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WASTE DISPOSITION AND RECYCLING SUBCOMMITTEE

TUESDAY, MARCH 12, 2013 @ 4:00 P.M.

**THE PURPOSE OF THIS MEETING IS TO PROVIDE THE SSAB SUBCOMMITTEE ON
SITE HYDROLOGY**

AGENDA

- REVIEW OF THE FEBRUARY MEETING
- SITE HYDROLOGY – DAVE HUNT & DOUG SNYDER, OHIO EPA
- DISCUSSION

ADJOURN



WASTE DISPOSITION & RECYCLING SUBCOMMITTEE

MEETING SUMMARY

MARCH 12, 2013 • 4:00 P.M.

THE OHIO STATE UNIVERSITY ENDEAVOR CENTER
1862 SHYVILLE ROAD, PIKETON, OH 45661

SSAB Subcommittee Members Present: Richard Snyder, subcommittee chair; Connie Yeager, subcommittee vice chair; Frank Halstead, Brian Huber, Dan Minter

SSAB Subcommittee Members Absent: Shirley Bandy, Al Don Cisco

Other SSAB Members Present: Will Henderson, board chair; Val Francis, board vice chair; Gene Brushart, Carl Hartley, Sharon Manson

U.S. Department of Energy (DOE) and contractors: Greg Simonton, Johnny Reising, DOE; Rick Greene, Restoration Services, Inc. (RSI); Karen Price, Jeff Wagner, J.D. Chiou, Steven Thompson, Fluor-B&W Portsmouth (FBP)

Liaisons: Maria Galanti, Dave Hunt, Doug Snyder, Ohio Environmental Protection Agency (EPA); Mike Rudadue, Ohio Department of Health (ODH)

Support Staff: Eric Roberts, Julie Galloway, Cindy Lewis, EHI Consultants (EHI)

Public: Geoffrey Sea, Neighbors for the Ohio Valley Alternative (NOVA)

Snyder opened the meeting at 4:01 p.m.

1. Review of the February meeting:

2. Site Hydrology-Dave Hunt and Doug Snyder, Ohio EPA

- Hydrogeology of the Proposed OSDC Site D
- General Hydrologic Cycle
- Cross Section of a Typical Landfill
- Solid Waste Landfill Site Investigation and Hydrogeologic Studies
- Requires the Following
- Drill boring to describe the geology
- Install Monitoring Wells
- Siting Criteria of OAC 3745-27-07
- Portsmouth Site and OSDC Siting

- Surrounding Terrain of Site D
- Proposed Site D
- Does Site D meet the State of Ohio Landfill Siting Criteria?
- Additional Work Needed
- DOE On-Site Groundwater Plumes
- Geology
- Typical Groundwater Contamination Plume
- Source and Plume Removal
- Advantages of Excavating the Plumes

Question/Comment:	Answer:
<p>Simonton: On the siting criteria you said there has to be a five-year travel time to water supply, is that private or public water supplies?</p> <p>Will there be redevelopment potential over the site after the cleanup if it is cleaned up like this?</p>	<p>Doug Snyder: Public, we do not do a five-year travel time for private water supplies. A landfill needs to be 1000 feet from a private water supply.</p> <p>If they fill everything in, I do not think it would be a problem.</p> <p>Hunt: You will still have, 90% that is clean.</p>
<p>Roberts: If site D does not meet one of those criteria, do you do a waiver or what?</p> <p>Will the water naturally run off in that same direction again or do you control the run off completely?</p>	<p>Doug Snyder: That is possible; there are landfills in Ohio that have not met all of these criteria. If it were deemed safe, we would allow it.</p> <p>When you put this landfill in with the liner and the cap, you are cutting off 40 years of rainfall over 80 acres. It is like putting an umbrella over the cell.</p>
<p>Dick Snyder: So you would direct the water into the little valleys.</p> <p>How will the 611 be impacted?</p> <p>The cross section to the left, you have another mound, would the water flow down against the cell?</p> <p>When you say meets Ohio criteria does that mean Comprehensive Environmental</p>	<p>Doug Snyder: That is possible. I could see them doing that. Yes.</p> <p>They are talking about lowering the elevation so the 611 is lower than the 680 sandstone. That way 611 becomes a discharge point for the 680 sandstone.</p> <p>That is something that will have to be engineered.</p> <p>Chiou: The water will be collected on the edge and flow off the cell.</p> <p>Doug Snyder: Solid Waste rules. There are also some federal rules that have to be</p>

Response, Compensation and Liability Act (CERCLA)?	followed. Galanti: They have to meet the Ohio rules of siting a landfill.
Payton: What keeps the 611 from filling up again?	Chiou: The manmade dam will keep the 611 from filling up.
Halstead: This area has a high volume of rain and the cell will be open for years. Since we do not know what is in some of the landfills, will there be tests performed before any digging starts?	Doug Snyder: Yes, a portion of the cell will be open, so they have to be able to deal with that water. Galanti: We have to have enough data. A. What is in it? B. Where do we take it? You cannot just start digging without the data.
Hartley: When you say there are not records of the contents in some of the landfill, have you asked the workers?	Galanti: Yes, they have talked to the workers. However, what they remember may not always be correct.

3. Discussion:

Question/Comment:	Answer:
Roberts: Since you are out of time, do you want to schedule a working session to work on a recommendation?	Dick Snyder: Yes, the subcommittee would like to schedule a working session.

Snyder: Meeting adjourned at 5:04 p.m.

Next meeting: Tuesday, April 12, 2013

4. Action Items:

1. EHI to schedule a working session
2. EHI to make color copies of the Site Hydrology presentation for the subcommittee

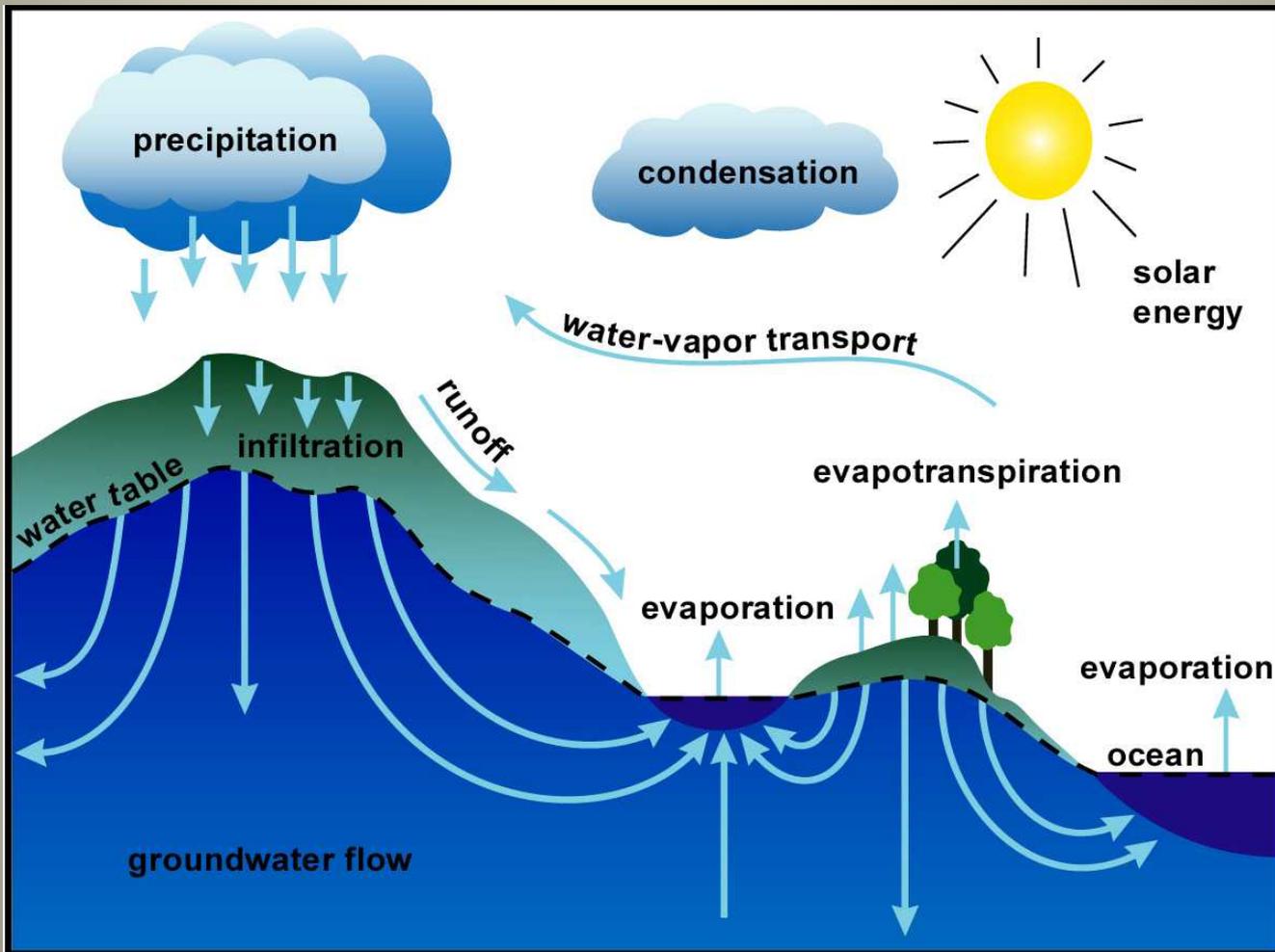
Hydrogeology of the Proposed OSDC Site D

