet Miller, John Russell and Jim Smart

Board members absent: Barry Eadens, Shirley Lanier and Rhonda McCorry

Ex Officio members and related regulatory agency employees present: Jon Maybriar, Kentucky Division of Waste Management; Doug Dawson and Tim Kreher, Kentucky Department Fish and Wildlife Resources; and David Williams, Environmental Protection Agency

Deputy Designated Federal Official present: David Dollins

DOE Federal Coordinator present: David Dollins

DOE-related employees present: Jeannie Brandstetter, Greg Cook, Kim Crenshaw, Bruce Ford, Bruce Gardner, Bob Giroir, Steve Hampson, Lester Hurst, Steve Kay, Reinhard Knerr, Steve Meiners, Joe Tarantino, Elizabeth Trawick, and Dick Veazey

Six members of the public attended the meeting.

Agenda

Kay asked for proposed modifications to the agenda. Kerley said the Site Management Plan (SMP) update will be postponed and the Retreat discussion will follow the task force presentations. **The Board adopted the agenda by consensus.**

Minutes

Kay asked for proposed modifications to the draft October minutes. There were none. **The Board approved the minutes as submitted by consensus.**

Deputy Designated Federal Official *Attachment 1*

In the absence of William Murphie, Mr. Dollins supplied the project updates to the Board. Questions and answers (paraphrased) appear below.

Question/comment	Answer
Mr. Burnett – Will the remediation contract affect the Envirocare scrap removal contract?	Mr. Hurst – The contract Bechtel Jacobs Company LLC (BJC) holds with Envirocare is funded through January 29 and will continue if BJC's contract is extended. The new remediation contractor could take over or terminate the contract with Envirocare.
Mr. Anderson - How many cylinders are being reviewed for the presence of phosgene?	Mr. Dollins - 1,825 were alleged for potential presence of phosgene. A record search of all but 31 cylinders have been conducted and none were found to contain phosgene.
Dr. Russell – The language in the Senate Appropriation Bill called for the Government Accountability Office to conduct an independent review.	Mr. Dollins said he could not speak for the GAO or what that agency is doing.
Mr. Kerley – Is DOE is still waiting for a permit for the leachate treatment system?	Mr. Giroir - the system has been received and all equipment is in place to begin on issuance of the Kentucky Department of Waste Management (KDWM) permit. BJC is going through the comment response resolution with the regulators.
Mr. Kerley – What is the status of the remediation contract award?	Mr. Dollins – There is no date set for the award.

Ex-Officio Comments

Williams said the Environmental Protection Agency (EPA) Environmental Services Division obtained samples on the Northwest Plume and on the Northeast Plume to see whether there

has been vaporization of the TCE into the soil. He said the results indicated that the clays are so tight they did not get any gas at five to six feet.

Maybiar said KDWM received the SMP the previous day for review and they will issue their comments to DOE. He said their comments are also available to the Citizens Advisory Board (CAB).

Task Forces/Presentations

Kentucky Research Consortium for Energy and the Environment Presentation

Attachment 2

Hampson presented an update on the Kentucky Research Consortium for Energy and the Environment (KRCEE) projects to the Board. Questions and Mr. Hampson’s answers (paraphrased) appear below.

Question/comment	Answer
Mr. Maybriar – What is the completion date on the ecological project?	Mr. Hampson – We have one year to finish. This presentation is an independent study of what has been done.
Mr. Maybriar – the Kentucky Department of Fish and Wildlife Resources (KDFWR) has been utilized and it seems logical that a state risk assessment group would be utilized to make sure risk assessment protocols are being followed for the state of Kentucky.	Answer – KDFWR is summarizing work that has already been done. Hampson said borings instead of trenches were used to encompass vertical extent of Holocene-aged material at the site because of the contamination potential.
Mr. Williams – What is the depth of a trench when used to detect Holocene displacement?	Answer - Borings instead of trenches were used to encompass vertical extent of Holocene-aged material at the site because of the contamination potential. The trench is usually 10-20 feet deep and it may be in KRCEE’s final report for DOE to figure a way to use the trenches.
Mr. Williams – A trench will be dug when additional portions of the landfill are constructed.	
Dr. Russell – A substantial amount of excavation was done when the portion of the C-746-U Landfill that is currently active – was contamination found at that time?	Answer – I don’t know the details of that work.

<p>Dr. Russell - An Environmental Impact Assessment was done when the landfill was proposed and a landfill could not be placed within 200 feet of Holocene displacement and this issue was not addressed at that time. He said if there was contamination that prevents a trench; it should have been observed when the excavation for the current landfill was taking place.</p>	<p>Answer - The health and safety requirements prevented the trench and a trench may not have been necessary for what the KRCEE was trying to determine.</p> <p>Mr. Dollins – The 30-foot depth used was enough to indicate Holocene displacement for these studies. The seismic investigation indicated age dating for Holocene faulting is found at 20-22 feet. (Mr. Hampson agreed)</p>
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Waste Disposition Task Force

Russell said the task force began discussing the end condition of the site.

Water Quality Task Force

Attachment 3

Smart said the Water Quality task force discussed the desirable end state quality for groundwater such as clean water standards, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) risk range and natural attenuation versus remedial efforts. He said institutional controls for groundwater was discussed including a no fault clause for new industrial tenants, continued water supply for the Water Policy box, and DOE acquisition of property rights of residents within the water policy box. Williams said CERCLA controls all federal transfers of property and holds the federal agency responsible forever for any contamination that is found associated with them. He said there is a national policy that all property transferred in every Record of Decision or action must go through a consistency review by EPA Headquarters to ensure controls will be in place forever. All property records will include a clause for future buyers or users notification of the contaminant levels that are present there and that all of these records are maintained in deeds at the courthouse.

Smart concluded with a 2005 annual summary of all topics discussed by the Water Quality task force.

Lee said the leachate treatment system would affect the Kentucky Pollutant Discharge Elimination System (KPDES) permit. She asked if the Division of Water has made a commitment on a date for the updated permit. Maybriar said the Division of Water makes the decision whether the permit requires a significant change in outfall sources and if the permit would require a modification.

Public Comments

Jurka said she does not see the need for buy-outs within the community. She said residents in the Water Policy Box have provided Active Citizens for Truth (ACT) with sampling results from DOE. The data does not show that the wells are contaminated; the test results meet water quality standards and they have for the last ten years. She said there is no foundation

for discussion of property buyouts for the residents that are located in the water policy box other than there are plumes in the area. Jurka said she believes people in the community look at buyouts as a way of moving along some else's business interest to acquire the property. Dollins said 10 years ago when the residents were put on public water, tenant buyouts were not discussed. The concern was that large groundwater contamination plumes were moving north and northeast of the plant. DOE was to provide clean and safe water to people impacted. He said there were no motives, just concern that plumes were headed for residents' wells. He said a separate issue has arisen about property evaluation. Jurka asked how providing water to residents has evolved into land buyouts. She said ACT has not seen data to support land buyouts. Dollins said there are questions that the technology may be practical to clean up the source areas only and impractical to clean up the whole wide spread plume. He said the buyouts could occur if they find they are unable to fix the problem. He said he cannot speak for other parties and the decision will be a challenge. Cook said the legislation to authorize DOE to conduct any study for potential property purchase has not been signed yet. He recommended that Jurka review the Site Environmental Report for monitoring well data that indicates evidence of the groundwater plume. He said it does not show the residential well data because of privacy act concerns. Williams said CERCLA law states that property around the plume has to be cleaned up no matter who owns the property.

Jurka said Williams had stated that during the vapor investigation the clay soil prevented vaporization. She suggested taking samples at other locations where there are different types of soils. Williams said the samples were taken at the highest concentrations at the northwest and northeast plumes. He said there were legitimate samples that did not indicate vaporization of gas. He said he understood Jurka's concern and there is a possibility of another phase of sampling.

Administrative Issues

Review of Retreat

Kerley said notes from the retreat were included in the packet and the realignment of the task forces requires a vote. He said members tentatively agreed to combine the Waste and Water task forces and move forward with the other two task forces. He said task force attendance would become voluntary and issue reports quarterly. Kerley said members agreed to alter the monthly meeting agenda by focusing on one primary topic each month. Kay proposed to go along with what was tentatively agreed upon at the Retreat with the modification of changing the Long-Range Strategy/Stewardship to an Ad hoc subcommittee. All members agreed. Kerley said the bylaws would be drafted to include these changes and proposed at the January meeting. The bylaws would then be voted upon at the February meeting.

Russell suggested the current members of the Waste and Water task forces meet prior to the next meeting, January 19 at 5 p.m. to discuss a regular meeting time and elect a chair.

Burnett suggested contacting the public that regularly attends meetings to obtain questions in advance to be able to provide answers at the Board meeting. Kay said the public could send questions to the staff in advance if they are requesting specific information but the public is

always welcome to ask questions at the Board meeting. He said it is appropriate for questions to be answered later if the person is not prepared to answer the question at the time it is asked.

Lee asked if Rachel Blumenfeld, DOE would provide a presentation on the End State Vision document in January. Dollins said Blumenfeld has requested that Board members submit specific questions or issues that they would like included in the presentation. Brandstetter said she would issue an e-mail to all Board members for questions and issues they want to see addressed. Kerley asked that Board members review the document prior to the presentation. Miller and Kerley requested the CD and Lee requested the link to retrieve the document.

Lee said the Web site has not been updated and asked for that issue be added to the retreat action items. Brandstetter said the new web contractor has started working on the Web site.

Budget Review

Kerley said the budget was discussed at the retreat. He said the final budget number for FY06 should be in the \$340,000 range. He said that is not reflected on the current budget that is in the packet. He said hopefully by January the CAB would have that information.

Review of Workplan

Kerley said the SMP update would be postponed to February. He asked for DOE to present the information. Dollins suggested contacting John Morgan, BJC for a 30-minute presentation. Kay suggested allowing 30 minutes for all presentations and then another 30 minutes for questions.

Lee asked if the D2 Southwest Plume Site Investigation and the Proposed Remedial Action Plan should be pushed back. Dollins said those dates have changed. Lee asked if the project charts had been revised. Brandstetter said the charts would be revised according to the SMP timeline. She said the charts should be provided in January.

Review of January Agenda

Kay said the Waste/Water task force would report on their established time for their meetings. He said there would be no report from the Long-Range Strategy/Stewardship task force since it has been changed to an Ad Hoc subcommittee. Kerley suggested adding the discussion of the bylaws revisions under administrative issues.

Action Items

Dollins said the action item regarding addressing the public to clear up confusion on the land purchasing study should be closed. Kay said all other actions are still pending.

Subcommittee Report

Executive Committee

Kerley said there is information in the packet about a meeting discussing the development of a uranium-based battery that was the same time as the Board meeting. He asked members to review the flier and think about this as a future task force or Board meeting topic.

Kerley said the next Chairs meeting is scheduled for April 26-28 in Oak Ridge. He said to send topic suggestions to him before December 8, which is the next steering committee conference call.

