



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

Paducah Land Acquisition Study

Public Informational Briefing

Heath High School

March 20, 2007

Richard Bonczek, PhD



www.em.doe.gov



Background

The study is being conducted in accordance with a Congressional Directive to DOE in the 2006 Energy and Water Development Appropriations Act.

“Within the funds provided the Department shall undertake a study of the potential purchase of property or options to purchase property

Energy and Water Development Appropriation Bill, 2006 (Senate Report 109-084)



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The study is being conducted in accordance with a Congressional Directive to DOE in the 2006 Energy and Water Development Appropriations Act.

*“Within the funds provided the Department shall undertake a study of the potential purchase of property or options to purchase property that is located **above the plume of contaminated groundwater** near the facility site.*

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The information in the report may be used in future decision documents, as appropriate.

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Background Tasks Completed

- Identify Project Team
 - Delineate
 - Develop
 - Summarize
 - Model
 - Identify
 - Complete
- **Kentucky Research Consortium for Energy and Environment**
 - **University of Kentucky College of Law**
 - **University of Kentucky College of Agriculture**
 - **University of Kentucky College of Engineering**



Background Tasks Completed

- **Identified property that is over or could be over contaminated groundwater.**
- Delineated ways to purchase property or interests in property.
- Developed general cost estimates for property or interests in property.
- Summarized assumptions for potential remedial actions that could address contaminated groundwater and sources.
- Modeled where contaminated groundwater might migrate to in the future and identified potentially impacted properties.
- Identified conditions that make property acquisition cost-effective while ensuring protection for human health and the environment.
- Completed an economic analysis.





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The final draft of the report is due to Congress on April 16, 2007.



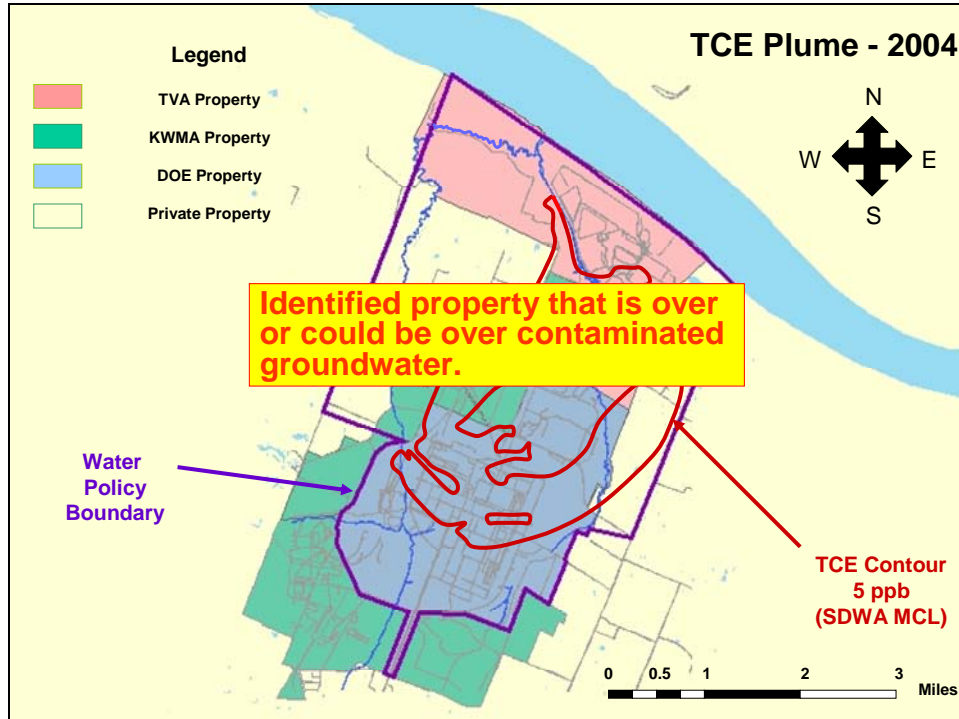
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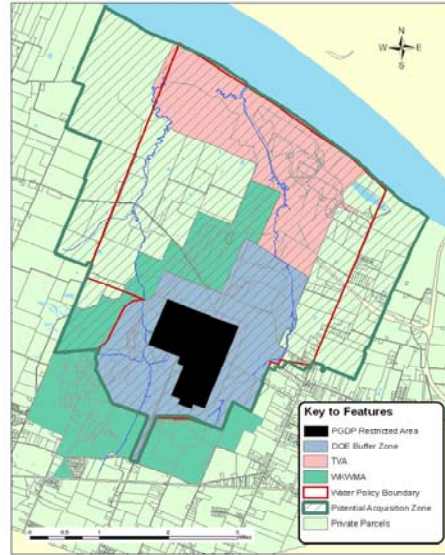
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Identified property that is over or could be over contaminated groundwater

