



PADUCAH GASEOUS DIFFUSION PLANT CITIZENS ADVISORY BOARD

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Paducah Gaseous Diffusion Plant Citizens Advisory Board Working Session Summary August 16, 2007

The Citizens Advisory Board (CAB) met at the CAB office in Paducah, Kentucky, August 16, at 5 p.m.

Board members present: Allen Burnett, Judy Clayton, Bobby Lee, Shirley Lanier, Jim Smart and Don Swearingen

Board members absent: John Anderson, Elton Priddy and John Russell

Board Liaisons and related regulatory agency employees: Mike Guffey, Todd Mullins, Edward Winner, Kentucky Division of Waste Management; David Williams, U.S. Environmental Protection Agency (EPA); Tim Kreher, Kentucky Department of Fish and Wildlife Resources (KDFWR) and Matt McKinley, Kentucky Radiation Health Branch

U.S. Department of Energy (DOE) Deputy Designated Federal Official: Reinhard Knerr

DOE Federal Coordinator: Mitch Hicks

DOE-related employees: Rich Bonczek, Tracey Brindley, Bryan Clayton, Kim Crenshaw, Bruce Gardner, Steve Hampson, Jerry Mayes, Eric Roberts and Jana White

Waste Disposition/Water Quality Committee

Southwest Plume Site Investigation

Bryan Clayton provided a presentation on the Southwest Plume Site Investigation and DOE's path forward. The investigation focused on three potential source units: Solid Waste Management Unit (SWMU) 1, the C-720 Maintenance Building and the storm sewer that runs north of C-720. The presentation identifies the following:

- Analytical results and conclusions for each potential source unit
- Sampling depths and results of trichloroethylene (TCE) and technetium-99 in the Southwest Plume
- Status and schedule of documents associated with the Southwest Plume
- Preparation, scope and future impact of the TCE Degradation Study

The Southwest Plume Proposed Plan will review the remedial alternatives considered for SWMU 1 and the C-720. The preliminary preferred alternative is no further action, which includes maintaining access controls and Comprehensive Environmental Compensation, Response and Liability Act (CERCLA) 5-Year Review.

The CAB may submit recommendations to DOE after receipt of the D1 Proposed Plan.

Surface Water On-Site Removal Action Overview

Jana White provided a presentation on the Surface Water on-site removal action. The presentation includes the following:

- Paducah Surface Water Strategy
- Surface Water Operable Unit scope
- Focus of the Site Investigation
- Focus of the Baseline Risk Assessment
- Document schedule

The Surface Water Engineering Evaluation/Cost Analysis will recommend the preferred alternative that best meets the removal action objective. The preliminary preferred alternative is excavation and interim institutional controls, which includes "hot spot" excavation and restoration, verification sampling during excavation and continued inspection and site maintenance. No long-term effluent monitoring for contaminant migration would be conducted.

The CAB may submit recommendations to DOE after receipt of the D1 Engineering Evaluation/Cost Analysis.

Long Range Strategy/Stewardship Committee

Environmental Indicators

Tracey Brindley provided a presentation on environmental indicators (EI). The presentation includes the following:

- Indicators and conditions
 - Groundwater Contamination Migration “No” condition at Paducah Gaseous Diffusion Plant (PGDP), Kentucky Department of Environmental Protection (KDEP) justification
 - Human Exposure Controlled “No” condition at PGDP, KDEP justification
- Path to gain a “Yes” for Human Exposure EI
 - Place signs along Little Bayou Creek
 - Stay on track with Soil Piles evaluations
 - Develop a process for managing uncertainties with respect potential human exposures associated with PGDP property
 - Develop a plan to expedite discovery of any yet accounted for areas of contamination
- Sign Placement and examples proposed by KDEP
- Planned Action – Install signs when DOE, EPA, and KDEP are in agreement on the actions specified by KDEP

Lee requested that staff prepare a recommendation to DOE on posting and maintenance of the signs.

Politics of Cleanup

Eric Roberts provided an overview on the Energy Communities Alliance’s (ECA) “Politics of Cleanup” communication recommendations. The presentation included the following:

- ECA organization and mission
- Four categories of recommendations: Goals, Actions, Communications and Conflict Resolution
- Communication recommendations
 - All parties must take into account post-cleanup requirements
 - Parties must build a working relationship
 - Be organized
 - Resources ensure parties can participate
 - Following the minimum in the law is not enough

The communication recommendations will be a topic for the fall Site Specific Advisory Board Chairs Meeting in Paducah. Roberts urged all members to review that portion of the document for discussion at the Chairs Meeting.

Community Outreach Committee

Membership Campaign

Roberts presented information that is used by the Savannah River Site CAB to promote membership. The packet included a public service announcement, press release, newspaper ad and the membership application that DOE Headquarters has requested that all CABs utilize. Lee said a significant change has been made to the CAB over the last few years and this should be advertised via newspaper and radio. Roberts said he is working with DOE to provide weekly or monthly articles for publication in the Paducah Sun.

Other Issues

Chairs Meeting Top Three Issues

The top three issues selected by the Board for the Fall Chairs Meeting are nickel disposition, C-400 area groundwater remediation and TCE degradation. All Board members were requested to send specific subpoints for each issue to Roberts to develop a draft slide for discussion at the Executive Committee meeting.

All CAB Working Session presentations are available on the CAB Website at www.pgpdcab.org.

The meeting adjourned at 8:30 p.m.