Kerley said the November Executive Committee meeting has been moved to 3 p.m.

Lee suggested that Board members send KRCEE suggestions on target issues they would like discussed for the quarterly presentations. Kay suggested the Executive Committee work with KRCEE to provide presentations on projects that are relevant to the Board. Miller suggested emailing Board members for topics a couple of months before the presentation. Brandstetter suggested emailing Board members in advance of all presentations for input on information to be discussed. Kay suggested adding preparation for the next presentation under administrative issues for all future agendas.

The meeting adjourned at 9 p.m.

Progress at the PADUCAH PROJECT

Update to the Citizens Advisory Board

November 17, 2005



Dave Dollins
U.S. Department of Energy
Federal Coordinator
Portsmouth/Paducah Project Office



DUF₆ Conversion Project

- Conversion Building foundation construction underway
- Conducting extensive review of 30A cylinder records in response to OIG concern for potential presence of phosgene

1166 piles installed for conversion building ground stabilization





Scrap Metal Removal

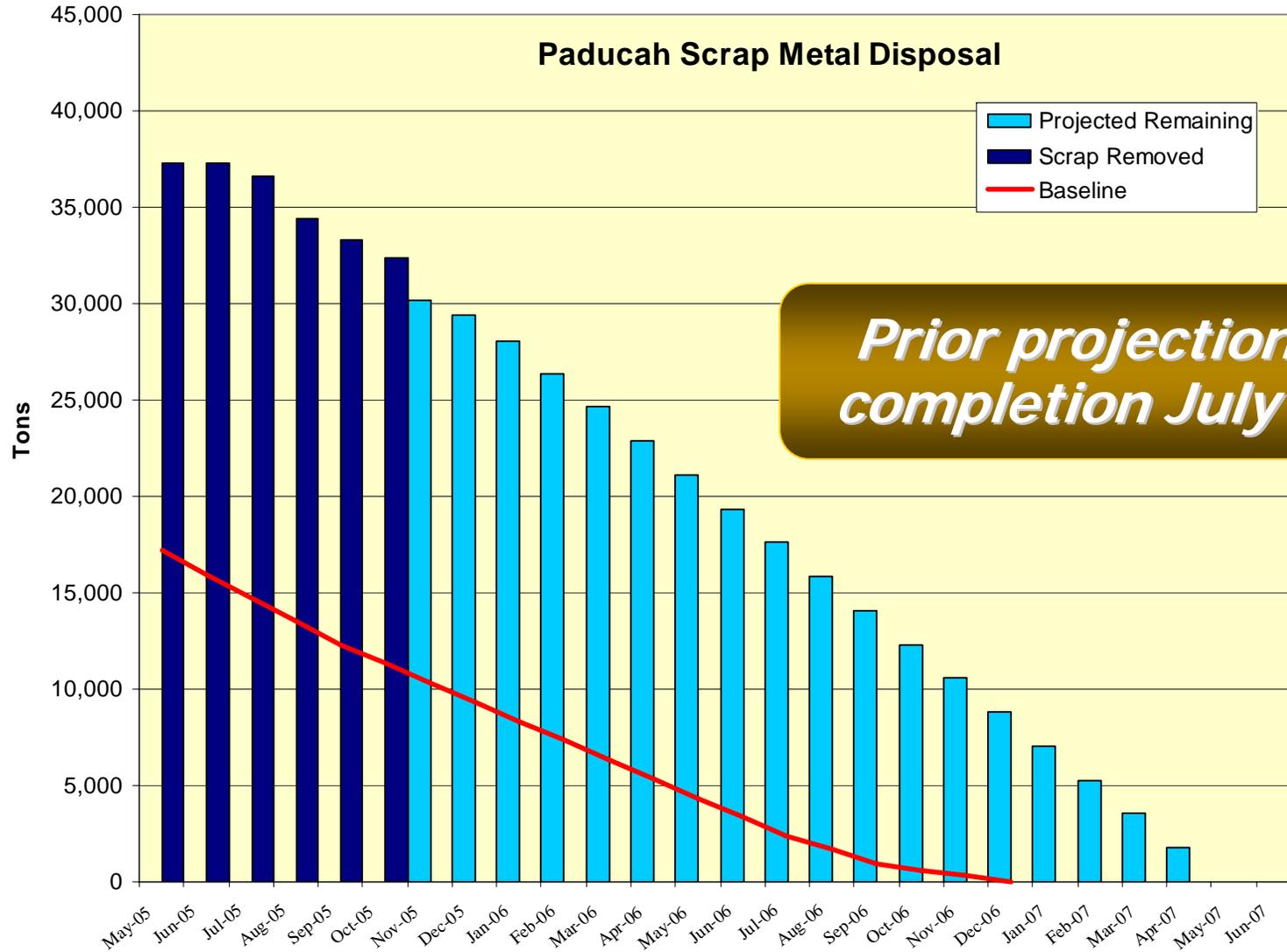
- Shipped 893 tons of D-Yard scrap to NTS in October; 2,190 tons total shipped since July
- Envirocare has assumed the WESKEM subcontract; shipments of Northwest scrap to resume in December.



A "Mi-Jack" lifts a 40-foot Envirocare shipping container in the C-759 scrap loading area



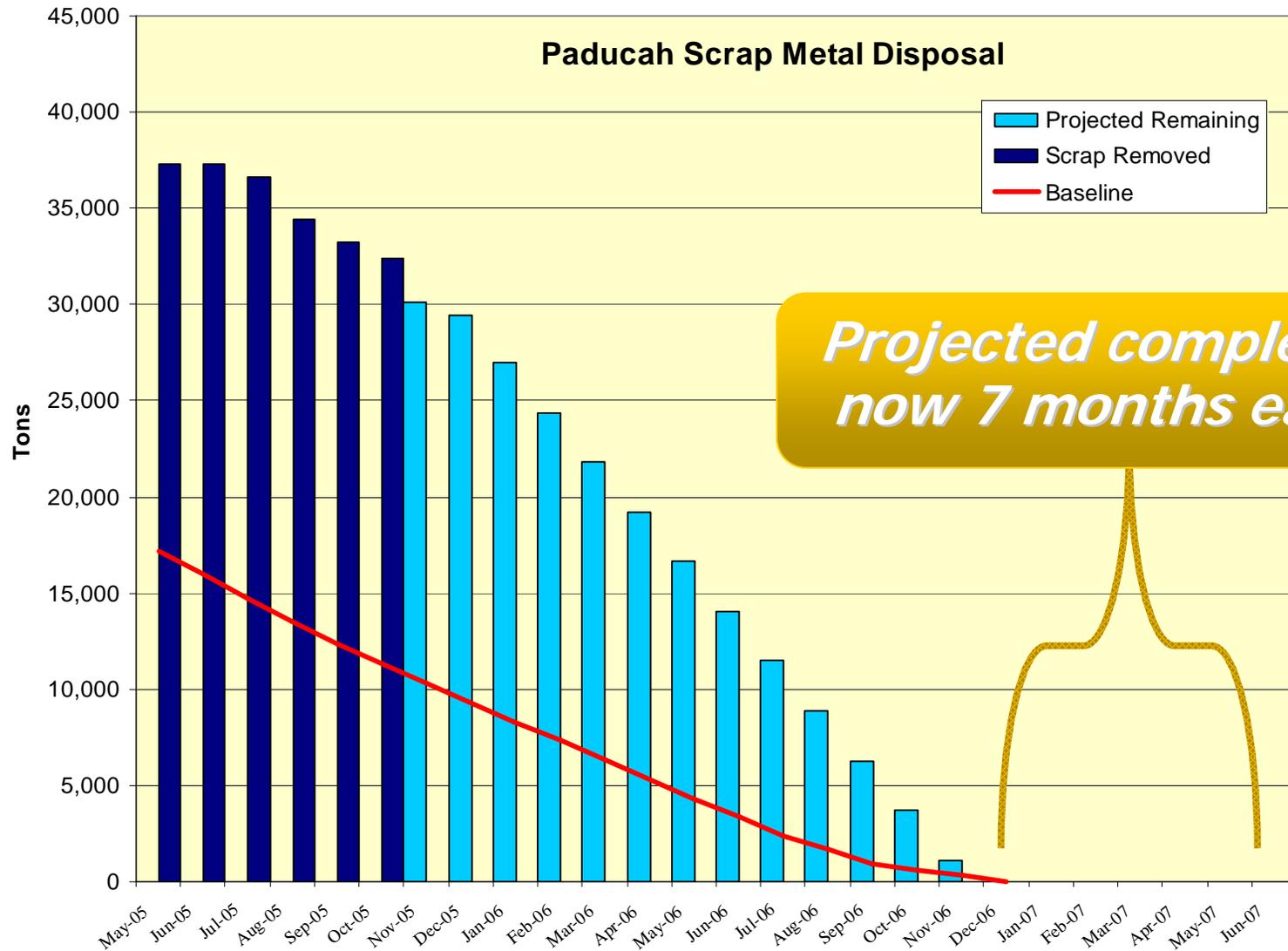
Scrap Metal Removal



Prior projection for completion July 2007



Scrap Metal Removal



Projected completion now 7 months earlier



Inactive Facilities D&D

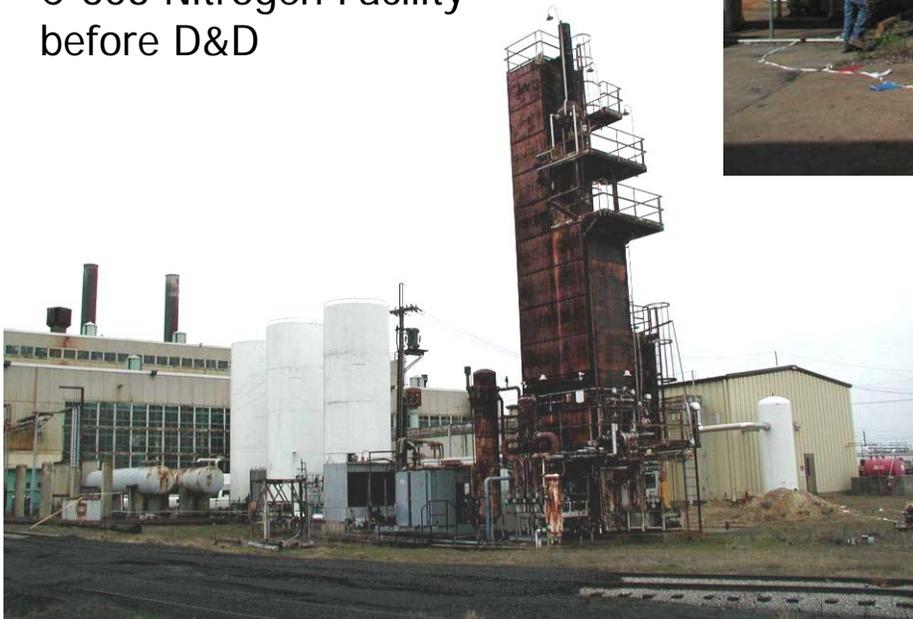
Nitrogen Facility



Lifting out last nitrogen tank

Fieldwork complete

C-603 Nitrogen Facility before D&D



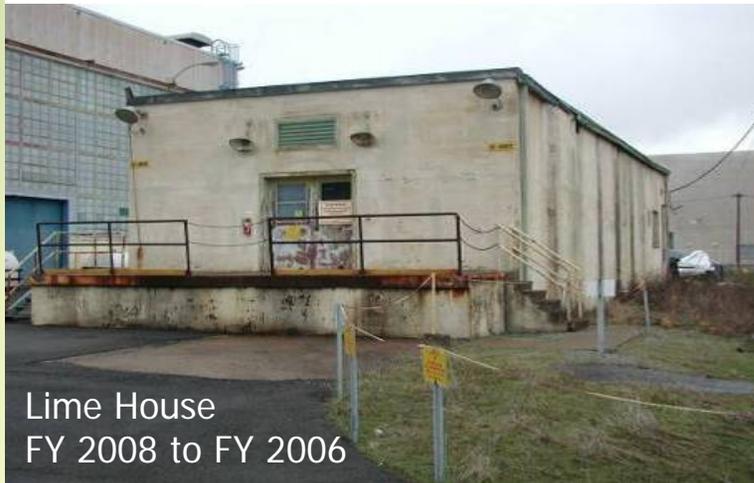
Area of the C-603 Nitrogen Facility after D&D