Dave Hunt & Doug Snyder

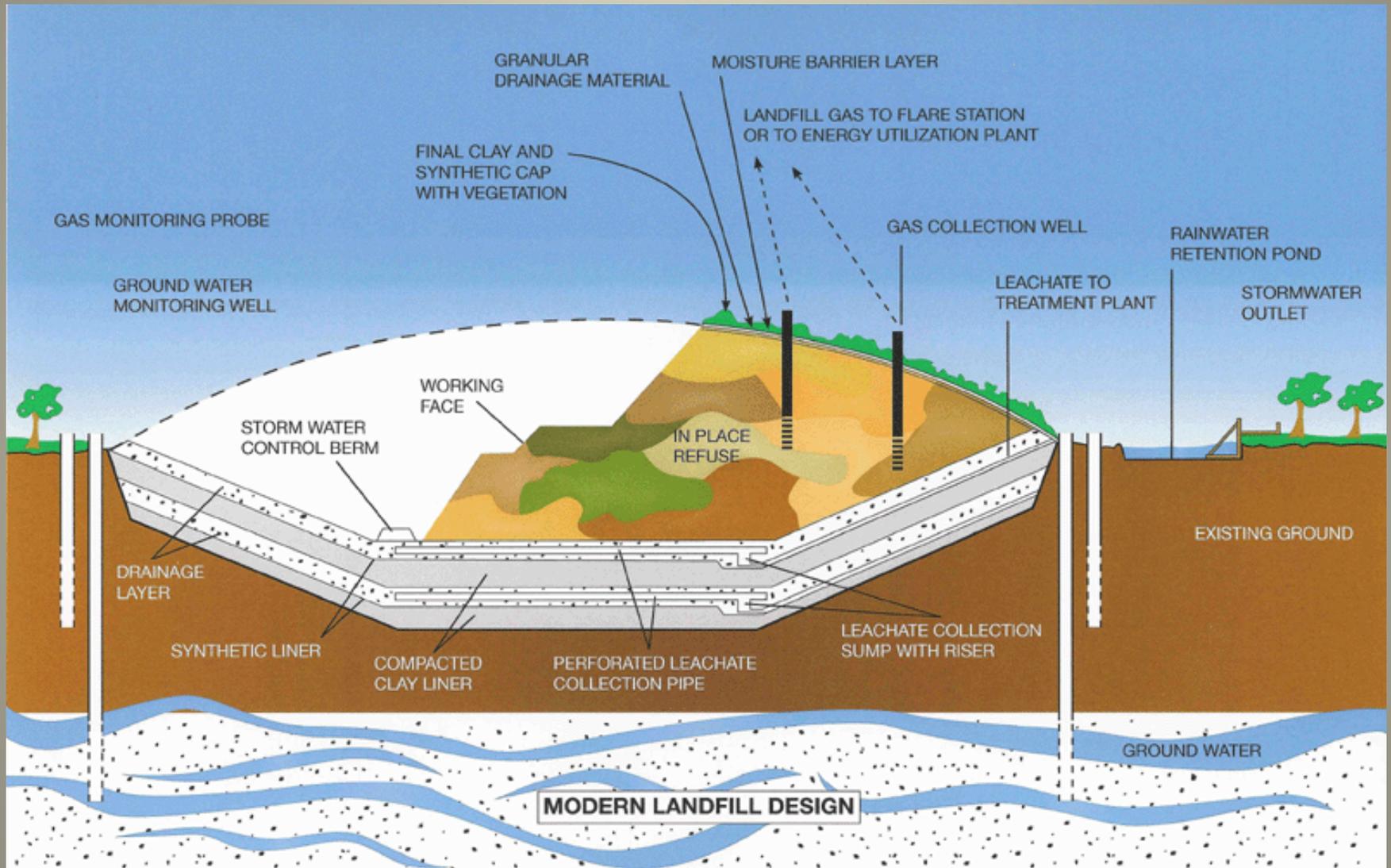
Ohio EPA Geologists

Division of Drinking & Ground Water

General Hydrologic Cycle



Cross Section of a Typical Landfill



Solid Waste Landfill
Site Investigation and Hydrogeologic
Studies must follow:

OAC 3745-27-06

OAC 3745-27-06

Requires the Following

- Determine the geology below the site
- Determine which units are saturated
- Depth to the water table
- Presence of springs and seeps
- How much water can a unit supply (Yield)
- Water flow direction and rate/velocity of flow
- Quality of the water below the site

Drill borings to describe the geology.



DEPTH (FEET)		BLOW COUNTS, SAMPLE NOS. & SPLIT SPOON RECOVERY	OVA READING (PPM)	LITHOLOGY DESCRIPTION	USC CLASSIFICATION	COMMENTS
FROM	TO					
0.0	0.5	5-4-8-7 (80%)	0	Clay, moderate yellowish-brown, vegetation, dry, crumbly	OL	
0.5	2.0			Silt, sandy, very fine-grained, iron stains, dry, crumbly	SM	
2.0	4.0	5-8-8-6 (75%)	0	Silt, sandy, very fine-grained, well sorted, iron stains, dry, crumbly	SM	
4.0	6.0	2-3-4-2 (100%)	0	Silt, sandy, very fine-grained, plastic, iron stains, wet at 4.5' and 5.5', soft	SM	wet

OGDEN Environmental and Energy Services Co.		BORING NO. <u>04G</u> PAGE <u>1</u> OF <u>2</u>
BORING LOG	CLIENT: MARTIN MARIETTA ENERGY SYSTEMS	PROJECT NO.: 0-4267-0072-0000
FACILITY NAME: <u>Portsmouth X-737</u>		FACILITY ID NO. _____
LOCATION: <u>Portsmouth X-737</u>		START DATE: <u>06/11/93</u> TIME: <u>1513</u>
DRILLER: <u>George Akins</u>		COMPLETION DATE: <u>06/12/93</u> TIME: <u>1300</u>
HELPER: <u>Denton Scaff</u>		LOGGED BY: <u>Timothy A. Lee</u>
DRILL: <u>CME 552</u>		DRILLING COMPANY: <u>GATS</u>
SURFACE ELEVATION (MSL): <u>651.7'</u>		DRILLING METHOD AND DEPTHS: HOLLOW STEM AUGER: <u>6.25" id to 17.5'</u> AIR ROTARY: <u>N/A</u> ROCK CORING: <u>N/A</u> WASH ROTARY: <u>N/A</u>
DEPTH DRILLED IN SOIL: <u>17.2'</u>		
DEPTH DRILLED IN ROCK: <u>0.3'</u>		
TOTAL DEPTH OF BORING: <u>17.65'</u>		
NOTES: <u>James Lamb - Health and Safety Officer</u> <u>Steve Kirk - Sample Technician</u> <u>Cluster well with 05B and 11M.</u>		