Ownership Characteristics in the Area Impacted or Potentially Impacted by Contaminated Groundwater		
Ownership	Number of Parcels	Area (Acres)
DOE	1	3,556
TVA (Shawnee Power Plant)	1	2,669
Kentucky (West Kentucky Wildlife Mgt. Area)	2	1,290
Private Property	165	6,054
Farm	64	5,783
Rural Residential	101	271
Total	169	13,568



Delineated ways to purchase property or interests in property

Considered:

Fee Simple
 Life Estate
 Leasehold
 Concurrent Estates
 Nonpossessory – Future Interests
 Option to Purchase
 License
 Easement
 Real Covenants/
 Equitable Servitudes

Chosen for Evaluation:

Fee Simple
 Easement
 • Limited
 • Expanded





Developed general cost estimates for property or interests in property

Range of Estimated Per Unit Acquisition Costs to DOE* for Fee Simple Purchase of Properties Based on: (1) Tax Valuation and (2) Sales Valuation			
Parcel Type	Units	Estimated Range of Acquisition Costs Per Parcel or Per Acre (Averaged over Area)	
		Upper Estimate	Lower Estimate
Residential	Per Parcel	\$138,301	\$120,293
Farm:			
Fair Market Value	Per acre	\$3,099	\$2,788
Development Value	Per acre	\$7,583	\$6,524

* Values shown include legal costs.



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Developed general cost estimates for property or interests in property

Range of Estimated Per Unit Acquisition Costs to DOE* for		
Easement		
	Farm: Estimated Cost Per Acre	
Limited scope easement includes restrictions on the use of groundwater underlying a property or the surface water running through the property.		
Limited Scope Restrictions		
Upper Estimate	\$17,330	\$872
Lower Estimate	\$4,001	\$472
Expanded Scope Restrictions		
Upper Estimate	\$38,325	\$2,789
Lower Estimate	\$16,529	\$2,589

* Values shown include legal costs.



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Developed general cost estimates for property or interests in property

	Expanded scope easement includes restrictions on the use of groundwater underlying a property or the surface water running through the property and, potentially, a prohibition on the construction of subsurface structures (i.e., swimming pools, septic systems, ponds and the like).		
Limited			
Expanded Scope Restrictions			
	Upper Estimate	\$38,325	\$2,789
	Lower Estimate	\$16,529	\$2,589