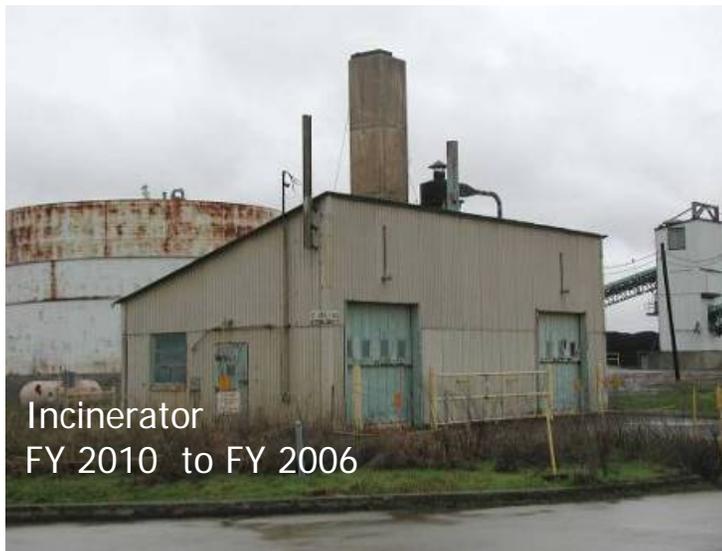
Inactive Facilities D&D

Limehouse, Contaminated Item Incinerator, and West End Smelter

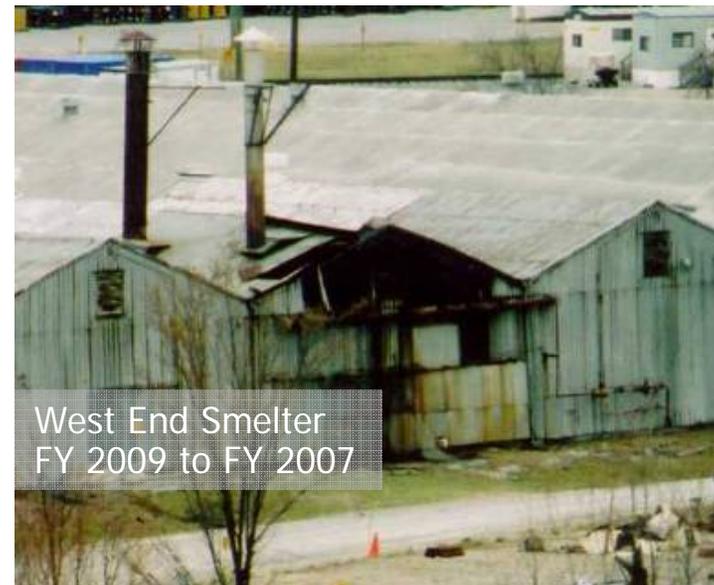


Lime House
FY 2008 to FY 2006

- EE/CA comment period ended on October 31 with comments only from Kentucky and EPA
- Now developing Remedial Action Work Plan for Lime House
- Fieldwork on Lime House to begin January 2006



Incinerator
FY 2010 to FY 2006



West End Smelter
FY 2009 to FY 2007



C-410 D&D

- Continued removal of fluorine cell stands and platforms from Sector 2.
- Completed blasting three fluorine cells, working on fourth
- Fixative application in Zone 64 complete
- Packaged 3 intermodals of debris (steel cell stands, concrete from cell platforms, loose debris from building) for offsite disposal
- Shipped ~3000 cubic feet of compactible debris for disposal
- Piping and equipment removal in Zone 64 is 50% complete

Northeast corner of C-411 before work



Corner with fixative applied



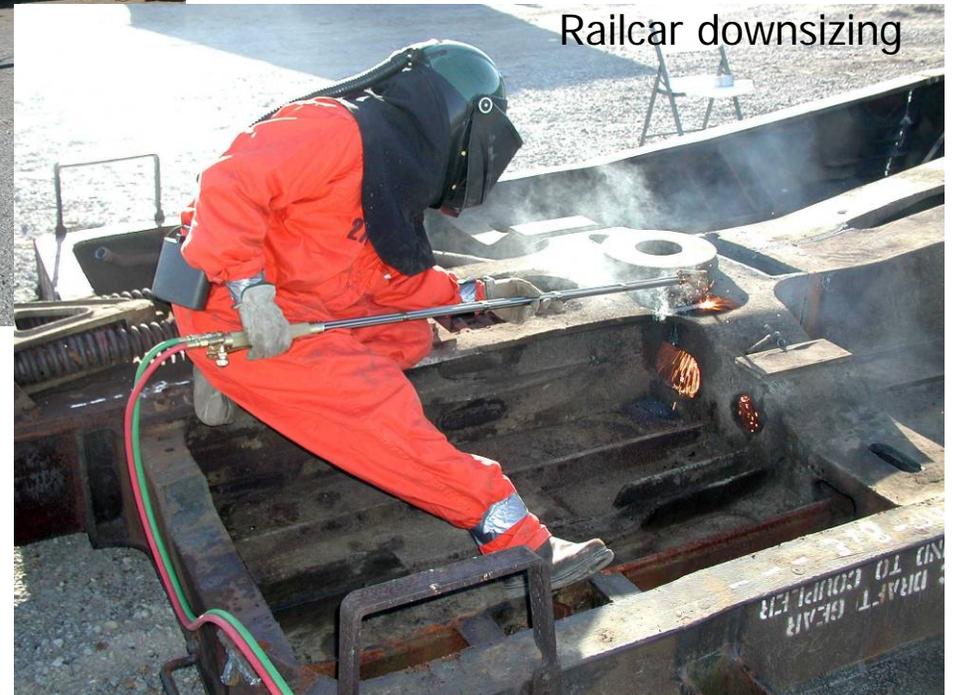
Corner after piping removal





DMSAs

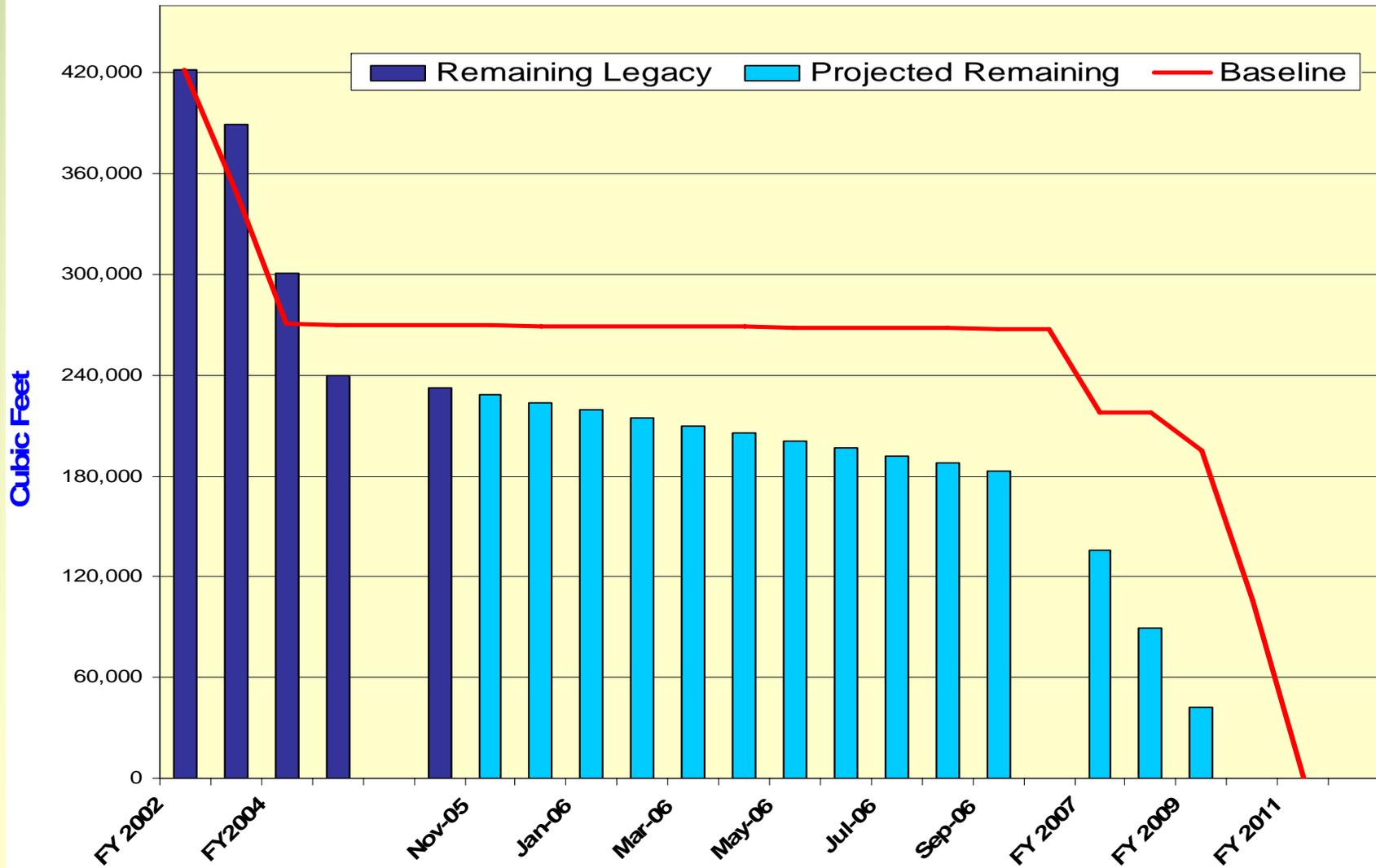
- Initiated downsizing of rail cars from DMSA OS-4 and OS-14 in former DMSA OS-6
- Pursuing RCRA closure of 20 DMSAs





Legacy Waste Disposition

- Shipped 6,850 cubic feet of sewer sludge to Envirocare





Legacy Waste Disposition

Expedited Outdoor Legacy Waste Disposal

- Outdoor Legacy LLW shipments to Envirocare scheduled for November, including more than 1,700 cubic feet of floor sweep on November 15
- Repackaging continuing



Low-level waste stored on the "V" pad

Outdoor Legacy Waste
FY 2009 to FY 2006



Low-level waste stored on the "H-3" pad



Surface Water Operable Unit



Storm water
sampling

- Completed final week of Step 2 storm sewer sampling on November 4
- Step 3 sampling decisions will be made after laboratory results from Step 2 samples are received in late-November.



