

Air Sparging

The image shows an outdoor field site for air sparging. Two yellow and orange air sparging units are positioned on the ground, connected by long black hoses. The hoses run across the grassy field and are bundled together in the foreground, showing multiple white PVC pipes with red-handled valves. The background features a line of trees with autumn foliage.

"A report on contamination remediation technology"

Caleb Wegener
Juliette Cortez
Jenna Davey
Chris Bautista

What is Air Sparging?

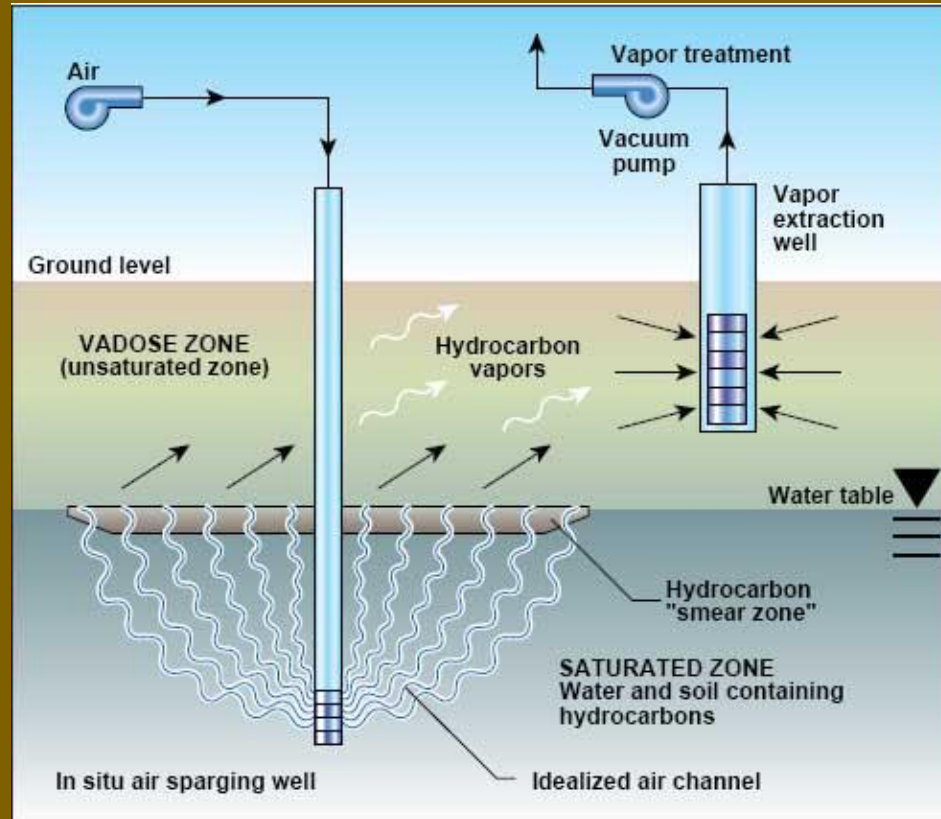
Also called in situ volatilization.

The injection of air into the soil below the groundwater.

It is used to extract VOCs.

Normally used with soil vapor extraction.

How does it work?



Price Comparison

	small site		large site	
total marked-up costs:	easy (gravel/sand)	Difficult (sand-silt/sand-clay)	easy (gravel/sand)	difficult (sand-silt/sand-clay)
Air Sparging	\$70,817	\$143,169	\$399,386	\$2,070,532
Soil Vapor Extraction	\$80,295	\$93,536	\$152,989	\$368,465
Chemical Oxidation	\$327,664	\$368,553	\$814,971	\$1,032,496
Bioventing (In-situ Bio-Remediation)	\$59,101	\$61,805	\$100,334	\$139,266
Phytoremediation (In-situ Bio-Remediation)	\$239,482	\$887,681	\$1,121,846	\$3,691,490