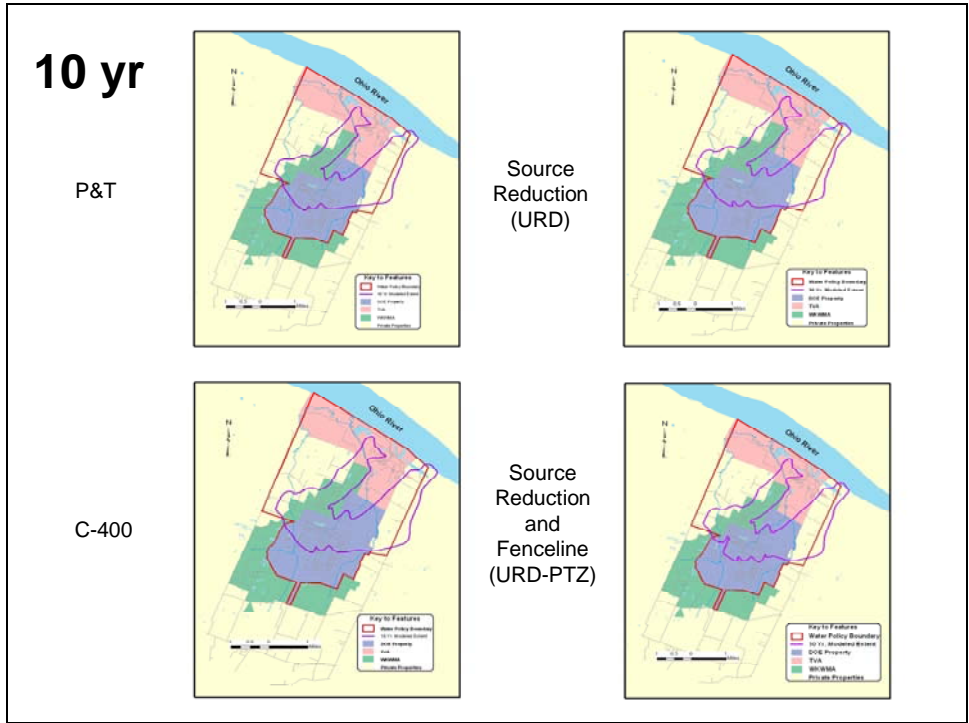
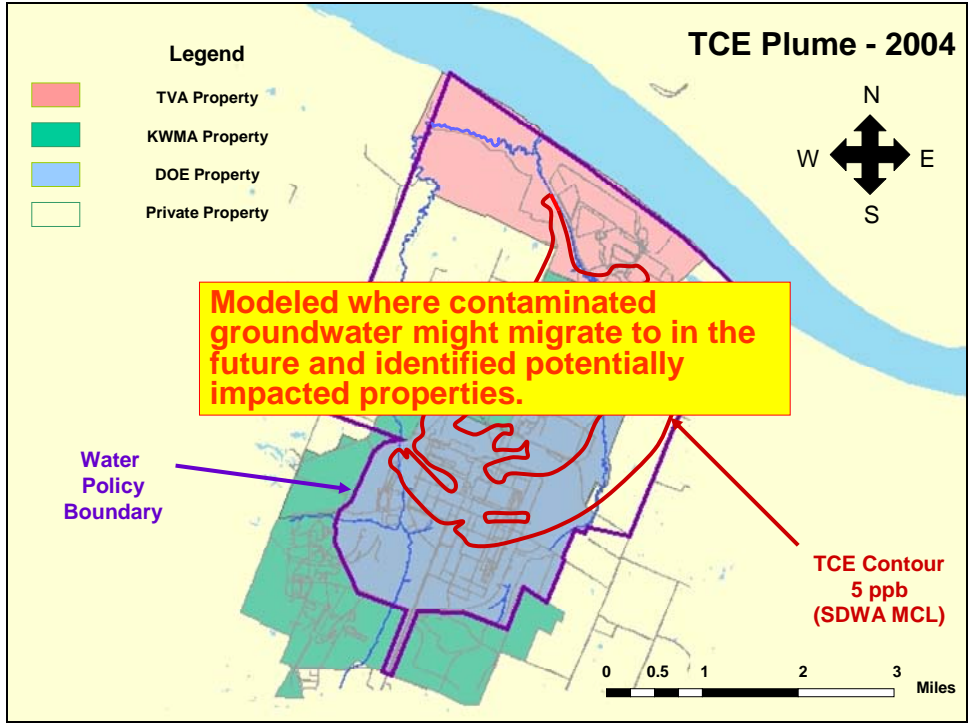
* Values shown include legal costs.



Summarized assumptions for potential remedial actions that could address contaminated groundwater and sources

- Continuation of existing pump and treat action (P&T)
- Source building 400
- Source and tre **These four scenarios are examples used to examine the potential effect of remedial actions on plume migration in the future.** (sources D)
- Source reduction for all sources, treatment of Southwest Plume, and plume containment (URD-PTZ)





30 yr

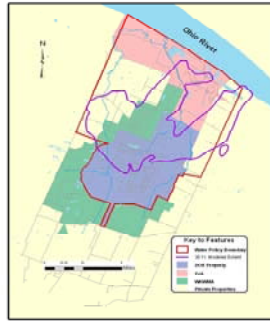
P&T



Source Reduction (URD)



C-400



Source Reduction and Fenceline (URD-PTZ)

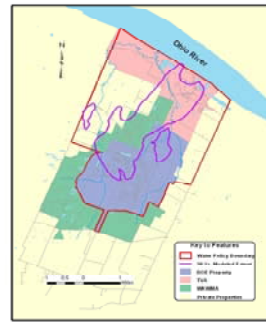


50 yr

P&T



Source Reduction (URD)



C-400



Source Reduction and Fenceline (URD-PTZ)



100 yr

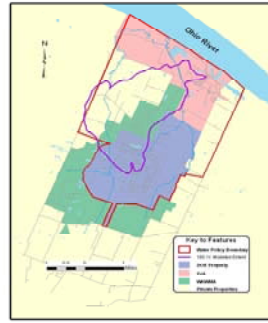
P&T



Source Reduction (URD)



C-400

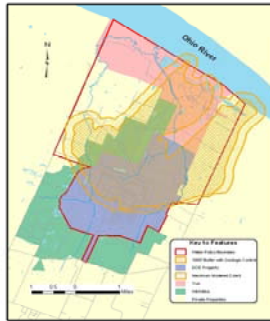


Source Reduction and Fenceline (URD-PTZ)



Maximum Extent (Independent of Time)

P&T



Source Reduction (URD)