Other Items of Interest

Groundwater Operable Unit

C-400 Source Removal

- Bechtel Jacobs continues to evaluate subcontractor proposals to design, build, and operate the Electrical Resistance Heating project

S & T Landfill

- Issued D1 Site Investigation Report on September 30; Kentucky comments received November 1; EPA comments to be issued by December 1, 2005

C-746-U Landfill

- Leachate treatment system received November 3
- Construction subcontractor issued suspension of work pending issuance of KDWM permit

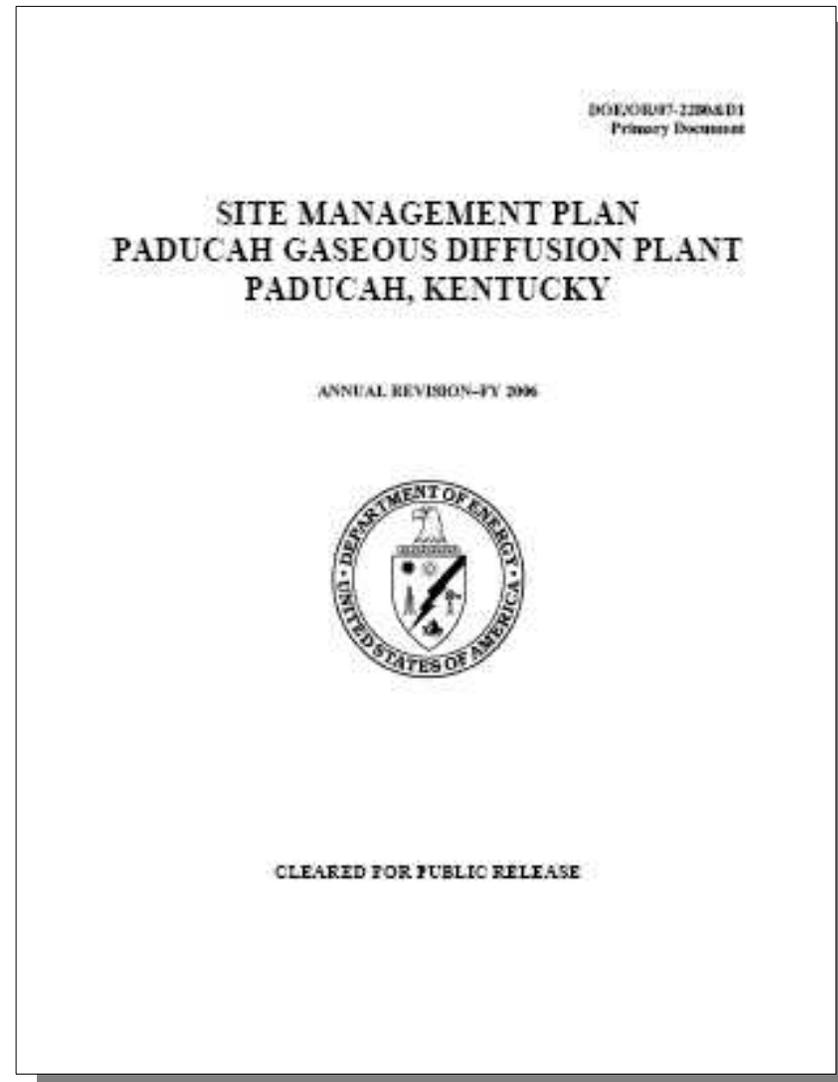
Burial Grounds Operable Unit

- EPA and Kentucky comments received on D1 Remedial Investigation /Feasibility Study Work Plan; meeting held November 9 to review sampling plan
- D2 RI/FS in development



Site Management Plan

- D1 submitted to regulators November 14





**Project Status Update for Paducah DOE Citizens Advisory Board
November 10, 2005
Project: Solid Waste Contained Landfill**

Contact Persons:

Bechtel Jacobs Company LLC: Jim Ehlers/Steve Davis
Commonwealth of Kentucky: Todd Hendricks
U.S. Environmental Protection Agency: David Williams
Citizens Advisory Board: John Russell

Purpose: Waste Disposition

Description: The 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 (KDWM). 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 non-hazardous soil and debris from environmental cleanup and other DOE projects, protective clothing worn by workers, paper, packaging, and landfill office wastes. No waste classified as hazardous or radioactive is accepted.

Key documents:

- Environmental Assessment for the Construction, Operation and Closure of the Solid Waste Landfill at the Paducah Gaseous Diffusion Plant (DOE/EA-1046)
- Environmental Assessment on the Implementation of the Authorized Limits Process for Waste Acceptance at the C-746-U Landfill (DOE/EA-1414)
- Waste Acceptance Criteria for the Department of Energy Treatment, Storage, and Disposal Units at the Paducah Gaseous Diffusion Plant (BJC/PAD-111R4)
- C-746-U Landfill Solid Waste Disposal Facility Permit Number 073-00045

Issues:

- The Kentucky Division of Waste Management (KDWM) issued a letter of withdrawal on July 6, 2005 for the S, T and U permit modification due to an administrative error. The public comment period had not expired and the permit was issued prematurely. Currently the landfill facility is operating on the exiting permit which expires in 2006. Permit was reissued for public comment on July 11, 2005. Permission to construct Leachate Treatment Facility was withdrawn pending reissuance of the Permit. The comment period closed August 10, 2005. KDWM is addressing comments received.

Recent accomplishments/activities:

- Disposed of 150.3 tons of waste in October
- Subcontractor for construction of leachate treatment facility (A&K Construction) was issued a suspension of work to minimize costs until KDWM issues permit.
- BJC IFR approved for construction pending landfill permit issuance.
- BJC received delivery of the Leachate Treatment Unit on November 3, 2005 and the unit was offloaded at the C-746-U landfill.
- Field portion of the Kentucky Research Consortium for Energy and Environment Holocene Displacement Study completed October 3, 2005.

Activity over next 60 days:

- Continue disposal of construction debris and other non-hazardous solid waste streams.
- Support the Kentucky Research Consortium for Energy and Environment Holocene Displacement Study.
- Initiate construction of leachate treatment facility within two weeks of reissuance of Permit.

Project Status Update for DOE Paducah Citizens Advisory Board
November 10, 2005
Project: Waste Disposition

Contact Persons:

Bechtel Jacobs Company LLC: Pat Gourieux/Greg Shaia

Commonwealth of Kentucky: Jon Maybriar

U.S. Environmental Protection Agency: David Williams

Citizens Advisory Board: John Russell

Purpose: Waste Disposition

Description: DOE is responsible for disposal and/or recycling of 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, non-hazardous and non-radioactive wastes are disposed of in the DOE Solid Waste Contained Landfill. (*Please see landfill update 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.

Key documents:

- Paducah Waste Acceptance Criteria (BJC/PAD-11, Revision 4)
- Final Environmental Assessment for Proposed Disposition of Waste from the Paducah Site (DOE/EA-1339 and Addendum DOE/EA-1339-A) (FONSI)
- Agreed Order DWM-31434-042
- Site Treatment Plan DWM-30039-42

Issues:

- None

Recent accomplishments/activities:

- Completed UF₄ shipments to Duratek/Bear Creek
- Continued repackaging activities for Sewer Sludge (PCB/low level waste) for October/November shipments to Envirocare, shipment of TSCA waste near completion
- Continued repackaging activities for low-level waste stored in outside facilities for October/November shipments to Envirocare
- Shipped tanker of liquid waste to TSCA Incinerator

Activity over next 60 days:

- Complete shipment of UF₄ from Duratek to Envirocare
- Complete disposition of ~ 4,750 containers of Agreed Order "no-longer contains" waste at Envirocare or the C-476-U Landfill, as appropriate
- Ship four trucks of mixed low-level waste to Perma Fix facilities and Envirocare
- Disposition of approximately 3,000 containers of Sewer sludge and LLW stored in outside facilities

**Project Status Update for DOE Paducah Citizens Advisory Board
November 10, 2005**

Project: Decontamination & Decommissioning (D&D)

Contact Persons:

Bechtel Jacobs Company LLC: Brad Montgomery
Commonwealth of Kentucky: Jon Maybriar
U.S. Environmental Protection Agency: David Williams
Citizens Advisory Board: John Russell

Purpose: Environmental Cleanup/Waste Disposition

Description: The D&D project has completed development of Comprehensive Environmental Response, Compensation, and Liability Act regulatory documentation and has initiated actual D&D of the C-410/420 Feed Plant Complex. The current scope of D&D includes infrastructure removal on the C-410/C-420 complex, as well as ongoing surveillance and maintenance of the C-410/C-420 complex and the C-340 Metals Plant complex. Scope also included development of Safety Basis Documentation for the removal of equipment, piping, and stored material from the C-410 Complex. Operations at both complexes ended in 1977.

Key documents (C-410):

- Engineering Evaluation/Cost Analysis (EE/CA)
- Action Memorandum
- Removal Action Work Plan (RAWP)
- Cultural Resources Assessment of C-410 Complex
- Agreed Order DWM-31434-042

Issues:

- None

Recent accomplishments/activities:

- Continued removal of fluorine cell stands and platforms in Sector 2
- Completed blasting three fluorine cells; working on fourth
- Removed cold box (tower) and nitrogen tank from C-603 Nitrogen Generating Facility
- Completed 50% of piping and equipment removal in C-410 Zone 64.
- Shipped approximately 3000 cubic feet of compactible debris for disposal
- Packaged an additional three intermodals of debris for disposal
- Complete demolition activities at C-603 Nitrogen Generating Facility.

Activity over next 60 days:

- Continue packaging of loose materials in C-410 Complex
- Ship intermodals to Envirocare of Utah for disposal.