Actions

1. Staff will prepare a recommendation for CAB discussion on posting and maintenance of the signs to gain a “Yes” on the Human Exposure EI. *Closed, August 28.*
2. All Board members were requested to send specific subpoints for Chairs Meeting issues to Roberts for discussion at the Executive Committee meeting. *Closed, August 31.*

Southwest Plume Site Investigation and Path Forward

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Site Investigation Focus

To collect data on potential source units

1. SWMU 1 (Oil Land Farm)
 - Former bioremediation site
 - TCE source
2. C-720 (Maintenance Building)
 - Equipment maintenance
 - TCE source
3. Storm Sewer
 - Runs north of C-720

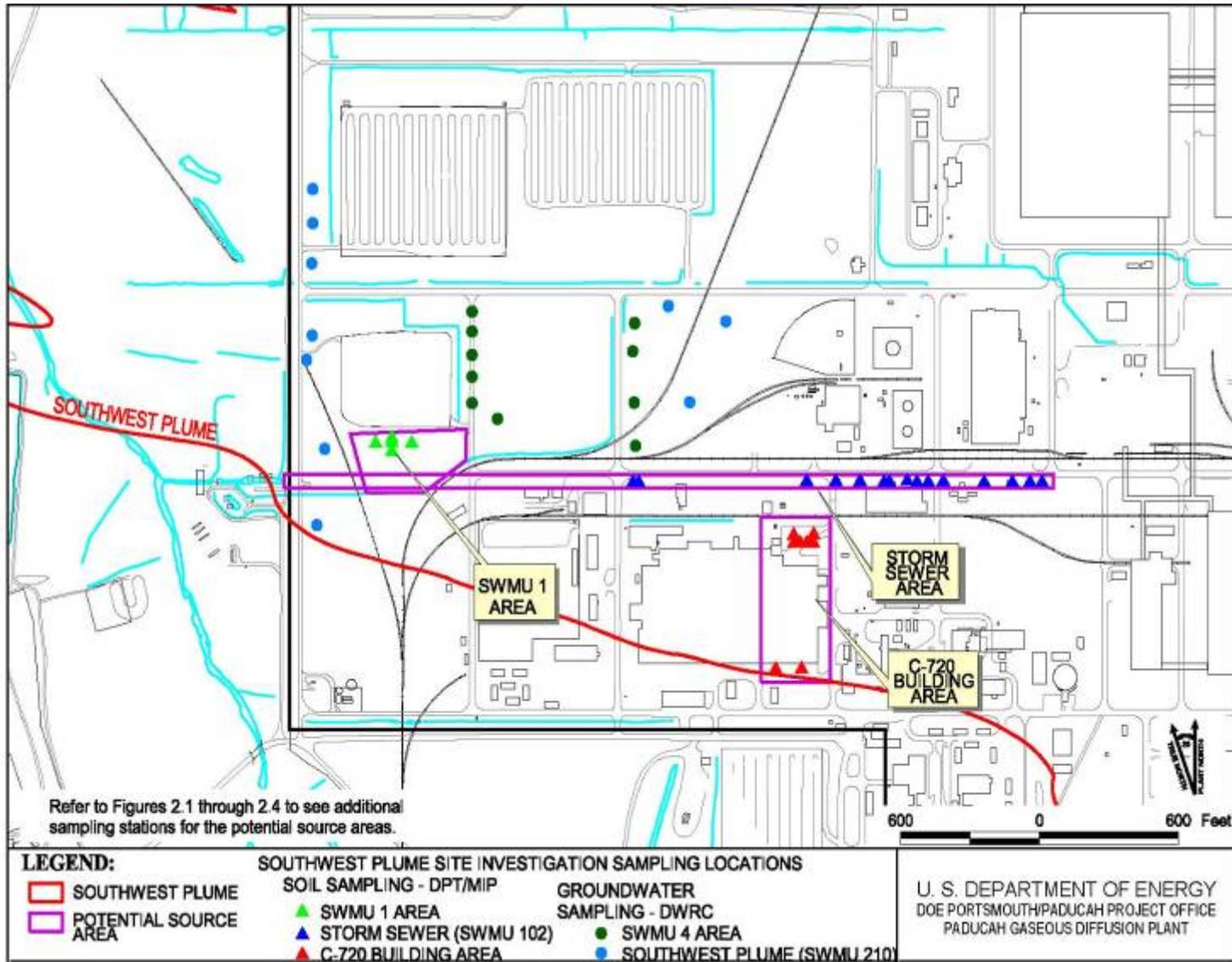
NOTE: SWMU 4 now included in Burial Grounds Operable Unit



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Site Investigation Areas



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SWMU 1 – Results and Conclusions

- Area of TCE contamination ~0.2 acre to a depth of 55 feet
 - Average concentrations in the source range up to 111 ppm (10 to 20 ft below the surface)
- Predicted TCE concentration at property boundary from this source is 1.3 ppb with variable TCE degradation rate (3.2-11.3 years) and 8.6 ppb for fixed TCE degradation rate set at zero (TCE MCL of 5 ppb)
- SWMU 1 is not a source of Tc-99 contamination



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C-720 – Results and Conclusions

- Largest TCE contamination area ~0.3 acre to a depth of 60 feet
 - Average concentrations in the source range up to 12 ppm (20 to 30 ft below surface)
- Predicted TCE concentration at property boundary from this source is 0.1 ppb with variable TCE degradation rate (3.2-11.3 years) and 2.9 ppb for fixed TCE degradation rate set at zero (TCE MCL of 5 ppb)
- C-720 is not a source of Tc-99 contamination



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Storm Sewer – Results and Conclusions