Install Monitoring Wells



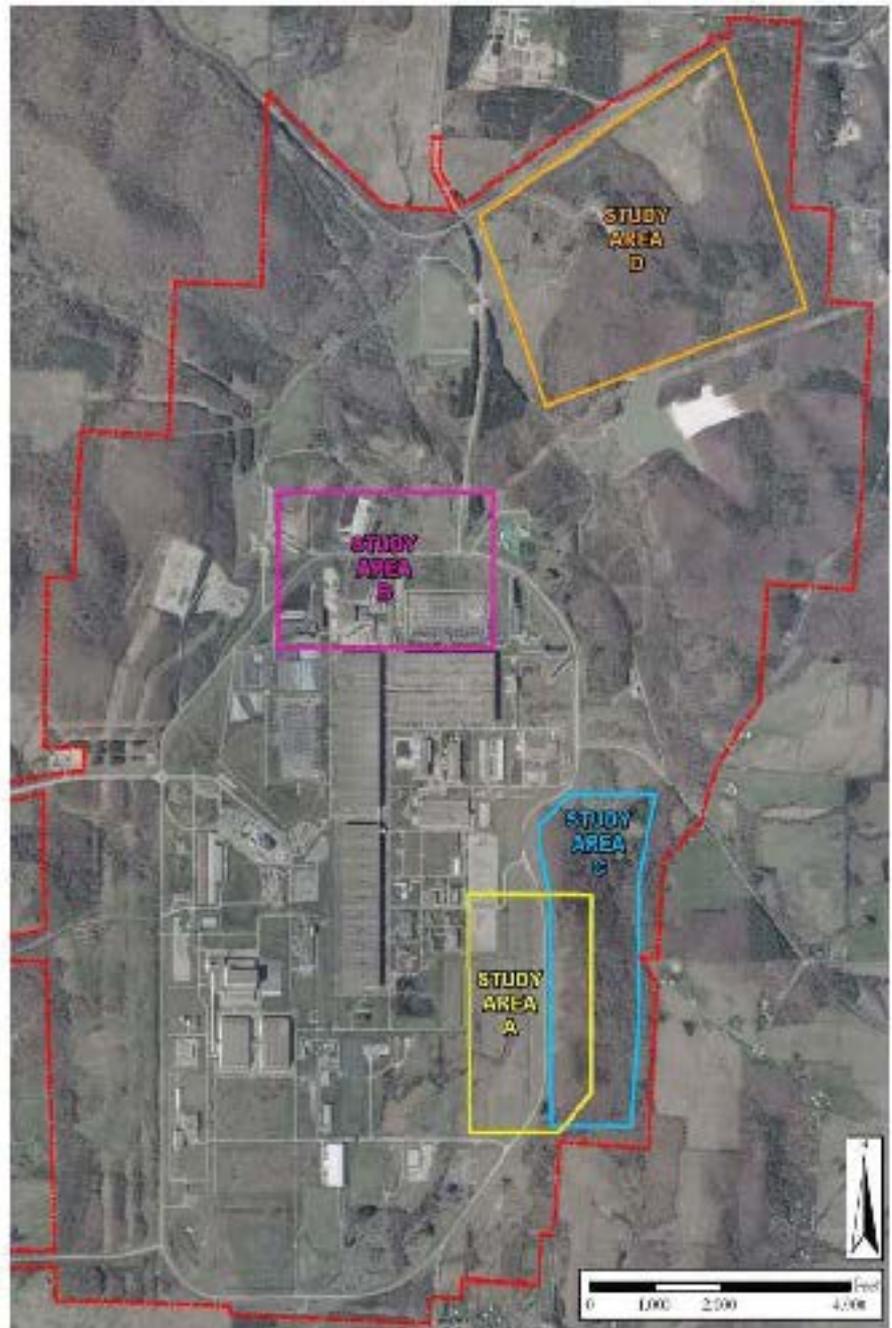
Siting Criteria of OAC 3745-27-07

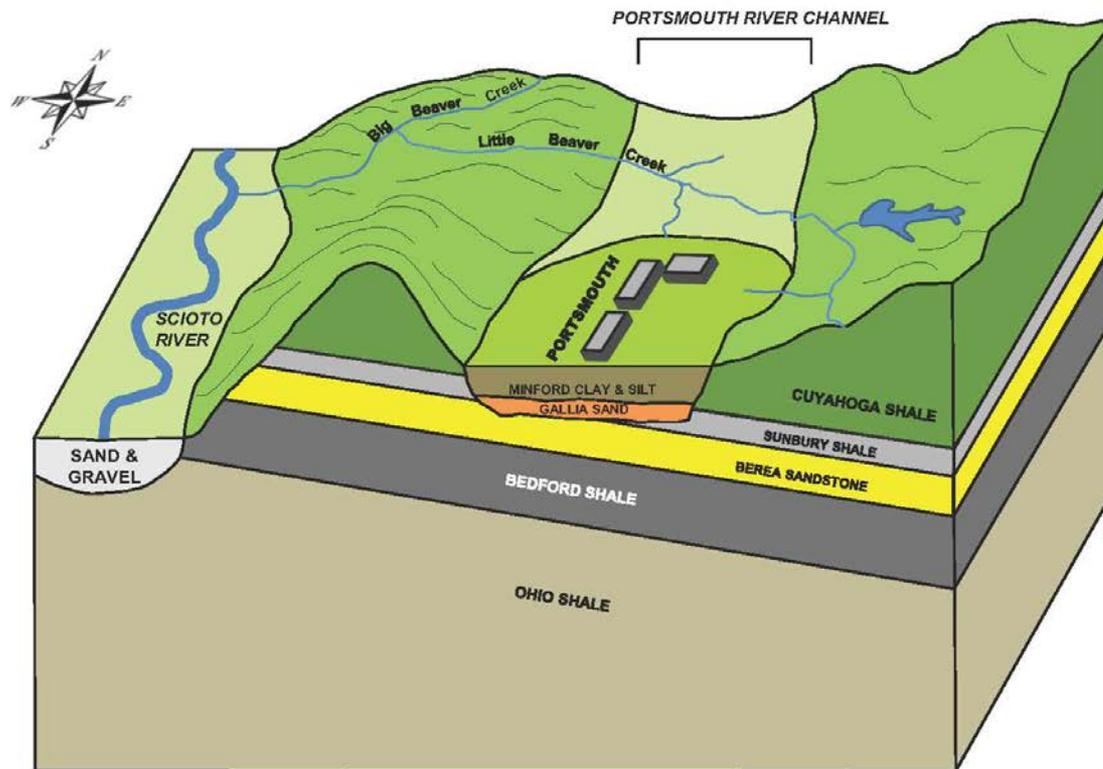
- Landfill cannot be in a sand or gravel pit or a rock quarry
- Landfill cannot be in a National or State park
- Cannot be located over 100 GPM aquifer
- Cannot be located within 5 yr travel time to a public water supply well.
- Cannot be located over an underground mine that could collapse

Siting Criteria of OAC 3745-27-07 (cont.)

- Landfill cannot be within 1000 feet of a water supply well or developed spring
- Landfill must be 300 feet from property line
- Landfill must be 1000 feet from a home
- Landfill must be 200 feet from a surface water body (stream, lake, wetland)
- Landfill cannot be located within 1000 feet of a stream segment that is designated a cold water habitat, exceptional warm water habitat