**Project Status Update for DOE Paducah Citizens Advisory Board
November 10, 2005
Project: DOE Material Storage Areas (DMSAs)**

Contact Persons:

Bechtel Jacobs Company LLC: Rick Keeling
Commonwealth of Kentucky: Jon Maybriar/Mike Guffey
U.S. Environmental Protection Agency: David Williams
Citizens Advisory Board: John Russell

Purpose: Environmental Cleanup/Waste Disposition

Description: The 160 DMSAs are non-leased areas inside buildings, as well as outdoor areas. DOE accepted the return of the areas that are now the DMSAs, and the material and equipment they contained from USEC on December 31, 1996, to facilitate NRC certification of the gaseous diffusion plants. At that time, most of the contents needed detailed inventory, characterization, and disposition. Since that time, DOE and contractors have been documenting contents, resolving environmental concerns such as draining and disposing of oils from old equipment, and segregating and disposing of wastes.

Key documents:

- PGDP Department of Energy Material Storage Area Characterization/Remediation Plan (BJC/PAD-186/R4), April 2001
- Agreed Order DWM-31434-042
- Documented Safety Analysis (DSA)

Issues:

- Increased rigor in characterizing painted items for PCB content has impacted characterization, packaging, and disposal activities. Effort is under way to resolve different requirements and allowances between Kentucky and EPA regulations for solid waste disposal of painted items.

Recent accomplishments/activities:

- Stored material continues to be characterized, packaged, & disposed.
- In October, 227 ft³ was characterized, 81 ft³ was sampled, 5,500 ft³ was packaged for disposal and 1,800 ft³ was disposed.
- Technical issues were resolved and the 15th and final PG cooler from DMSA OS-15 was sized and packaged in October. Three coolers and one booster await shipment for disposition.
- Mobilization for sizing, packaging, and disposition of the DMSA Rail Cars was initiated in October.
- An internal field review was completed allowing the verification of an empty gas cylinder in October.
- The last of the stored material in the outside DMSAs was removed from its original storage location in October.

Activity over next 60 days:

- Continue disposition of the remaining DMSA OS-15 material.
- Continue the sizing, packaging, and disposition of OS-4 and OS-14 rail cars.
- Continue characterization of "Priority B" DMSAs under the Agreed Order.
- Pursue boundary removal for DMSAs OS-02, OS-15, and OS-04.
- Pursue Kentucky approval for approximately 20 DMSA RCRA Closures.

Project Status Update for DOE Paducah Citizens Advisory Board
November 10, 2005
Project: Groundwater Operable Unit

Contact Persons:

Bechtel Jacobs Company LLC: Bryan Clayton/Lance Fleming

Commonwealth of Kentucky: Jon Maybriar/Todd Mullins

U.S. Environmental Protection Agency: David Williams

Citizens Advisory Board: Jim Smart

Purpose: Environmental Cleanup

Description: This project addresses environmental remediation of groundwater contamination on a site-wide basis at the Paducah Gaseous Diffusion Plant. The main contaminants of concern are trichloroethylene (TCE) and technetium-99 (⁹⁹Tc). Remedial actions will be designed and implemented after completion and signing of Records of Decision (RODs).

Key documents:

- Feasibility Study of the Groundwater Operable Unit at PGDP (DOE/OR/07-1857)
- Agreed Order DWM-31434-042
- Six-Phase Treatability Report (DOE/OR/07-2113)
- Proposed Remedial Action Plan for the Volatile Organic Compound Contamination at the C-400 Cleaning Building (DOE/OR/07-2114)
- Southwest Plume Site Investigation Workplan (DOE/OR/07-2094)
- S&T Landfill Site Investigation Workplan (DOE/OR/07-2098)
- Record of Decision for Interim Remedial Action for the Groundwater Operable Unit for the Volatile Organic Compound Contamination at the C-400 Cleaning Building (DOE/OR/07-2150&D2/R2); Remedial Design Work Plan (DOE/OR/07-2214&D1); Remedial Design Support Investigation Characterization Plan (DOE/OR/07-2211&D1)
- Site Investigation Report for the Southwest Groundwater Plume (DOE/OR/07-2180&D1)
- Site Investigation Report for the C-746-S&T Landfills (DOE/OR/07-2212&D1)

Issues: Discussions with the State of Kentucky and EPA are continuing concerning the use of biodegradation factors utilized in groundwater modeling to support risk assessment development.

Recent accomplishments:

- Issued D1 Remedial Design Work Plan to support development of the C-400 Remedial Action August 11, 2005 and State of Kentucky comments received on 10/6/05. Incorporating comments into D2 document.
- Evaluating contractor proposals from contractors responding to the Request for Proposal for a remediation contractor to design, build and operate the Electrical Resistance Heating at the C-400 Building. Contract award is anticipated in mid-January.
- Issued D1 Site Investigation Report for the C-746-S&T Landfills for review on 9/30/05. State of Kentucky comments received on 11/1. USEPA comments expected on 12/1/05.

Activity over next 60 days:

- Receive USEPA comments on the C-746-S&T Landfill Site Investigation Report and reissue as a D2.
- Complete RFP evaluation and award contract for C-400 action.
- Resolve biodegradation factors issue.
- Revise D1 RDWP for C-400 Interim Action by incorporating stakeholder comments into a D2 document for submission and approval by the State of Kentucky and USEPA.

FFA Milestones:

- Submit D2 Southwest Plume Site Investigation Report and D1 Remedial Action Plan, both due by November 6, 2005. (Milestone being modified pending resolution of the biodegradation factor use in groundwater models.)

**Project Status Update for DOE Paducah Citizens Advisory Board
November 10, 2005
Project: Surface Water Operable Unit (On-Site)**

Contact Persons:

Bechtel Jacobs Company LLC: Dave Guyan/Lance Fleming
Commonwealth of Kentucky: Jon Maybriar/Brian Baker
U.S. Environmental Protection Agency: David Williams
Citizens Advisory Board: Jim Smart

Purpose: Environmental Cleanup

Description: The Surface Water Operable Unit (On-Site) Project includes a site investigation to identify hot spots 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. The results of the site investigation will be documented in a Site Investigation/Baseline Risk Assessment Report and non-time-critical removal action documentation, as appropriate.

Key documents:

- Sampling and Analysis Plan for Site Investigation and Risk Assessment of the Surface Water Operable Unit (On-Site), DOE/OR/07-2137&D2/R2.

Issues: None

Recent accomplishments:

- Completed 2nd week of Step 2 storm sewer sampling on October 21, 2005
- Completed 3rd and final week of Step 2 storm sewer sampling on November 4, 2005

Activity over next 60 days:

- Review all Step 2 storm sewer sample data (2-week turnaround) when received from analytical laboratory
- Plan for Direct Push Technology (DPT) soil sampling along storm sewer or alternate Step 3 investigation method

FFA Milestones:

- Issue Site Investigation/Risk Assessment Report by August 16, 2006
- Issue Removal Notification by October 12, 2006.

**Project Status Update for DOE Paducah Citizens Advisory Board
November 10, 2005
Project: Scrap Metal Removal Project**

Contact Persons:

Bechtel Jacobs Company LLC: Wes Bass/Chris Marshall/Craig Jones

Commonwealth of Kentucky: Jon Maybriar

U.S. Environmental Protection Agency: David Williams

Citizens Advisory Board: Jim Smart/John Russell

Purpose: Environmental Cleanup/Waste Disposition

Description: About 36,000 tons of scrap metal exists at the PGDP, excluding nickel ingots. This project involves the removal of 26,700 tons of general scrap metal, 2,000 tons of aluminum ingots, and approximately 7,000 tons of classified scrap. The project does not include the recycling or disposal of 9,700 tons of nickel. Note the classified scrap total has been revised downward based on field experience.

Key documents:

- Engineering Evaluation and Cost Analysis
- Action Memorandum
- Removal Action Work Plans
- Agreed Order DWM-31434-042
- Documented Safety Analysis (DSA)

Issues: None

Recent accomplishments:

- 893 tons of scrap metal were shipped by truck in October from C-746-D yard to NTS. Since recertification of the waste shipping program by NTS in July 2005, BJC has shipped 2,190 tons of scrap to NTS.
- Sorted and segregated approximately 300 tons of scrap in northwest yards during October
- Developed work package and landfill package for disposal of wooden pallets removed from scrap yards.

Activity over next 60 days:

- Continue disposition operations by inspecting, sorting, size-reducing and packaging scrap metal
- Continue shipment of scrap metal to NTS
- Initiate Envirocare shipments in December
- Dispose of wooden pallets that were removed from scrap yards and currently staged at C-747-A
- Transfer WESKEM scrap metal disposal subcontract to Envirocare of Utah in November.

**Project Status Update for DOE Paducah Citizens Advisory Board
November 10, 2005
Project: Burial Grounds OU**

Contact Persons:

Bechtel Jacobs Company LLC: John Young/Lance Fleming
Commonwealth of Kentucky: Jon Maybriar
U.S. Environmental Protection Agency: David Williams
Citizens Advisory Board: John Russell

Purpose: Environmental Cleanup/Waste Disposition

Description: A Remedial Investigation/Feasibility Study (RI/FS) Scoping Document and the RI/FS Work Plan for the investigation of the Burial Ground Operable Unit (BGOU) at PGDP have been developed. The documents utilize a compilation of sampling information collected on and around the PGDP over the course of the last ten years. The BGOU includes Solid Waste Management Units (SWMUs) 2, 3, 4, 5, 6, 7, 30, and 145.

Key documents:

- Scoping Document for the Burial Grounds Operable Unit Remedial Investigation/Feasibility Study at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky.
- Work Plan for the Burial Grounds Operable Unit Remedial Investigation/Feasibility Study at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/OR/07-2179.

Issues: None

Recent accomplishments:

- BGOU D1 RI/FS Work Plan was completed and distributed to the Commonwealth of Kentucky and the EPA on June 30, 2005.
- Comments were received from Kentucky and EPA on the BGOU D1 RI/FS Work Plan on October 18, 2005
- A meeting was held on November 9 to review data gaps and the proposed sampling program..

Activity over next 60 days:

- Resolution of regulator comments on the Work Plan and issuance of a D2 Work Plan for approval
- The Request for Proposal to implement Work Plan is being developed.

Kentucky Research Consortium for Energy and Environment

A collaboration of Kentucky
universities administered by the
University of Kentucky



www.uky.edu/KRCEE

Mission

- To support DOE's efforts to obtain an expeditious and economically viable environmental remediation of the Paducah Gaseous Diffusion Plant, WKMWA, and surrounding areas.