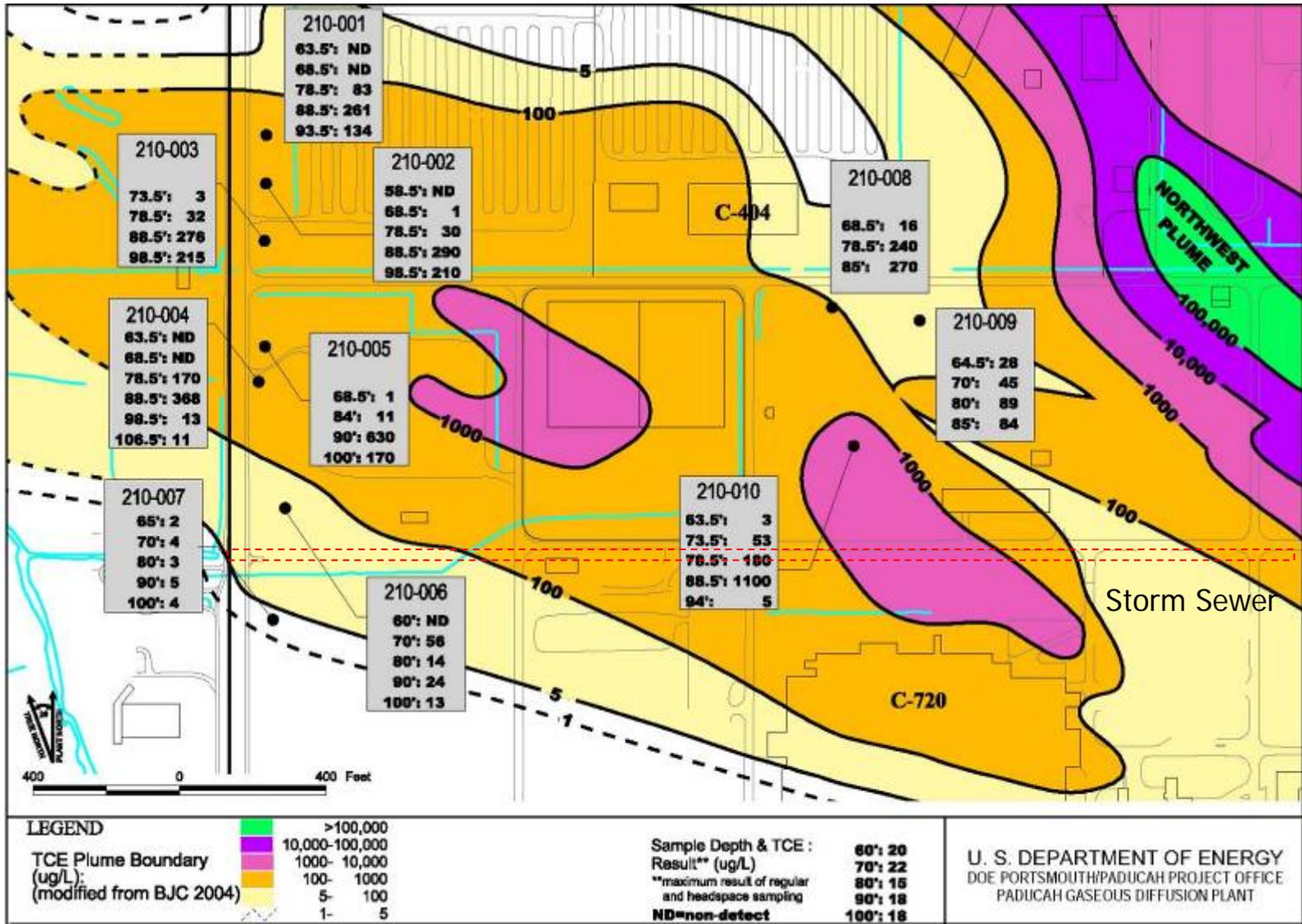
- Storm sewer structural integrity is good
- Not a source of TCE contamination
- Not a source of Tc-99 contamination



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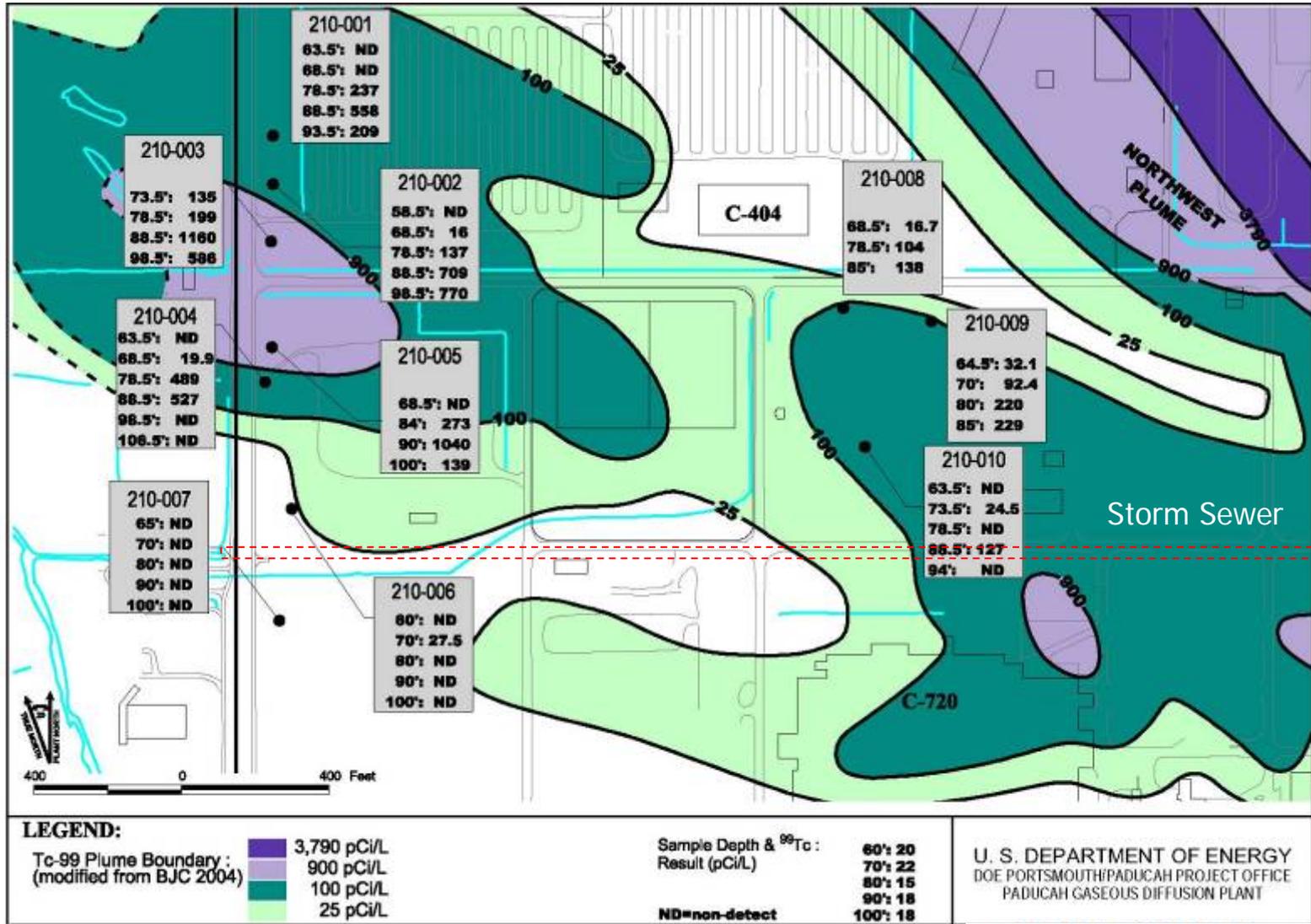
Southwest Plume – TCE