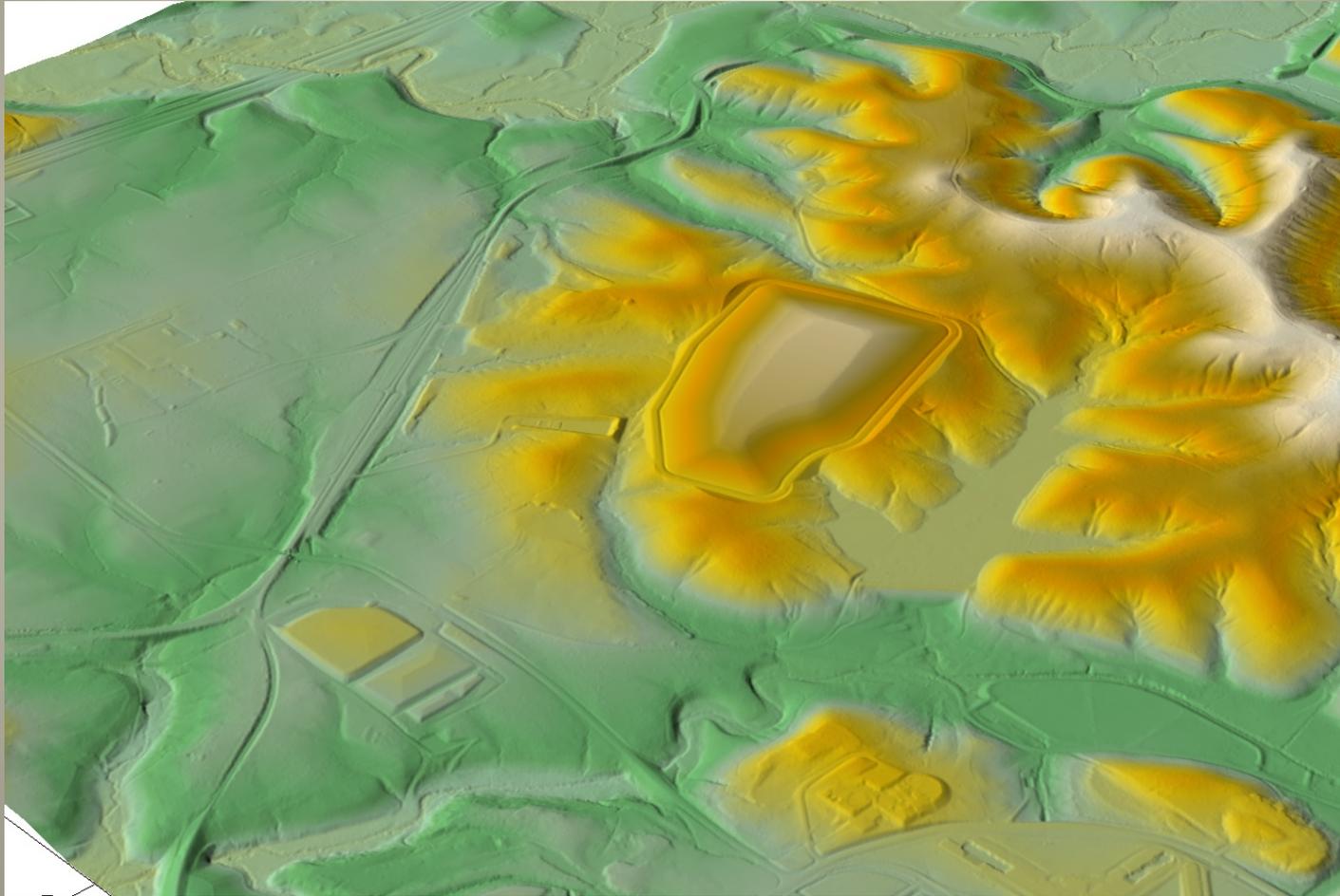
**Portsmouth Site
&
OSDC Siting**





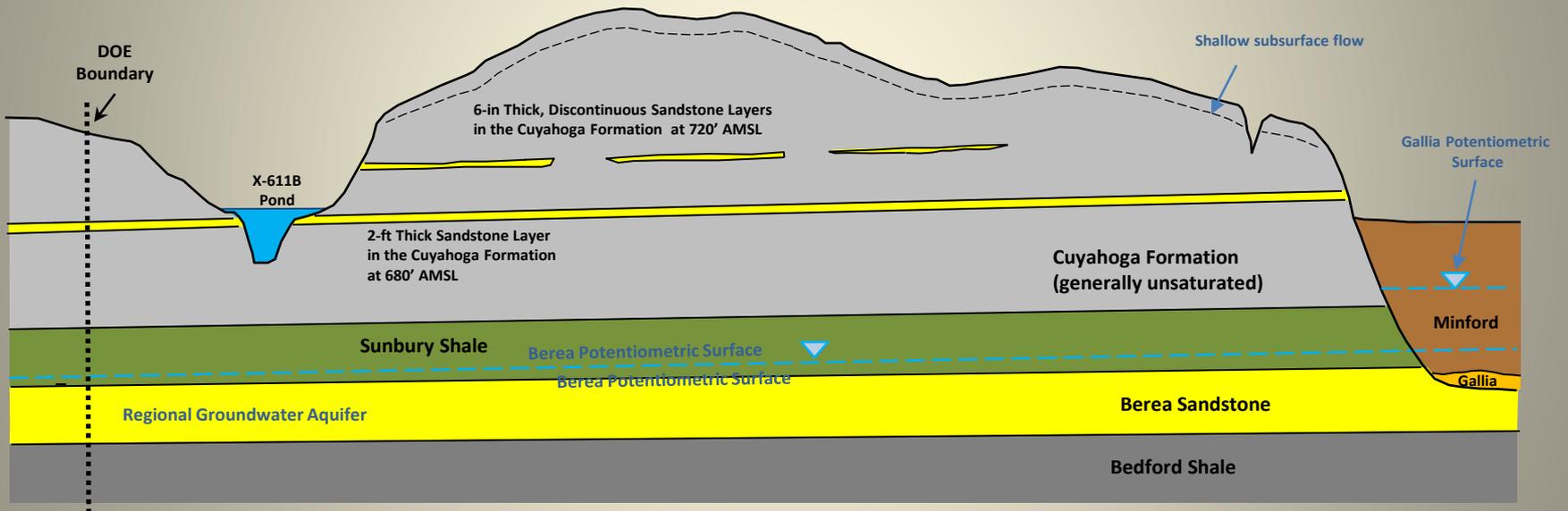
NOT TO SCALE

Surrounding Terrain of Site D



Southeast

Northwest



Not to Scale

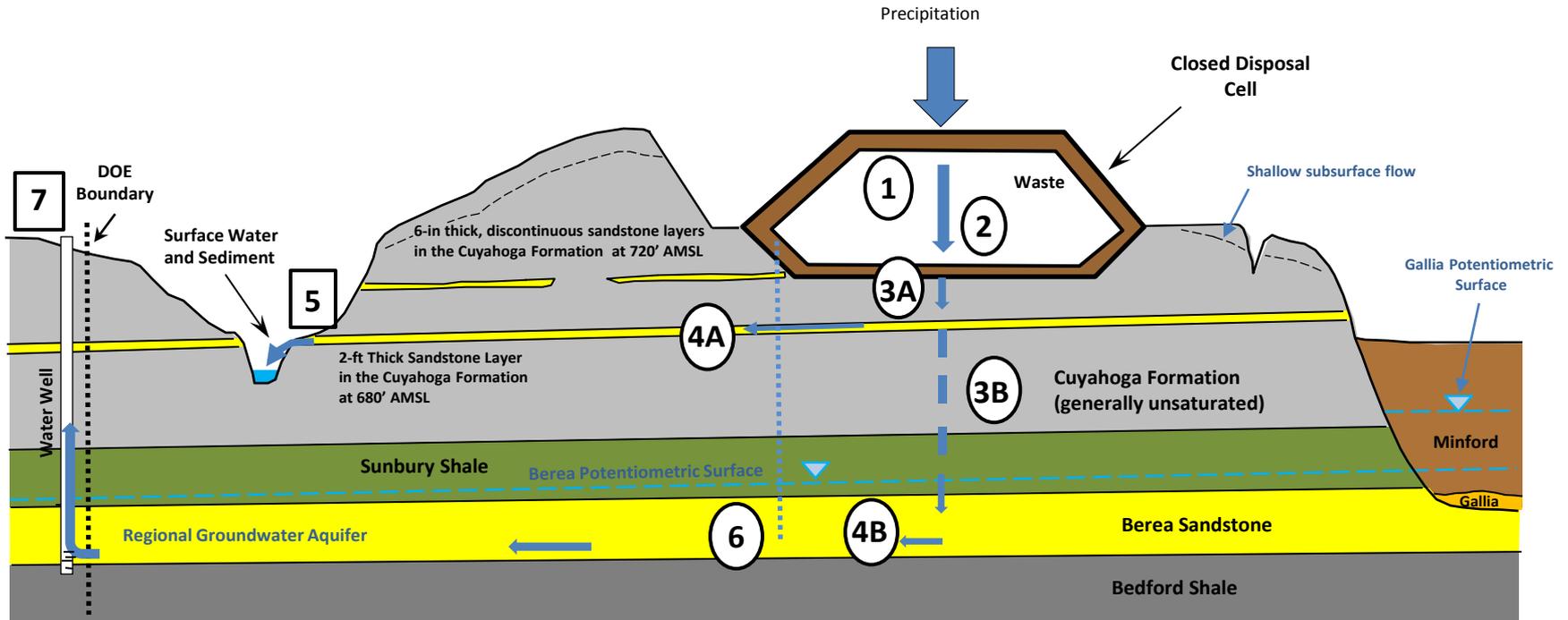
5 and 7. Point of Assessment (POA) Evaluation

5. On-site sandstone outcrop (POA-1)

7. Offsite residential well (POA-2)

1. Source estimate

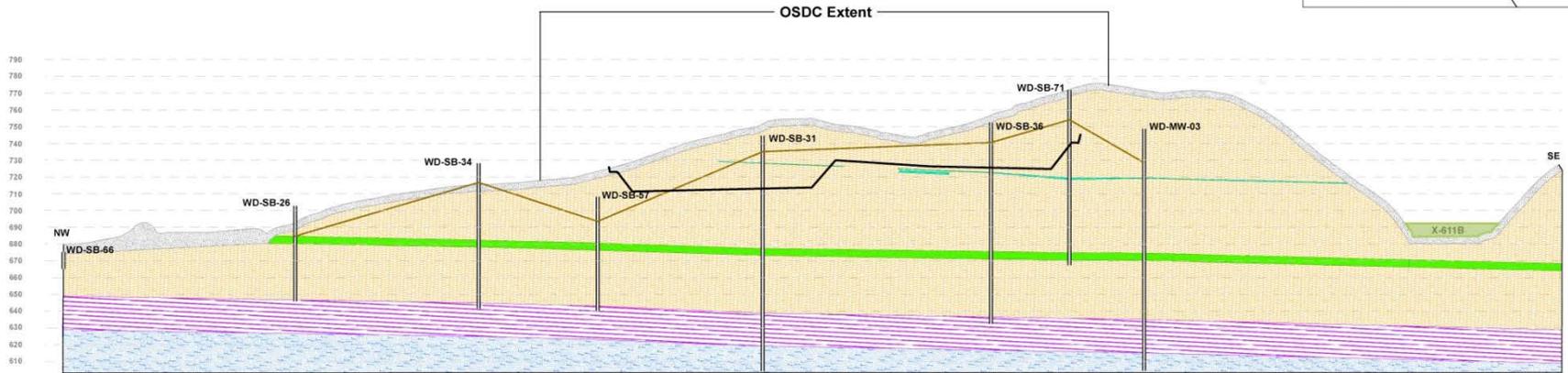
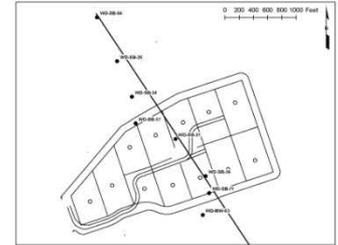
2. Infiltration/leaching rate through waste



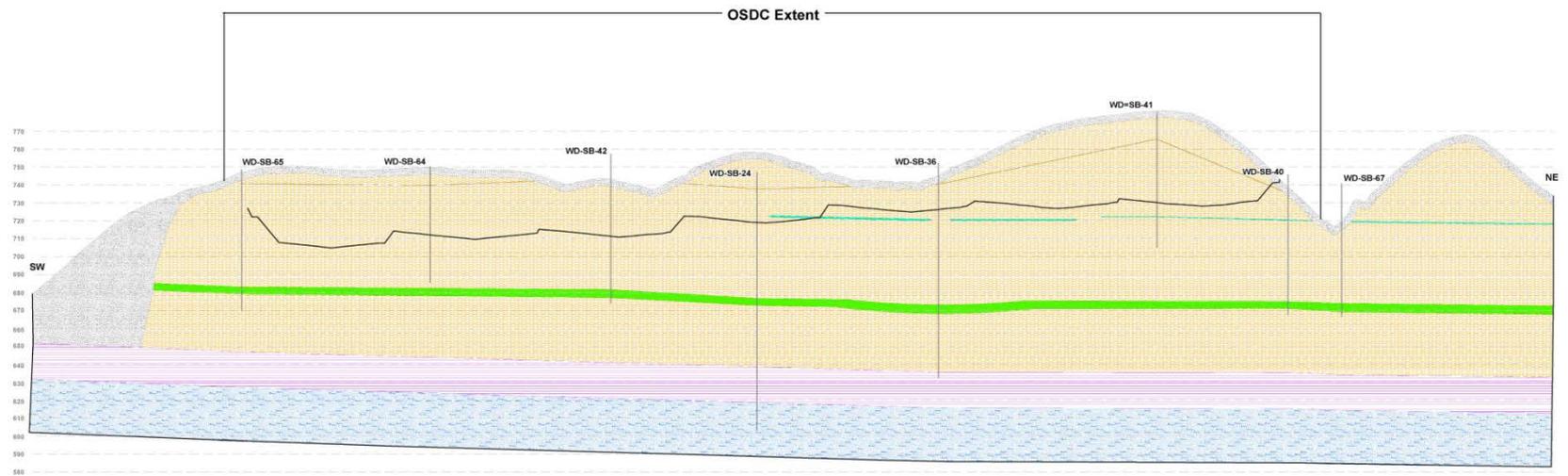
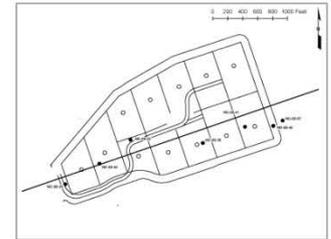
Not to Scale