KRCEE Objectives

- Application of technical expertise to assess and accelerate the implementation of cost effective technologies and methodologies that will result in accelerated clean-up and risk reduction.
- Establishment of problem-specific Project Teams drawn from disciplines of expertise at participating universities/industry that will work with and through DOE and its contractors to accelerate the implementation of project concepts and plans. Project Team focus will be on risk prioritization and accelerated implementation of cost-effective remedial activities to minimize impacts on public health and the environment.
- Technical review of proposed remediation plans and any non-consensus technical issues associated with their implementation.
- Utilization of Project Teams to interface directly through DOE with DOE national laboratories, EPA, and state regulatory agencies to help forge consensus solutions to technical problems related to the clean-up and ongoing operations of the PGDP site.
- Accomplishment of targeted long-term and short-term projects & tasks designed to support an accelerated clean-up of the PDGP

Short-term Projects

- RBES review & comment
- Probabilistic modeling review & comments
- Review of regulatory criteria & available technologies relevant to decontamination of PGDP contaminated Ni
- Review of issues/information & recommendations for defining & modeling natural attenuation
- Development of MS EXCEL macros for qualitative assessment of data sets (conducted for historical SnT data)
 - Data by sample location (or larger data sets)
 - Evaluates individual analytes
 - detects non-detects
 - exceedance of standards
 - # validated datum
 - TBD - add HH risk and Eco risk targets to macro
- Review of real-time in-situ & ex-situ screening and analytical methods relevant to PGDP
- Identification & testing of real-time, field-capable analytical methods for analysis of ^{99}Tc in soil/sediment and water

Ecological Summary Project

- **PIs:** Dr. Richard Halbrook (SIU), Dr. Howard Whiteman (MSU)
- **Products:**
 - Independent Review & Summary of Ecological Studies/Risk Assessments conducted at PGDP
 - Final Report identifying ecological impacts, data gaps, recommendations for future assessment
- **Impact/Benefit:**
 - Succinct "one-stop shopping" history of and findings of individual studies
 - User-friendly report for managers, contractors, & stakeholders
- **Status:**
 - Project Start 11/1/05

C-746-U Holocene Displacement

- **PIs:** Woolery (UK-GLY) and Hampson (UK-KRCEE)
- **Products:**
 - Detailed field investigation & evaluation of Holocene Displacement at PGDP
 - Targeted field investigation ABOVE faults identified on seismic profiles
 - LithoStratigraphic characterization that identifies and tracks shallow soil/paleosol horizons at PGDP
 - Final Report to support permitting of C-746-U expansion
 - Final Report subject to Independent Technical Review by Subject Matter Experts (SMEs) prior to release
- **Impacts/Benefits:**
 - Remove Holocene Displacement regulatory obstacle to allow permitting of C-746-U Landfill expansion for remedial waste
 - Increase understanding of the occurrence and distribution of paleosoils and Upper Continental Deposits at PGDP
 - Development of effective Project technical and field teams for future work
 - Participation of nationally/internationally recognized Subject Matter Experts to solve site problem(s)
 - Completion of Project at significantly reduced time/cost to DOE

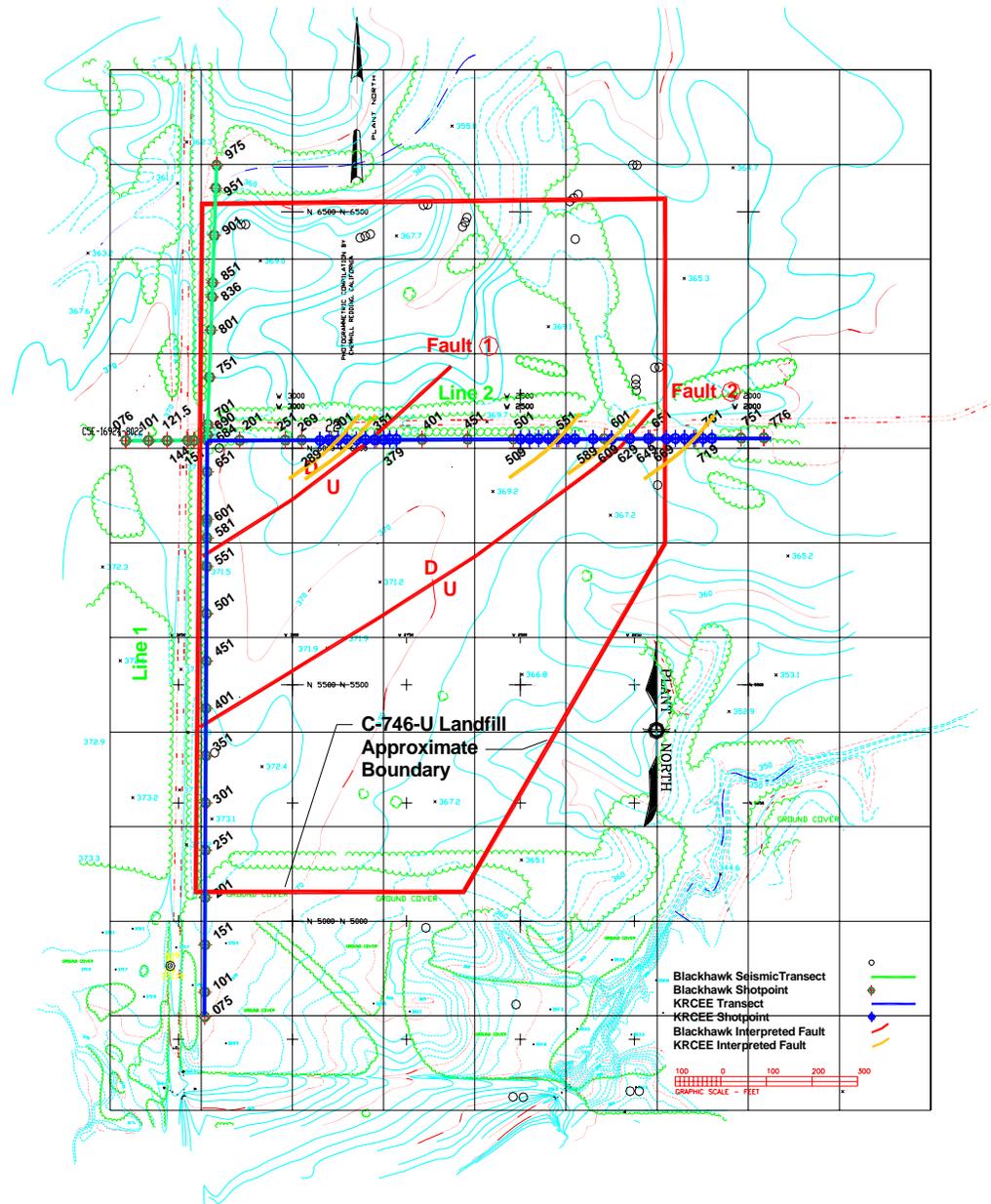
C-746-U Holocene Displacement

- **Technical Approach:**
 - Obtain fault interpretations from SAIC, UK, Lettis & Assoc for C-746-U Blackhawk Geophysical Study
 - Utilize fault interpretations to focus borings & obtain cores for lithostratigraphic/displacement evaluation (Figure 1)
 - Advance 80+ borings to 30' bgs above interpreted faults and collect cores
 - Utilize 10' boring spacing to provide lateral coverage & detail (5' if needed)
 - Depth of borings encompass sand/silty sand target horizon ID'ed in previous borehole logs from site
 - Depth of borings encompass vertical extent of Holocene-aged material at site and uppermost extent of interpreted faults from previous seismic studies
 - Obtain paired cores at 4 locations for thermo luminescent dating
 - Log 2400+ feet of core to 1"+ detail
 - ID soil horizons, paleosoil horizons, and geologic units
 - ID C-14 datable material and collect samples
 - ID soils/paleosoils & their horizons with Subject Matter Experts
 - Correlate core logs/construct cross-sections (Figure 2)
 - Assess deposition & displacement for summary field and project reports

C-746-U Holocene Displacement

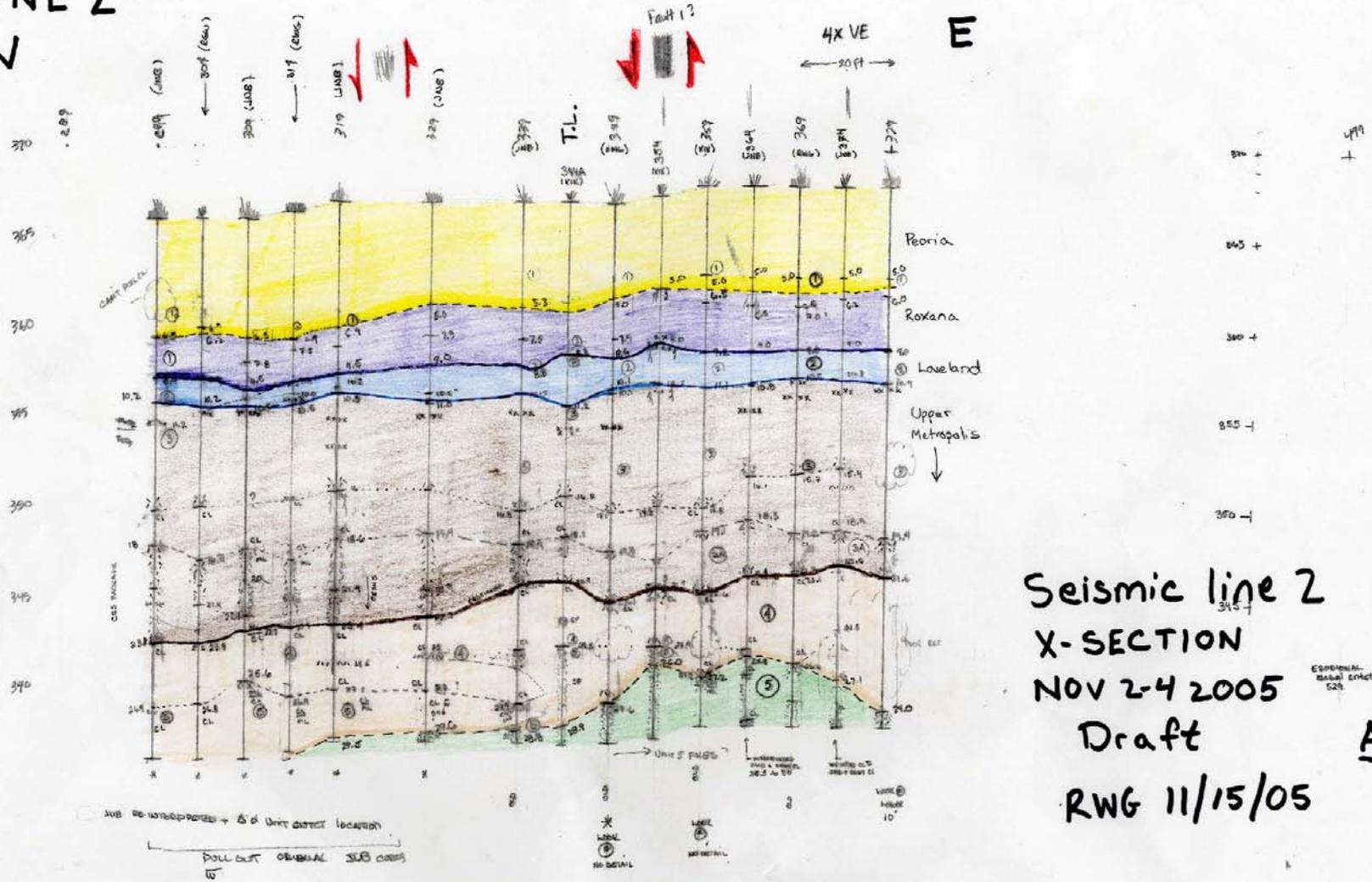
- **Preliminary Observation/Conclusions:**
 - Holocene-aged and older paleosoil horizons clearly identifiable across site
 - Holocene-aged and older paleosoil horizons clearly trackable across site
 - No preliminary evidence of gross displacement in Pleistocene-aged (?) material encountered in borings across site (older and deeper material underlying Holocene material)
 - No preliminary evidence of gross displacement in Holocene-aged material above targeted fault interpretations
- **Status:**
 - **Fieldwork 100% complete**
 - **Core logging 100% complete**
 - **Soils Subject Matter Experts provided soil/paleosoil report late October 2005**
 - **Core assessment/correlation/cross-sections complete November 2005**
 - **C-14 & UV dating complete November/December 2005**
 - **Preliminary reporting to stakeholders in November/December 2005**
 - **Final report to DOE complete January/February 2005**