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Southwest Plume – Tc-99

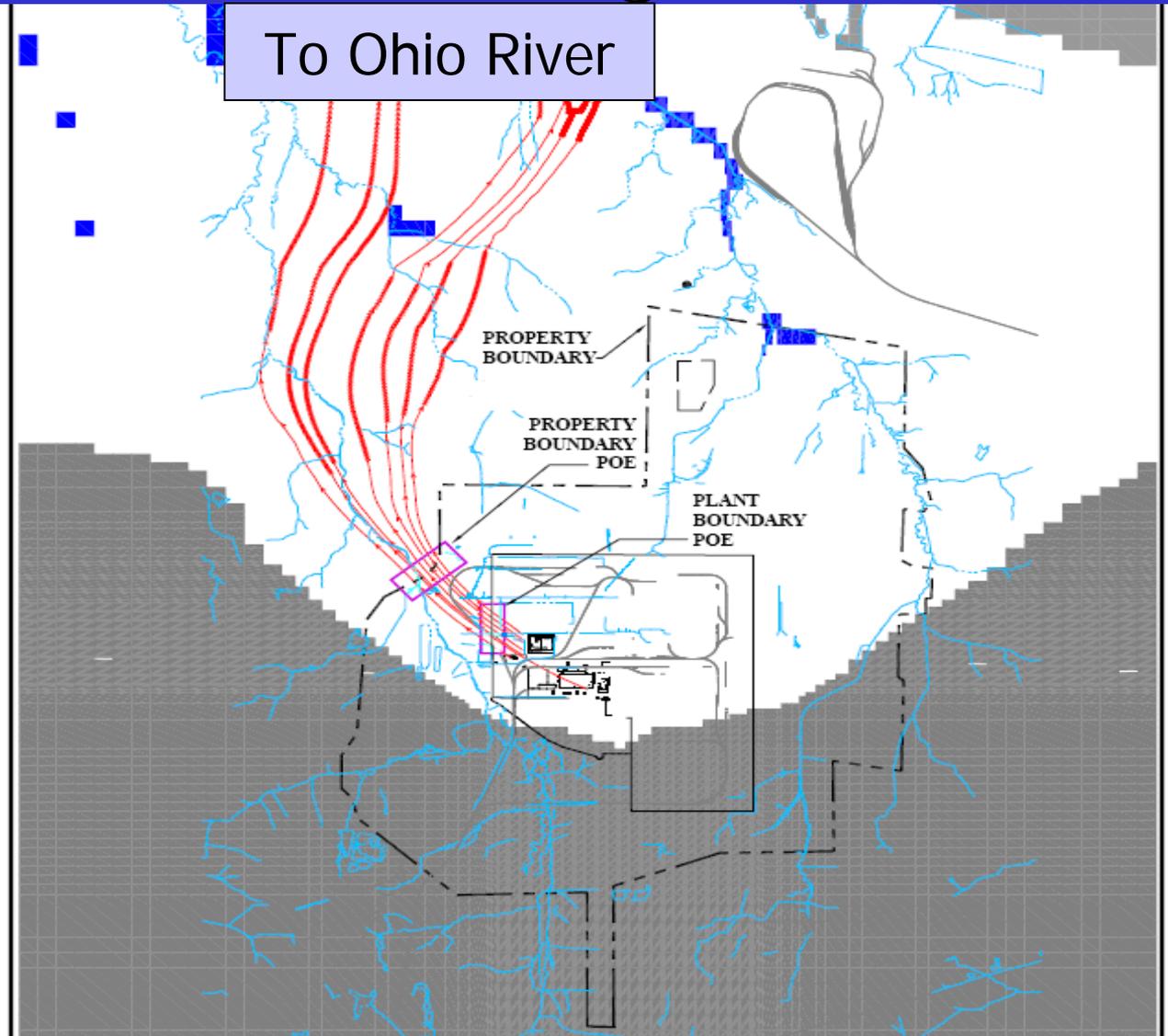


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Groundwater Modeling Results

Expected Migration Pathways for SW Plume



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SW Plume – Results and Conclusions

- Primary contaminants are TCE with lesser amounts of other VOCs and Tc-99
- SWMU 4 is the most important contributor of TCE and Tc-99 to the plume and will be evaluated under BGOU
- C-400, located upgradient of SWMU 4, may be a minor contributor to the Southwest Plume but a separate source reduction will be conducted there



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SW Plume – Results and Conclusions

- TCE concentrations at the plant fence range from non-detect to 630 ppb
 - At the property boundary, when variable TCE degradation rates (greater than 11 years) are considered, modeling indicates no exceedance of MCLs (5 ppb)
 - When degradation is not considered, worst case modeling shows TCE concentrations from 2.9 ppb to 8.6 ppb at property boundary
- Tc-99 levels at the fence range from non-detect to 1,160 pCi/L (Concentrations increase with depth)
 - Drinking water standard is 900 pCi/L
 - Levels at property boundary below drinking water standard



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Status and Schedule

Status

Currently is in Informal Dispute with several steps required to resolve

- Resolve informal dispute
- Complete regulatory review of D2/R1 SW Plume SI Report