- 3A. Vertical migration through liner to potential lateral pathway in Cuyahoga shale
- 3B. Potential vertical migration through shale to lower confined saturated zone in Cuyahoga shale
- 4A. Lateral migration in potential lateral pathway in sandstone layer
- 4B. Lateral migration in the regional groundwater aquifer (Berea Sandstone)
- 6. Point of Compliance (POC) Evaluation in regional groundwater aquifer (Berea Sandstone)

OSDC Cross Section A - A'



OSDC Cross Section B - B'



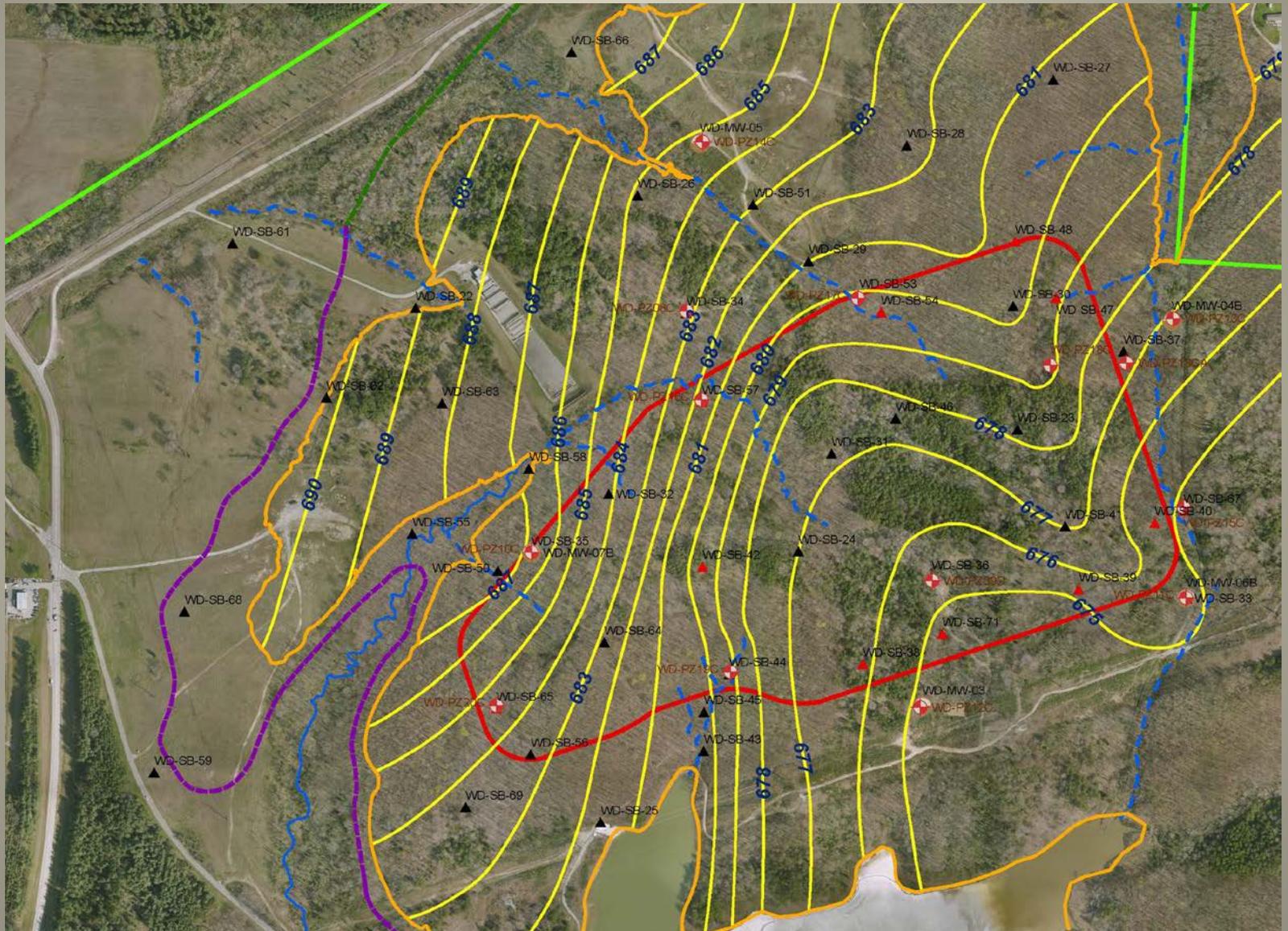
Legend

B-B' Geologic Section

 680 Sandstone	 Auger Refusal Line
 720 Sandstone	 Boreholes
 Berea Sandstone	 Unconsolidated Soils
 Cuyahoga	 Cell Liner
 Sunbury Shale	

Vertical Exaggeration 5X

Proposed Site D



Does Site D meet the State of Ohio Landfill Siting Criteria?

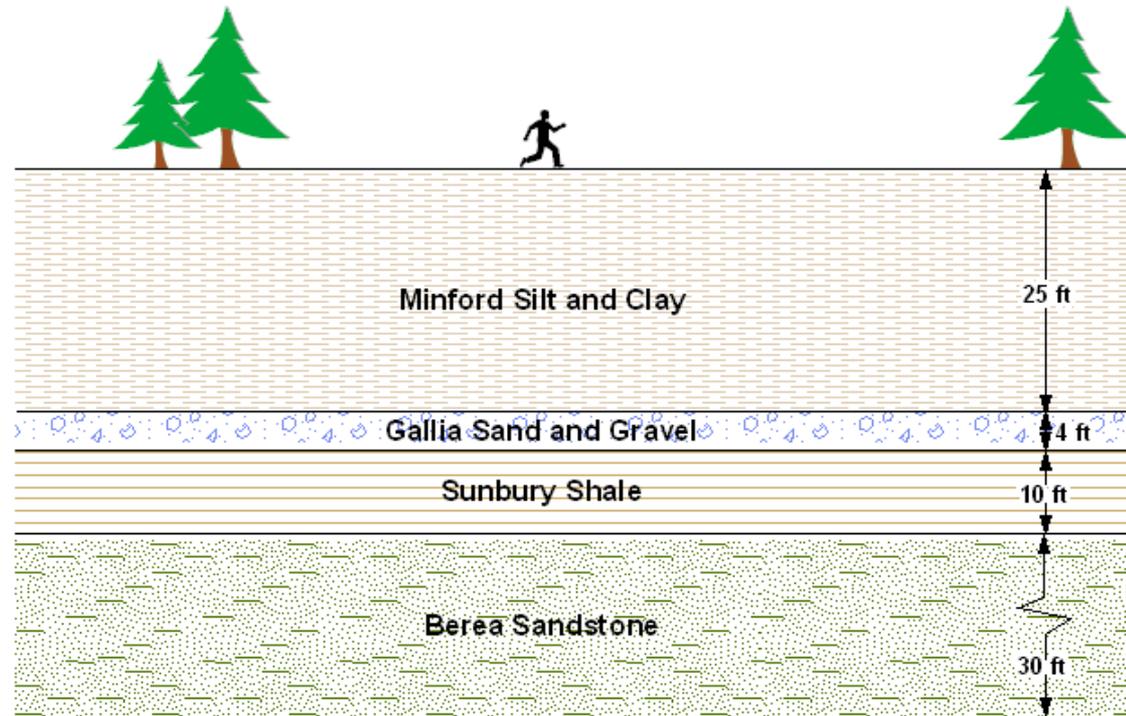
- Ohio EPA is evaluating all information to determine if the siting criteria are being met.
- Site D has competent shale beneath the proposed site which will limit ground water flow and contaminant transport from the site.
- Located on a ridge isolates the landfill and minimizes ground water entering the waste.
- Based on current information Site D is the best location for a landfill.

Additional Work Needed

- DOE must install monitoring wells into the 680 Sandstone to determine the current flow direction in the 680 Sandstone.
- It must be decided whether the 720 Sandstone will remain in place or be excavated.
- If it is left in place it must have wells installed into it and be fully characterized.