C-746-U Holocene Study Area



Seismic Line 2A

LINE 2
W



Seismic line 2
X-SECTION
NOV 2-4 2005
Draft
RWG 11/15/05

A

Seismic Assessment

- **PIs:** Woolery (UK-GLY) and Wang (UK-KGS)
- **Products:**
 1. Project 1 - Expansion of Seismic Network in W. Ky and to PGDP Site/Paducah
 2. Project 2 - Collection of Seismic Data (velocities and acceleration) to provide basis for Seismic Modeling, Seismic Hazard Assessment & Seismic Engineering Design
 3. Project 3 - Probabilistic Seismic Hazard Assessment utilizing site specific rather than "default" data.
 4. Projects 1, 2, 3. - Collaboration with USGS, SSA, and Professional Engineering Associations to redefine the New Madrid Seismic Zone & Seismic Hazard Data for Jackson Purchase, PGDP, & Paducah)
- **Impacts/Benefits:**
 - Impact on USGS seismic policy
 - Reduction in seismic engineering criteria for W. Ky., Paducah, PGDP
 - Decrease in seismic engineering design costs in W. Ky., Paducah, PGDP
 - Application of measured seismic/geotechnical data in facility design (houses thru infrastructure)
- **Status:**
 - Fieldwork Project 1 is 100% Completed
 - Fieldwork Project 2 completed December 2005.
 - Reports in November (Project 1), December (Project 2), January (Project 3)
 - Projects 1 & 2 will continue as part of Phase II KRCEE activities

"Real-Time" SW Remedial Demo

- **PIs:** Volpe (UK-KRCEE), Johnson (Argonne), and Hampson (UK-KRCEE)
- **Product(s):**
 1. Demonstration of the application of real-time in-situ and ex-situ on site instrumentation to accomplish the characterization and cleanup of contaminated soils and sediments in a section of the KPDES Outfall 011 ditch
 2. Demonstration of 100% coverage approach for characterization that serves as basis for remedial activities (vs. statistically based, random, or arbitrary approaches)
 3. Demonstration of Dynamic Planning Process(es) to determine the technical approach for implementing remedial activities.
 4. Demonstration of startup and completion of characterization/remediation activities in a single, short-term, field mobilization.
 5. Demonstration of approach that will only require removal of contaminated material and limit generation of waste
 6. Demonstration of the time and cost savings to DOE, DOE contractors, regulatory community, stakeholders
- **Impacts/Benefits:**
 - Gain acceptance of regulatory community, contractors, and stakeholders thru Project Team utilization of Dynamic Planning Processes developed by DOE (Adaptive Sampling and Analysis - ASAP) and EPA (TRIAD) that develops and implements activities.
 - Gain acceptance of regulatory community, contractors, and stakeholders thru their participation in Project Team which will determine the technical approach for activities.
 - Gain acceptance of real-time remedial approach from DOE contractors, regulators, and stakeholders based on project performance.
 - Reduced time/cost for remediation relative to currently employed technologies.
- **Status:**
 - Background materials provided to DOE, KDWM, and Project Team
 - Contracting in early process
 - Project team scoping January 2006
 - Fieldwork late April 2006

"Real-Time" SW Remedial Demo

Implementation Considerations

(Addressed with DOE PPPO October 2005 and DOE site/BJ November 2005)

1. All phases of Field Project will be performed in contaminated and radiation-posted areas
2. Field Project work will involve numerous contractors/subcontractors working concurrently in contaminated and radiation posted areas
3. All phases of Field Project will involve handling of radioactive/hazardous materials
 - Installation of flow controls to isolate work area
 - In-situ Characterization
 - Sampling for Ex-situ Analysis
 - Removal of Contaminated Material
 - Segregation of Remedial Waste
 - Disposal of Remedial Waste
4. Relationship to ongoing SWOU characterization work

Surface Water Assessment TMDL Development

- **PIs:** Kemp (MSU) and Kelly (MSU)
- **Products:**
 1. Project 1 - Data analysis & assessment for existing SW data
 2. Project 1 - Develop and Calibrate PGDP watershed model
 3. Project 1 & 2 - Draft recommendations report for PGDP TMDL development
- **Impacts/Benefits:**
 - Surface water model for evaluation of discharges/remedial activities
 - Eliminate certain metals/⁹⁹Tc from consideration in future TMDL development
 - Framework for future TMDL development
 - State DOW OK with methods applied
 - State DOW wants additional data collection for TMDL (at Outfalls)
- **Status:**
 - 90% Completed
 - Report December 2005

GW/Landfill Assessment

- **PIs:** Dr. Joe Hagerty (UofL) and Dr. Jim Watters (UofL)
- **Products:**
 - Preliminary assessment of GW technologies
 - Preliminary assessment of S&T Landfill
- **Impact/Benefit:**
 - Preliminary updated ITRD recommendations for remedial technologies to address plumes
 - Preliminary conclusions regarding historical/recent monitoring and GW contamination down gradient of S&T Landfill
- **Status:**
 - 70% Completed
 - Preliminary Reports December 2005
 - Final Report Spring 2006

Uranium Batteries

- **PIs:** Dr. Paul Dunbar (UK-Paducah)
- **Products:**
 - Identification and development of Lithiated Uranium compounds with electrochemical properties suitable for battery storage, use, and recharge
 - Electrochemical testing of Lithiated Uranium compounds
 - Construction of Prototype Battery
 - Final Report summarizing findings
- **Impact/Benefit:**
 - Better understanding of electro-chemical properties of depleted uranium
 - Potential beneficial use of PGDP depleted uranium stock
- **Status:**
 - 85% Completed

GW Modeling

- **PIs:** Dr. Srini Lingireddy & Dr. Chandra Viswanathan (UK-Civil)
- **Products:**
 - Independently Verified/updated GW flow and transport models existing
 - Model runs to evaluate future site conditions & remedial options (stream levels, hydraulic control, pumping, reactive walls)
 - Sensitivity Analyses (K's, leakance, pipeline leakage, lagoon leakage, recharge)
- **Impact/Benefit:**
 - Independent verification of existing PGDP flow and transport model
 - Modeling of potential remedial options and future conditions not undertaken by PGDP contractors
 - Recommendations relative to GW Model Inputs/Water Budget field data collection requests from DWM and CAB
- **Status:**
 - 90% Completed; Report(s) in December 2005.

Sediment/Contaminant Release Management

- **PI:** Dr. Richard Warner (UK-Agricultural Engineering)
- **Accomplishments/Products:**
 - Review/assessment/application of technologies that mitigate SW/Sed/Contaminant Release but do not require substantial capital engineering investments
 - Proposals for drainage ditch flow/release controls during Real-Time Remedial Demo Project activities at PGDP
 - Proposal for discharge, sediment, & contaminant release controls for KPDES 008, 011, 015 ditches
- **Impact/Benefit:**
 - Readily Implementable & Cost-Effective technologies for mitigating PGDP KPDES 011 sediment/contaminant discharges
 - Cost effective way to contain discharge during Surface Water Remedial Demo Project
- **Status:**
 - 50% Completed; Report June 2006

Nickel Stockpile Decontamination

- **PIs:** Grulke (UK-Chemical Engineering)
- **Products:**
 - Development/testing of a Physical Vapor Deposition (PVD) method to purify/decontaminate Ni contaminated with ^{99}Tc .
 - Knudsen Cell Mass Spectrometer (KCMS) constructed to perform tests and obtain data for distillation of Rhenium (^{99}Tc surrogate) and ^{99}Tc from Ni
 - Chemical and Physical properties of Rhenium, ^{99}Tc , and Ni as well as Rh-Ni and ^{99}Tc -Ni systems (includes vapor phase)
 - Bench-scale distillation apparatus designed to decontaminate Ni based on chemical & physical properties of ^{99}Tc , Ni, and Ni- ^{99}Tc system
- **Impact/Benefit:**
 - Cost-effective technology for decontamination of Ni ingots contaminated with ^{99}Tc
 - Potential for PVD to purify (separate) Ni/ ^{99}Tc to activity levels that would allow release/sale/reuse (i.e. non-detect by standard laboratory methods)
- **Status:**
 - 40% Completed; Final Report December 2006

PGDP Data Warehouse

- **PIs:** Kornis (SAIC), Cordiviola (UK-KGS), and Hampson (UK-KRCEE)
- **Products:**
 - Website GIS interface for PGDP OREIS, geospatial, geotechnical data
 - Training for administrators and users
- **Impact/Benefit:**
 - User-friendly interface for managers, technical contractors, et.al.
 - Reduced time/cost redundancy for site data mining/data utilization
 - Provide real-time data querying and presentation capabilities (meetings)
 - Standard outputs for all users of PGDP data
 - Specialized output formats for administrative/technical needs.
 - Utilization of experienced technical contractor for "lessons learned" system implementation at PGDP based on PORTS experience.
 - Development of very effective Project technical team
 - Completion of Project at significantly reduced time/cost to DOE
- **Status:**
 - Initial OREIS data compilation and querying capability 100% complete
 - System currently accessible and undergoing test runs thru November 2005
 - Geotechnical interface completed October - November 2005
 - Release for training and use - December 2005
 - Need for Phase II development funding

PGDP Data Warehouse

Current Capabilities:

1. Query the analytical, geospatial and groundwater elevation data from the warehouse,
2. Display the analytical query results on web-based maps
3. Display GIS features on web-based maps
4. Display temporal trend graphs of analytical results
5. Provides users ability to specify the type of data that they would like by clicking links to pages to select the type of information to be viewed or downloaded.
6. Accesses over 2 million standardized environmental analytical data records,
7. Accesses 10,000 temporal groundwater elevation records, and over
8. Accesses 100 layers of standardized GIS features.