Schedule

- D2R1 Site Investigation to be approved by Kentucky and EPA
- D1 Proposed Plan, 30 days after approval of D2R1 SI
- 45-day public comment period, following approval of D2 Proposed Plan
- Public meeting, within public comment period
- Record of Decision, 30 days following close of public comment period



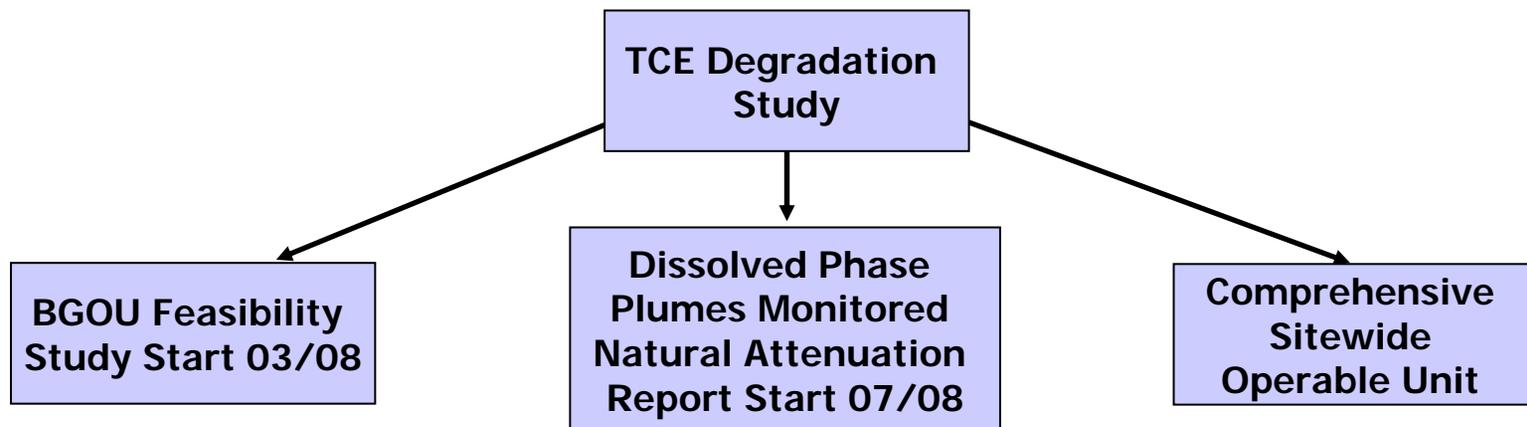
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TCE Degradation Study

Completion, December 2007

- Preparation – KRCEE, operating under a DOE grant, with technical assistance from DOE national labs, DOE headquarters and sites, Kentucky, EPA Region 4, and U.S. EPA's Groundwater Lab
- Scope – Evaluating degradation of TCE to prepare a scientific study, using sampling and modeling, that evaluates whether TCE degrades in the RGA at Paducah and at what rate
- Future impact – Data will be used to support dissolved phase plumes projects, Burial Grounds Operable Unit, and Comprehensive Sitewide Operable Unit



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SW Plume – Proposed Plan

- Southwest Plume Remedial Alternatives considered for source areas (Oil Land Farm and C-720)
 - No Action
 - No Further Action
 - Maintaining access controls
 - CERCLA 5-Year Review
 - Limited Action
 - Access and land use controls, CERCLA 5-Year Review
 - Source zone monitoring
 - Treatment of Source Areas
 - Direct heating of the source area
- Preliminary Southwest Plume Preferred Alternative
 - No Further Action
- 5-Year Review will be supported by additional monitoring



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Surface Water On-Site Removal Action Overview

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Surface Water Operable Unit Scope

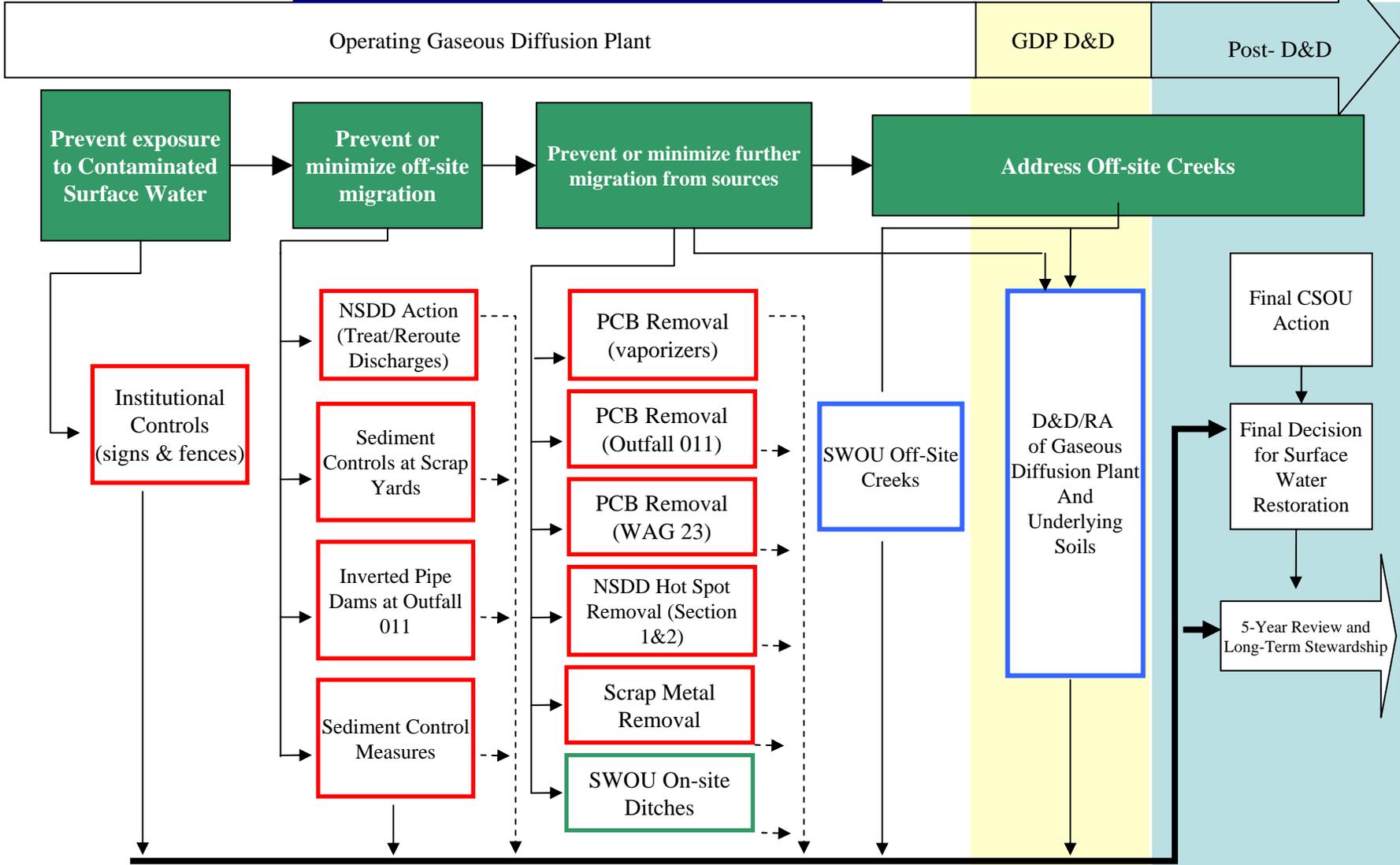
- Overall scope is to remediate ditches, storm sewers, and creeks to agreed-upon cleanup levels
- Site Management Plan divides SWOU into four main projects
 - Two where removal is completed
 - Scrap Metal
 - North-South Diversion Ditch – Sections 1 and 2
 - One Removal Action in process
 - Surface Water (On-site)
 - One Removal Action scheduled (by 2017)
 - Surface Water (Off-site)