Geology

Typical Geology Below PORTS Site



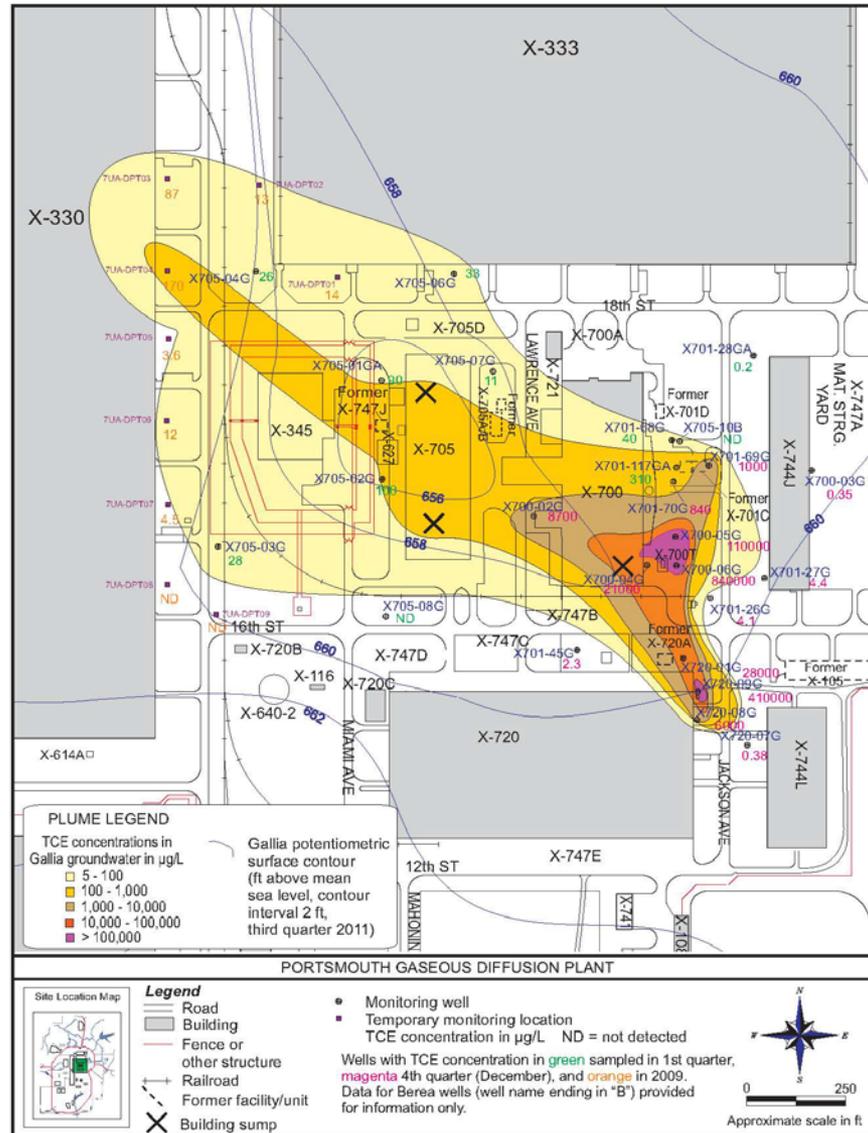
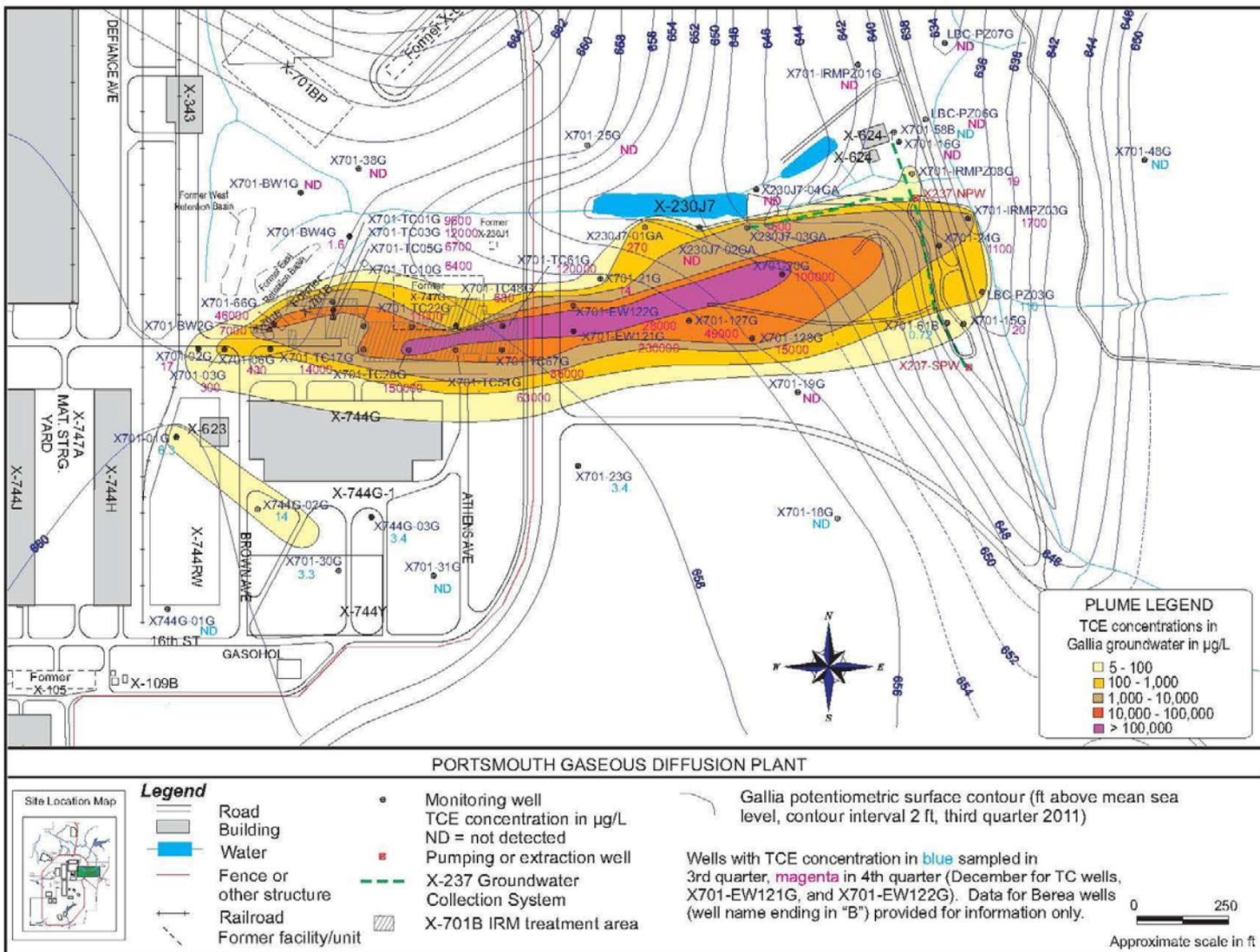


Figure 23. Quadrant II Groundwater Investigative Area Gallia groundwater TCE plume, 2011.

Figure 24. X-701B Holding Pond Gallia groundwater TCE plume, fourth quarter 2011.



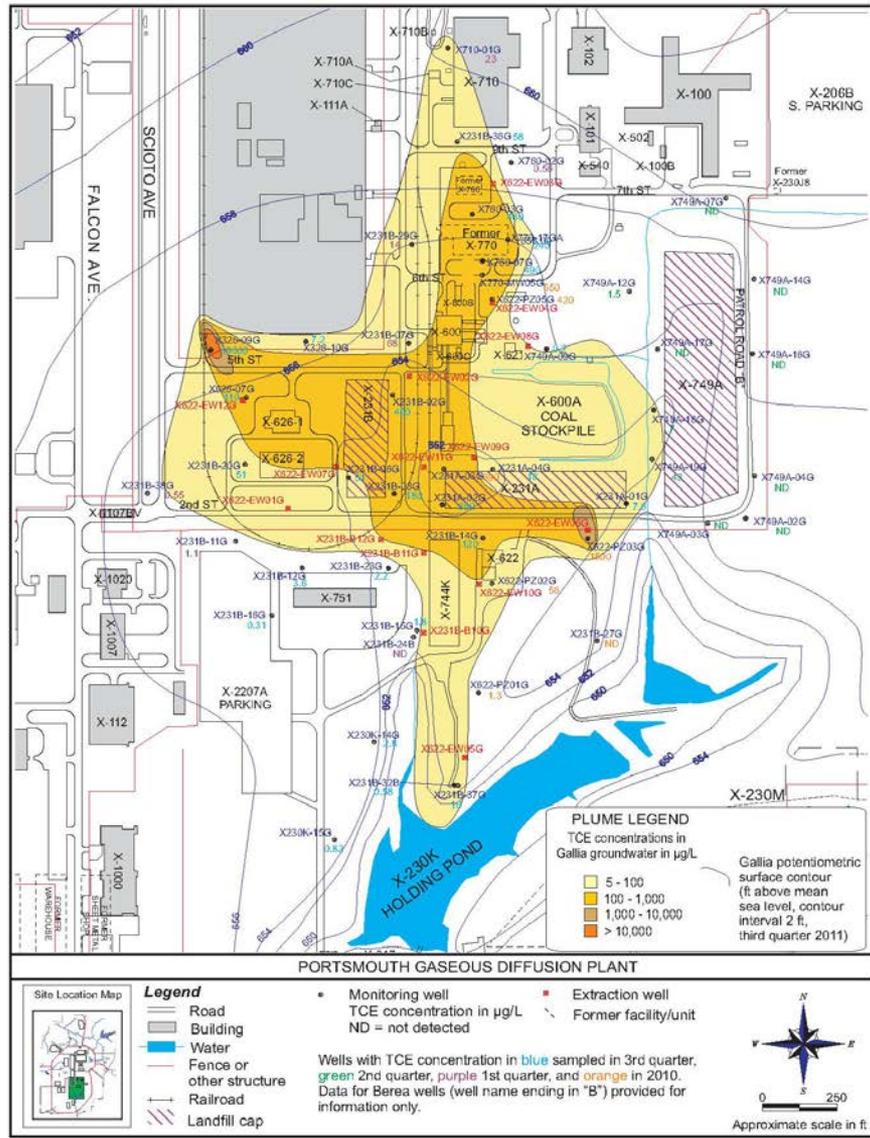


Figure 22. Quadrant I Groundwater Investigative Area Gallia groundwater TCE plume, third quarter 2011.