Phase II PGDP Data Warehouse

1. **Analytical Data Package Tracking** - Provide laboratory analytical metadata package tracking
2. **Document Indexing and Linkage** - Linkage & query capability for OCR'ed PDF site docs
3. **Radiation Walkover Data** - make available thru query
4. **Risk Assessment Output** - make available for data sets
5. **Geoscience Data** - make available electronically
6. **Modeling Output** - 2-D & 3-D data plotting file interface
7. **Hosting (Configuration & Installation)** - Development of plan and implementation of local hosting
8. **GIS Feature Extraction and Download** - tool to identify & extract GIS feature data for local use

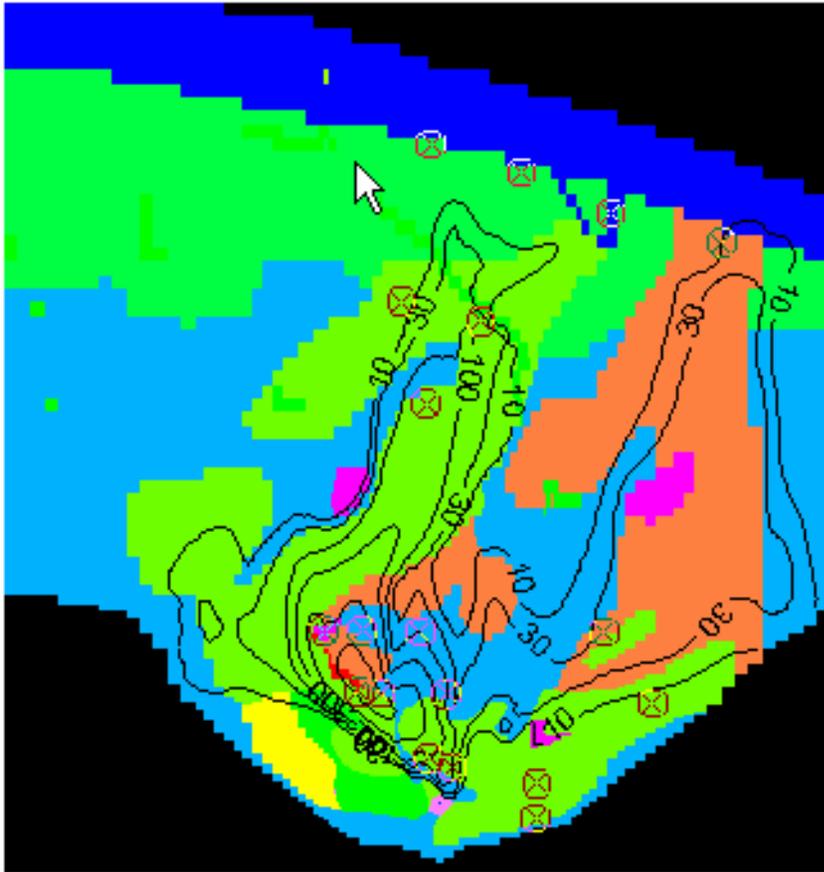
PGDP Groundwater Flow and Transport Model Sensitivity Analyses

- Proposed tasks
 - Pumping at TVA Shawnee Plant
 - River stage changes
 - Recharge rates
 - Plant recharges (lagoons)
 - Rain recharges
 - Leakage along the pipeline
 - Distributed
 - Concentrated
 - Plant shut down scenario
 - No outflow to Little Bayou Creek
 - Reduced outflow to Big Bayou Creek
 - Effect of Lineal elements
 - Model sensitivity to simultaneous changes in multiple parameters

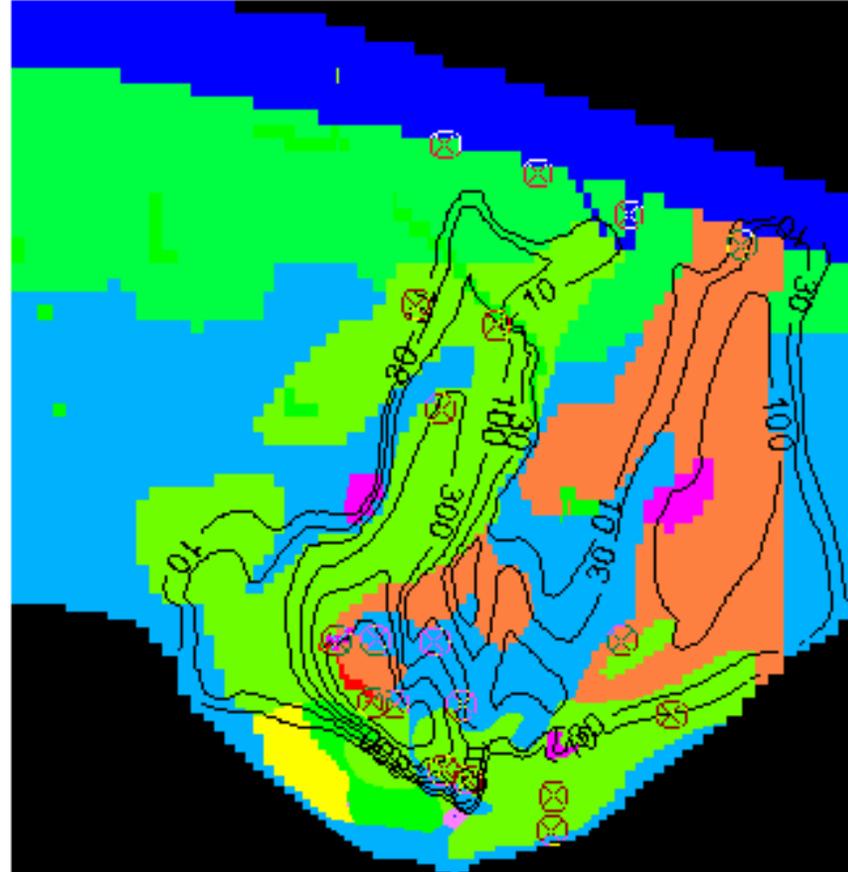
Modeling Evaluations to Date

- Baseline PGDP ground water model review (nature of development and improvements)
- Pump and treat study (wells/rates to influence gradients/plumes)
- Barrier study (effects of size/permeability)
- Influence of pumping at TVA Shawnee Plant
- Ohio River stage changes
- Recharge rates
- Plant recharges
- Rain recharges
- Sensitivity analysis on hydraulic conductivity in layer 3 (RGA aquifer)
- Sensitivity analysis on Big Bayou and Little Bayou creek stages
- Attenuation rate sensitivity analyses

Attenuation Sensitivity Analyses 1

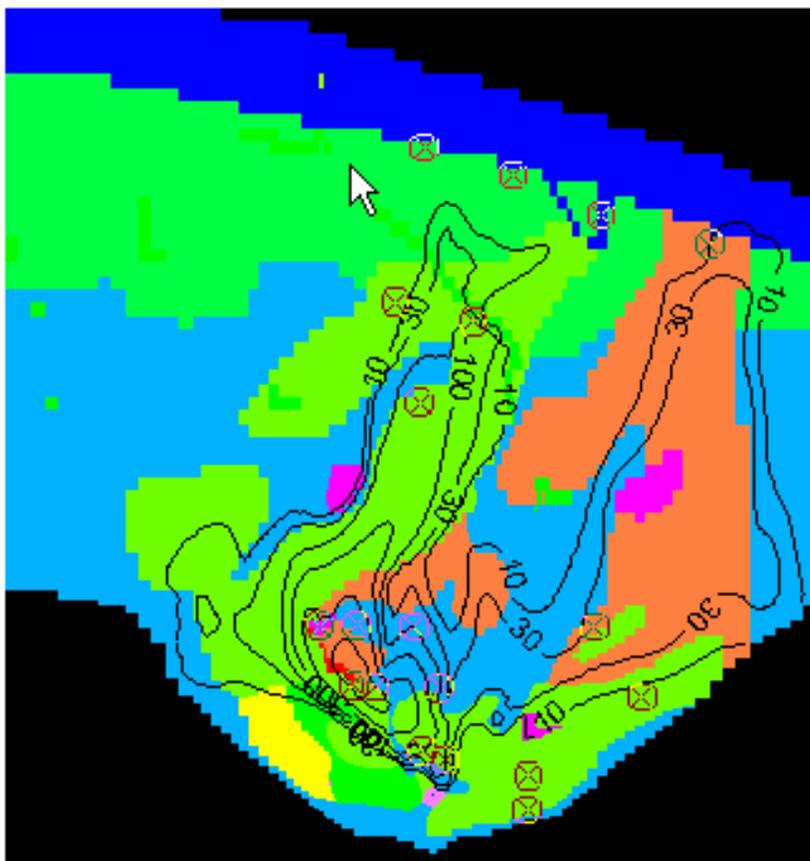


Baseline model with 26.65 years
half life period

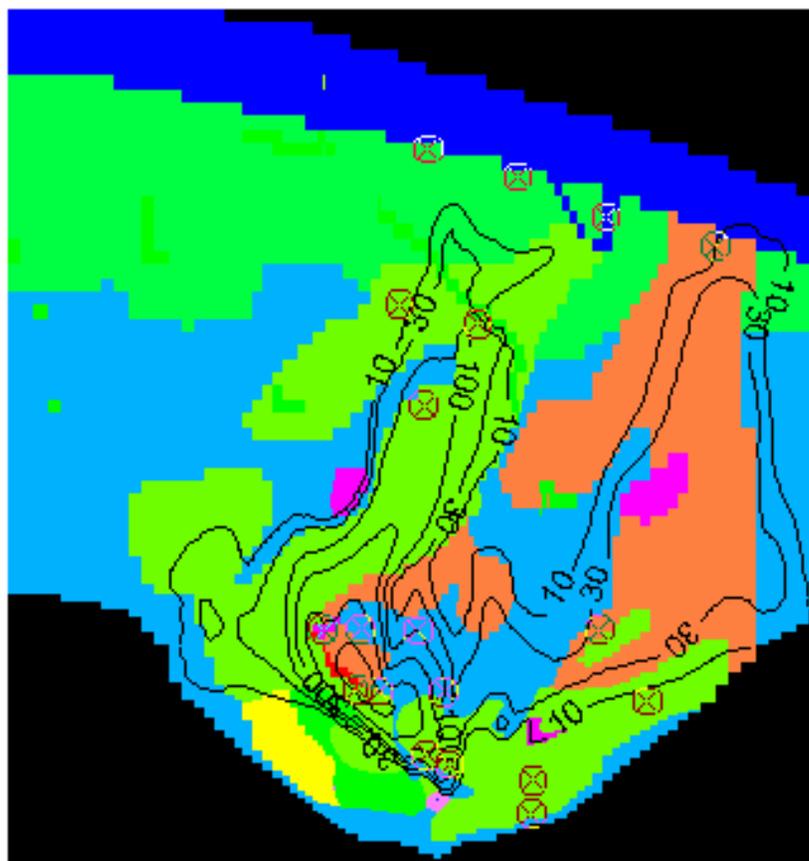


With no half life (i.e. no attenuation)

Attenuation Sensitivity Analyses 2



Baseline model with 26.65 years
half life period



With 5 years half life period for TCE