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Paducah Surface Water Strategy



On-Going Environmental Restoration and Performance Monitoring Data Activities

Construction complete
 In process
 Future



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Scope - Surface Water On-Site

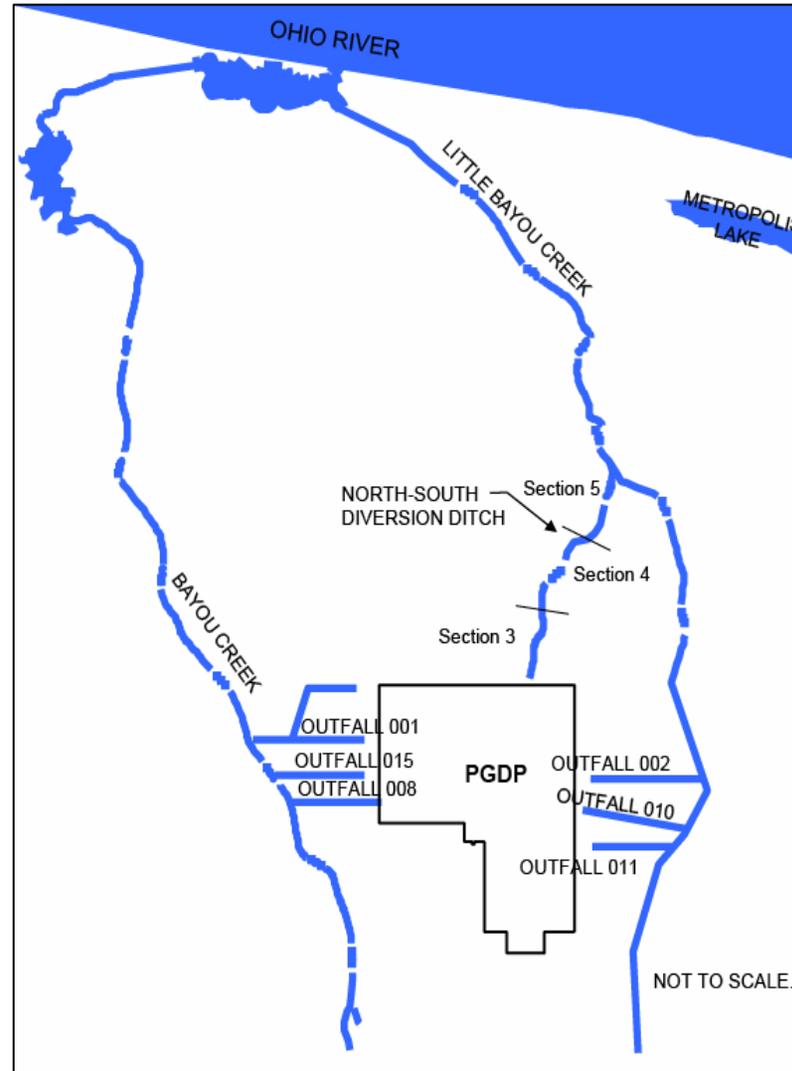
- Conduct a Site Investigation/Baseline Risk Assessment:
 - NSDD Sections 3, 4, and 5
 - PGDP outfalls 001 (those portions not addressed by the Scrap Metal Basin), 002, 008, 010, 011, 012 (those portions downgradient of the storm sewer discharge point), and 015
 - Internal ditches associated with the outfalls at PGDP (including SWMU 92 and SWMU 97)
 - PGDP storm sewers associated with C-333-A, C-337-A, C-340, C-535, and C-537
- Evaluate and select remedies
- Implement actions, as necessary, to address hot spots
- Evaluate need for additional sediment controls
- Engineering Evaluation/Cost Analysis in final development



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Surface Water Operable Unit Overview



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Surface Water (On-site) Site Investigation

- The SWOU (On-site) Site Investigation supports
 - Identification of hot spots that may be contributing to off-site migration and risks to human health and the environment
 - Development of source terms to support transport modeling and exposure point concentrations
 - Future evaluation of source actions (e.g., hot spot removal)
 - Future evaluation for additional sediment control measures



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On-Site Baseline Risk Assessment (BRA)