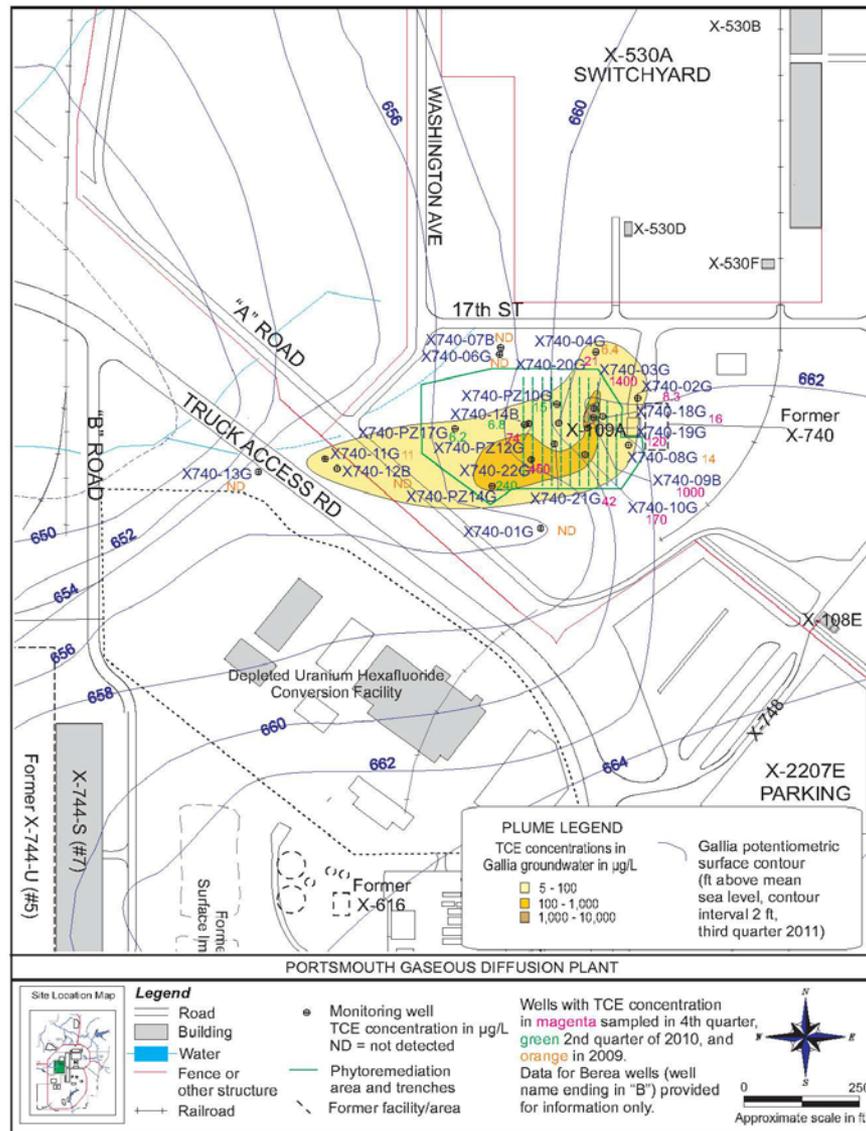


Figure 28. X-740 Waste Oil Handling Facility Gallia groundwater TCE plume, fourth quarter 2011.

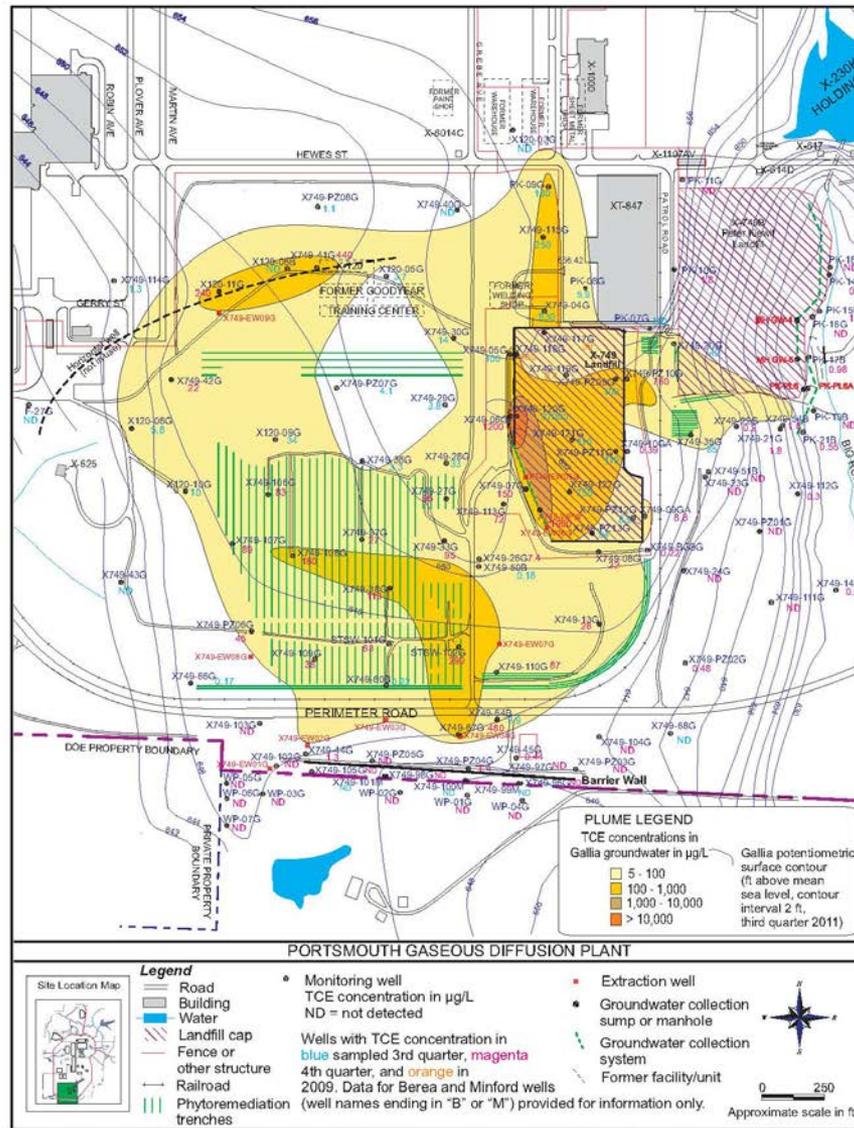
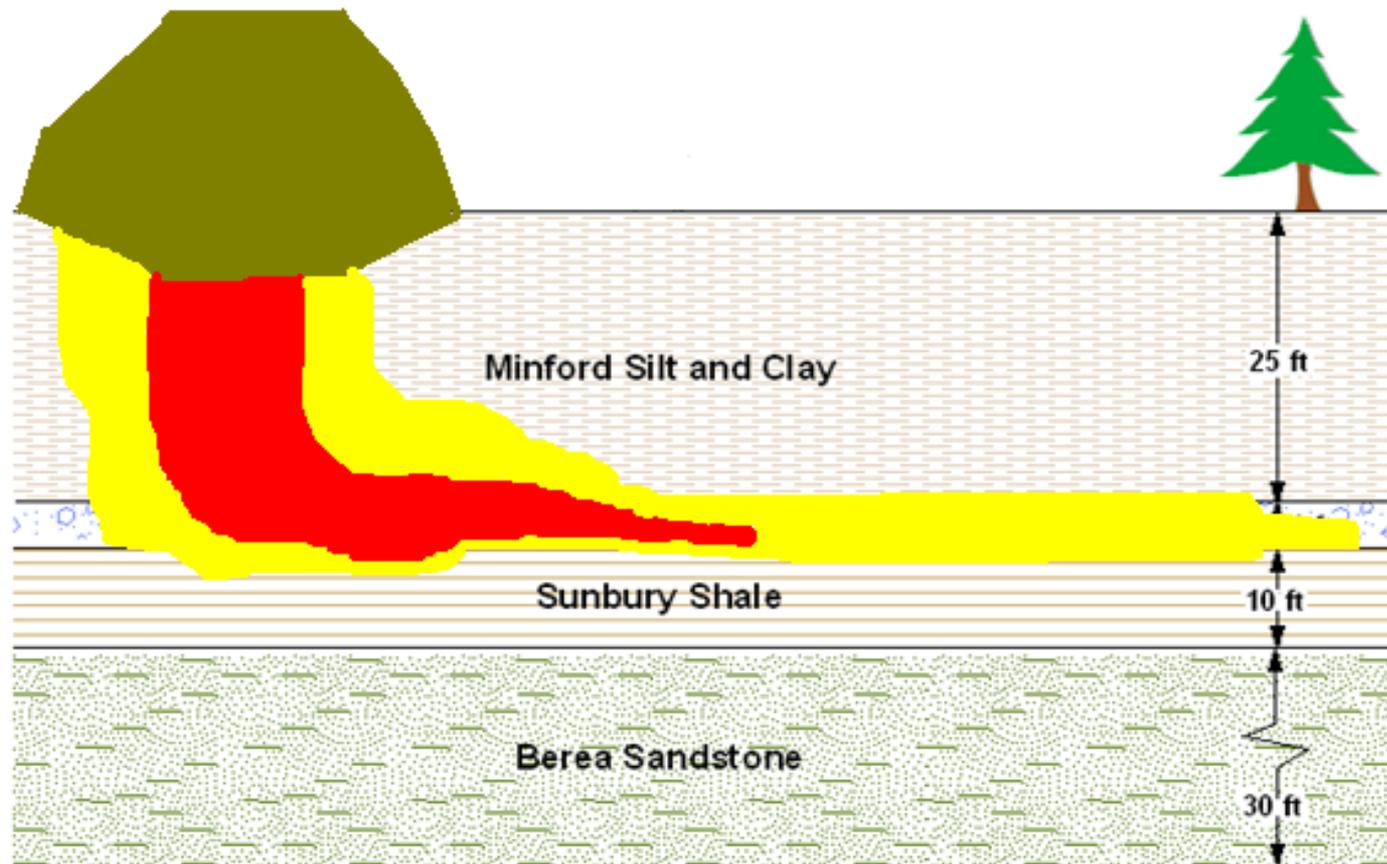
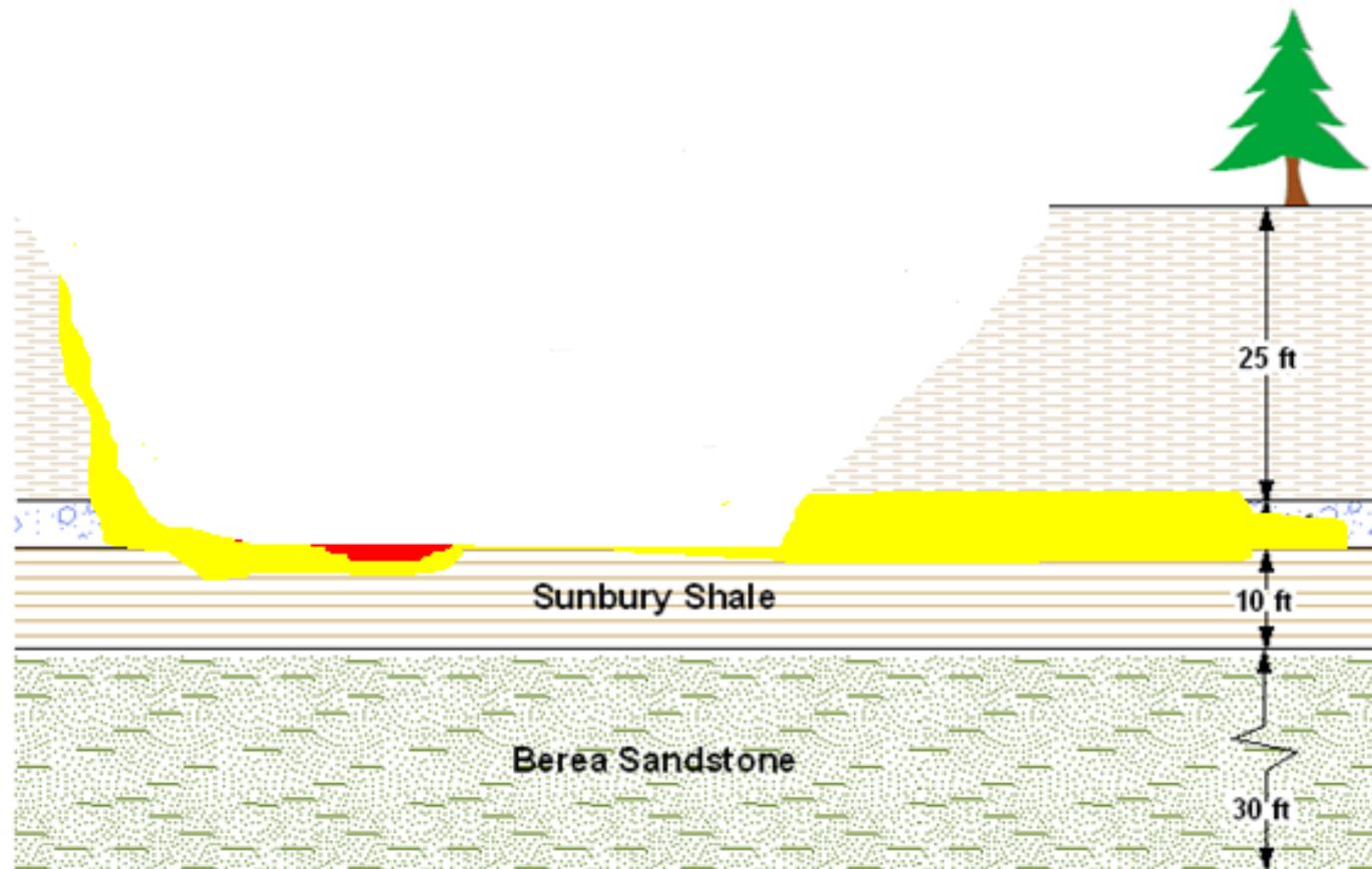