C-400



Source Reduction and Fenceline (URD-PTZ)





Modeled where contaminated groundwater might migrate and identified potentially impacted properties

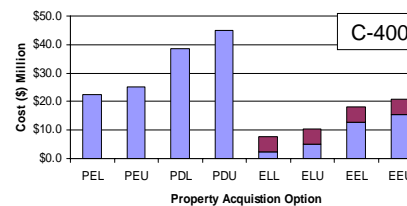
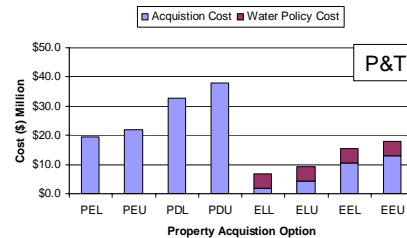
Maximum Potential Property Impact for Each Potential Remedial Action (over 100-years modeled)			
Scenario	ID	Agricultural Parcels (acres)	Residential Parcels (number)
1	P&T	3531	80
2	C-400	4370	85
3	URD	4102	85
4	URD-PTZ	4049	84



Completed an economic analysis

Key

- PEL – Fee Simple Purchase, Existing Condition, Lower Estimate
- PEU – Fee Simple Purchase, Existing Condition, Upper Estimate
- PDL – Fee Simple Purchase, Development, Lower Estimate
- PDU – Fee Simple Purchase, Development, Upper Estimate
- ELL – Limited Easement, Lower Estimate
- ELU – Limited Easement, Upper Estimate
- EEL – Expanded Easement, Lower Estimate
- EEU – Expanded Easement, Upper Estimate

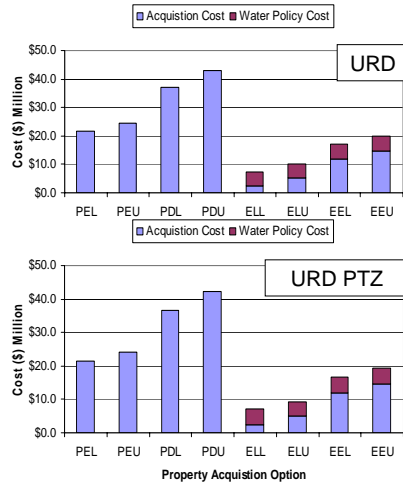




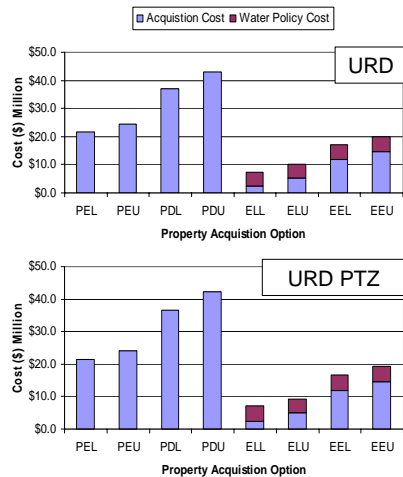
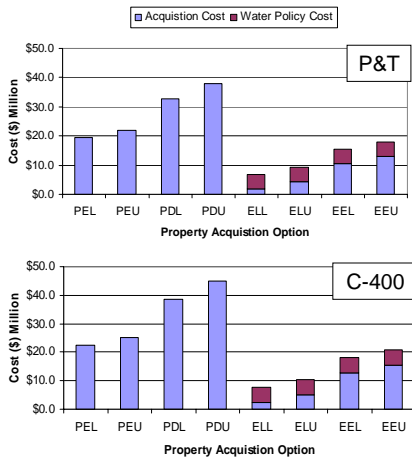
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General Observations

- Fee simple property purchase is significantly more expensive than the combined cost of the Water Policy with a limited or expanded easement.
- When compared between potential remedial actions, the costs for property acquisition (purchase or easement) are essentially equal.
 - The cost of property acquisition to limit exposure to contaminated groundwater does not depend on the effectiveness of the remedial action over time.



Future Use of the Results of the Study

The Land Acquisition Study gives DOE a tool that can be used in future decision documents to:

- 1) evaluate the cost effectiveness of potential institutional controls.
- 2) evaluate the cost effectiveness of potential remedial actions.





Upcoming Activities

- March 20 – Public Information Briefing
- April 3 – Comments Due
- April 13 – Final Report to DOE-HQ
- April 16 – Final Report to Congress



Contacts

Please send your comments or questions to:

- Rich Bonczek
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- Laura Schachter
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 - Phone: 859/219-4010
- Mitch Hicks
 - Email: Mitch.Hicks@lex.doe.gov
 - Phone: 270/441-6829