- Identified potential “hot spot” areas in the NSDD and in on-site ditches and associated areas
- Indicates no off-site migration of contamination from potential “hot spots” at unacceptable levels based upon modeling of Site Investigation (SI) data
- Human health risks greater than the EPA risk range may exist under some scenarios; however, under site specific current scenarios, risk falls within the EPA risk range
- Future evaluations of ecological risk may need to be performed



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CERCLA Document Schedule

Removal Notification	January 2007
D2 R1 SI/BRA Report	July 2007
D1 EE/CA	August 30, 2007
D2 EE/CA	60 days after D1
D1 Action Memorandum*	February 12, 2008
D1 Removal Action Work Plan*	June 12, 2008

* Upcoming enforceable milestone dates are currently under review by EPA and Kentucky



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Surface Water (On-Site) EE/CA

- The Engineering Evaluation/Cost Analysis will:
 - Describe the environmental conditions supporting the need for the removal action
 - Present cleanup goals and cleanup levels based on a risk evaluation
 - Outline and evaluate removal action alternatives
 - Recommend the preferred alternative that best meets the removal action objectives



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EE/CA Issues – Alternatives Considered

- Alternative 1 - No Action
- Alternative 2 - Interim Institutional Controls
 - Installation of fencing and hazard posting around “hot spots”
 - Inspection and maintenance of fencing and hazard postings
 - Long-term monitoring to ensure that contaminant migration does not occur
- Alternative 3 - Engineering Controls and Interim Institutional Controls
 - Installation of impermeable liner/barrier in “hot spots”
 - Installation of fencing and hazard posting around “hot spots”
 - Inspection and maintenance of fencing and hazard postings
 - Long-term monitoring to ensure that contaminant migration does not occur
- Alternative 4 - Excavation and Interim Institutional Controls
 - “Hot spot” excavation and restoration
 - Verification sampling during excavation
 - No long-term effluent monitoring for contaminant migration
 - Continued inspection and site maintenance



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Communication, Cooperation, and Public Participation

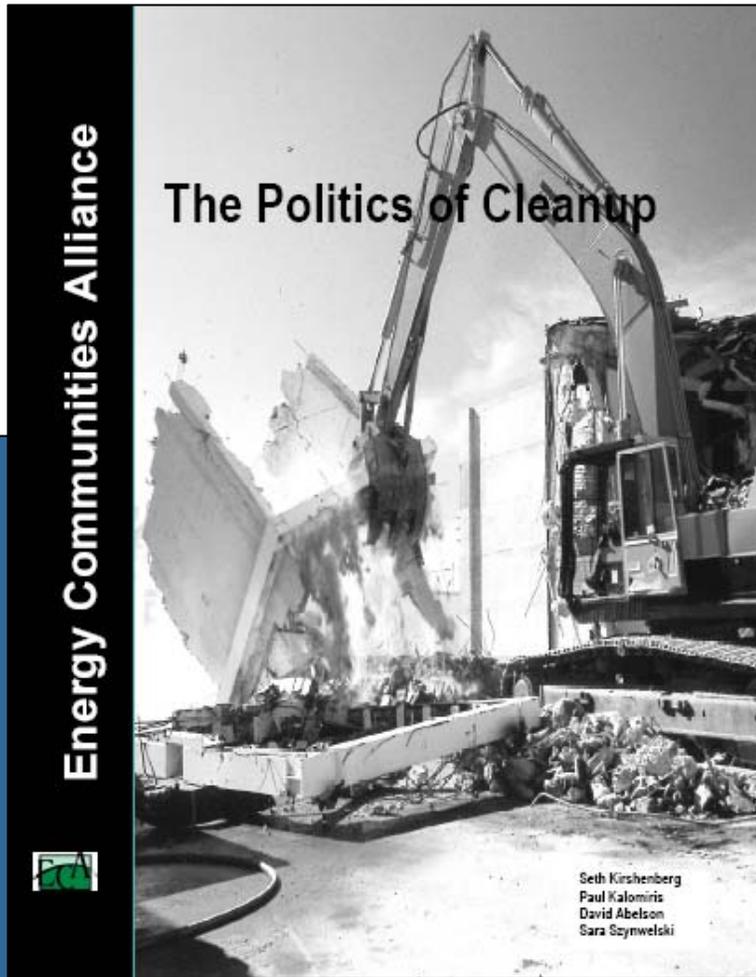
Preparation for EM SSAB Chairs Workshop



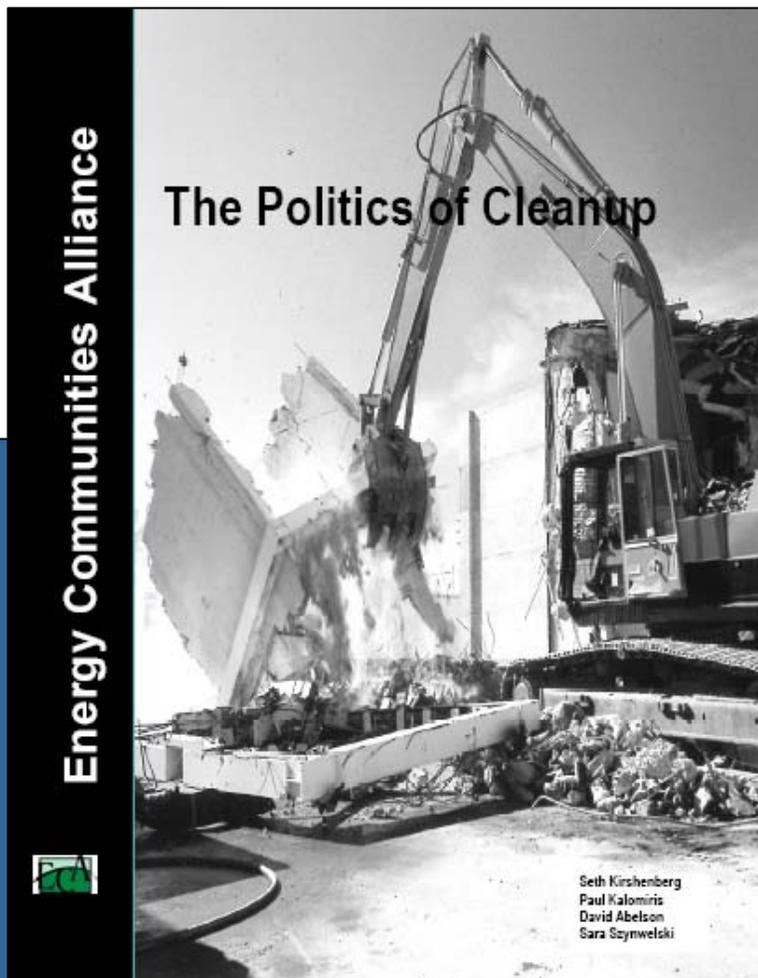
- **Energy Communities Alliance (ECA)** is the organization of local governments that are adjacent to or impacted by DOE activities. Their board members include elected officials and administrators from local governments impacted by DOE.