Figure 21. X-749/X-120/PK Landfill Gallia groundwater TCE plume, fourth quarter 2011.

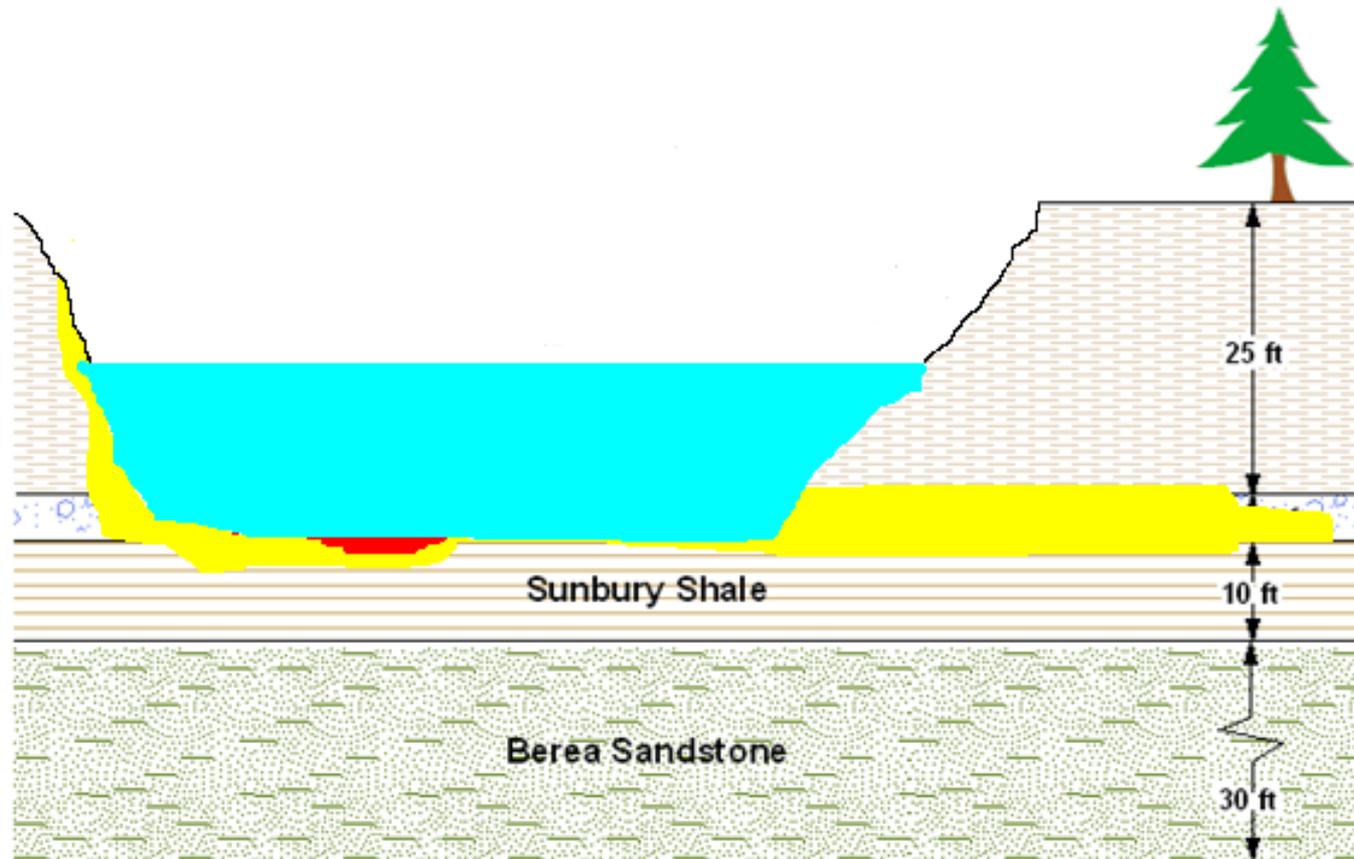
Typical Ground Water Contamination Plume



Source and Plume Removal



Source and Plume Removal







Advantages of Excavating the Plumes

- Excavation would remove contaminated soil
- Contaminated ground water entering excavation would have to be pumped out and treated.
- This would likely result in large reduction in contaminant mass which likely decrease total timeframe of cleanup.

The End