- ECA's mission is to bring together local government officials in DOE-impacted communities to share information, establish policy positions and advocate community interests in order to effectively address an increasingly complex set of constituent, environmental, regulatory and economic development needs.



- **Research Report Published in February 2007**
- **Series of recommendations on interactions between federal, state, and local agencies concerning cleanup activities**



- **Recommendations are grouped into four categories**
 - **Goals**
 - **Actions**
 - **Communications**
 - **Conflict Resolution**
- **“Communications” section is the topic for fall Chairs meeting.**

III. Communications:

Engaging the Community Through Consultation, Coordination and Ongoing Dialogue

- EM SSAB Chairs Workshop will be led by David Abelson, coauthor
- Round Table Discussion will allow Boards the opportunity to share their activities toward Outreach, Communication, and Public Participation

Recommendation #10

All Parties Must Take Into Account Post-Cleanup Requirements

- Sites rarely remediate to natural background levels
- Ongoing management (long-term stewardship) will be required
- Stewards must be identified, agreed upon and have the funds necessary to implement activities

Recommendation #11

The Parties Must Build a Working Relationship

- Partnerships based on trust, accountability, and openness must be formed
- This is a paradigm shift from Cold War Era, “Umbrella of Secrecy”
- Trust and accountability flow from the program mission and there must be agreement on goals and a clear vision

Recommendation #12

Be Organized

- SSABs benefit DOE by offering continued involvement from a broad range of members from local communities
- SSABs do not always agree with the goals of local elected officials
- Working as a single entity, a coalition can speak with one voice with amplified power and effectiveness

Recommendation #13

Resources Ensure Parties Can Participate

- Federal government must provide regulators and communities with the finances to organize and retain staffing
- States must have staff to work with DOE on cleanup issues, federal funding allows regulators to participate and facilitate the cleanup process
- No one interviewed for this report thought federal funding compromised their independence from DOE

Recommendation #14

Following the Minimum in the Law is Not Enough

- Minimum regulatory requirements are insufficient to support substantive public involvement
- Parties must develop public involvement processes that are tailored to site-specific needs; this process is different from negotiations
- Engaging affected community members improves the decision making framework

Environmental Indicators

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Environmental Indicators

- The 1993 Government Performance and Results Act (GPRA), hold federal agencies accountable for using resources wisely and achieving program results
- EPA, under direction from Congress, established two environmental indicators (EIs)
- Two indicators: groundwater contaminant migration under control and human exposure under control
- Kentucky has responsibility for making determination
- Three possible indicator conditions
 - Yes, contamination under control
 - No, contamination not under control
 - Insufficient information



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Indicator - Groundwater Contaminant Migration

- “No” condition
- Kentucky does not consider groundwater contaminant migration under control because:
 - Contaminant plumes are not stable
 - Groundwater seeps in Little Bayou Creek releasing contamination to surface water



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Indicator – Human Exposure Controlled

- “No” condition per Kentucky
- DOE believes exposure is adequately controlled
- Kentucky does not consider exposure under control because:
 - Unacceptable levels of uncertainty exist regarding contamination levels in Little Bayou and Bayou Creeks
 - Contamination exists in the off-site portions of the North-South Diversion Ditch
 - Various contaminants have been identified in these areas above background and in excess of agreed upon risk-based screening values
- DOE, EPA and Kentucky working together to achieve a “Yes” to EI



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Path to Gain a 'Yes' to Human Exposure EI

1. Place signs along Little Bayou Creek, a small defined stretch of Bayou Creek and along Section 5 of the North South Diversion Ditch
2. Stay on track with Soil Piles evaluations in accordance with February 2007 letter and the schedules attached
3. Develop a process for managing uncertainties with respect to potential human exposures associated with entire PDGP property
4. Develop a plan to expedite discovery of any yet unaccounted for areas of contamination



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Sign Placement

- Place and maintain signs at all easily accessible points to the creek areas along Little Bayou Creek and portions of Bayou Creek
- No signs would be required where fencing is already in place

Example of sign for Little Bayou Creek as proposed by Kentucky



Sediments in this creek may be contaminated. Use of this waterway for drinking, fishing, swimming or other forms of recreation may expose you to unnecessary health risk.

Do not eat fish caught in this body of water. For more information, call (270) 441-5023.



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Sign Placement

Example of sign for Bayou Creek
as proposed by Kentucky



**Sediments in this creek
may be contaminated.
Use of this waterway for drinking,
swimming or other forms of
recreation may expose you
to unnecessary health risk.
For more information, call
(270) 441-5023.**

Example of sign for North-South
Diversion Ditch as proposed by
Kentucky



**WARNING: The U.S. Federal
Government has determined
that this ditch is contaminated
and should not be used for drinking,
recreational, or fishing purposes.
For more information,
call (270) 441-5023.**



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Current Status

- DOE expects to develop a flowchart to describe how the FFA parties are managing uncertainties with respect to potentially unidentified areas
 - DOE, EPA, and KDEP will jointly evaluate future needs for signs or other controls as more data become available
- DOE will procure and install signs as soon as all three parties are in agreement on the actions specified by Kentucky
- DOE will maintain signs and continue with investigations per the FFA/SMP



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