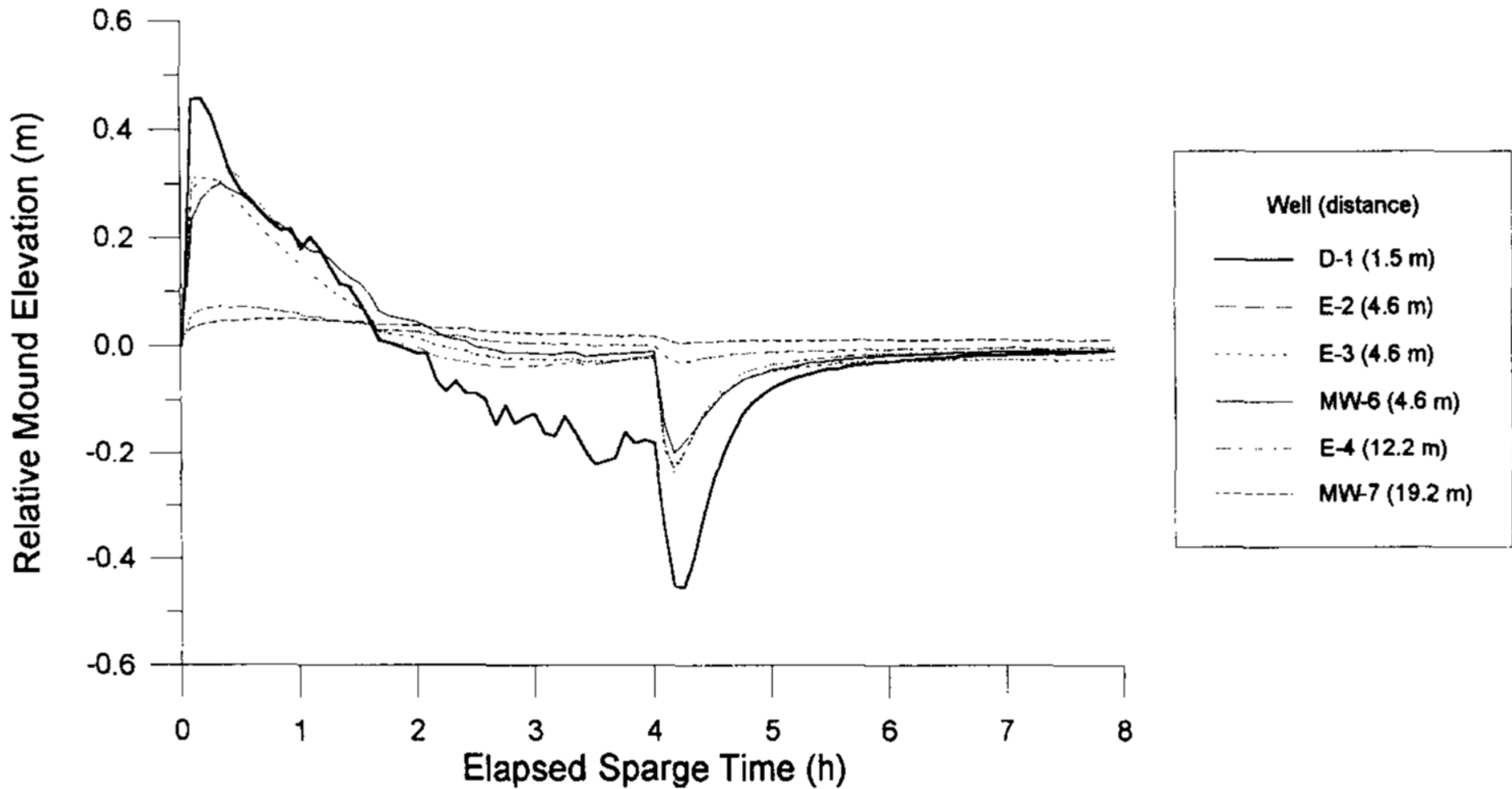
Costs

- Not the cheapest option compared to other remediation technologies
- Recommend using a different option
- Cheaper and more effective alternatives
- Air sparging + SVE=\$2,438,997

Bankruptcy

Do not pass Go,
do not collect \$200





Limitations of Air Sparging

- Mobilization of contaminants
- Mounding: Rising of the vadose zone due to subsurface waves and increased air pressure
- “Radius of influence” vs “zone of influence”
 - Radius > zone
- Ground movement damaging nearby structures
- Escaping vapors
- Soil

What else?

- Contaminant type
- Sufficient air distribution/many injection wells
- Electrical resistivity tomography (ERT), Geophysical diffraction tomography (GDT), and vertical induction profiling (VIP).
- Too many variables

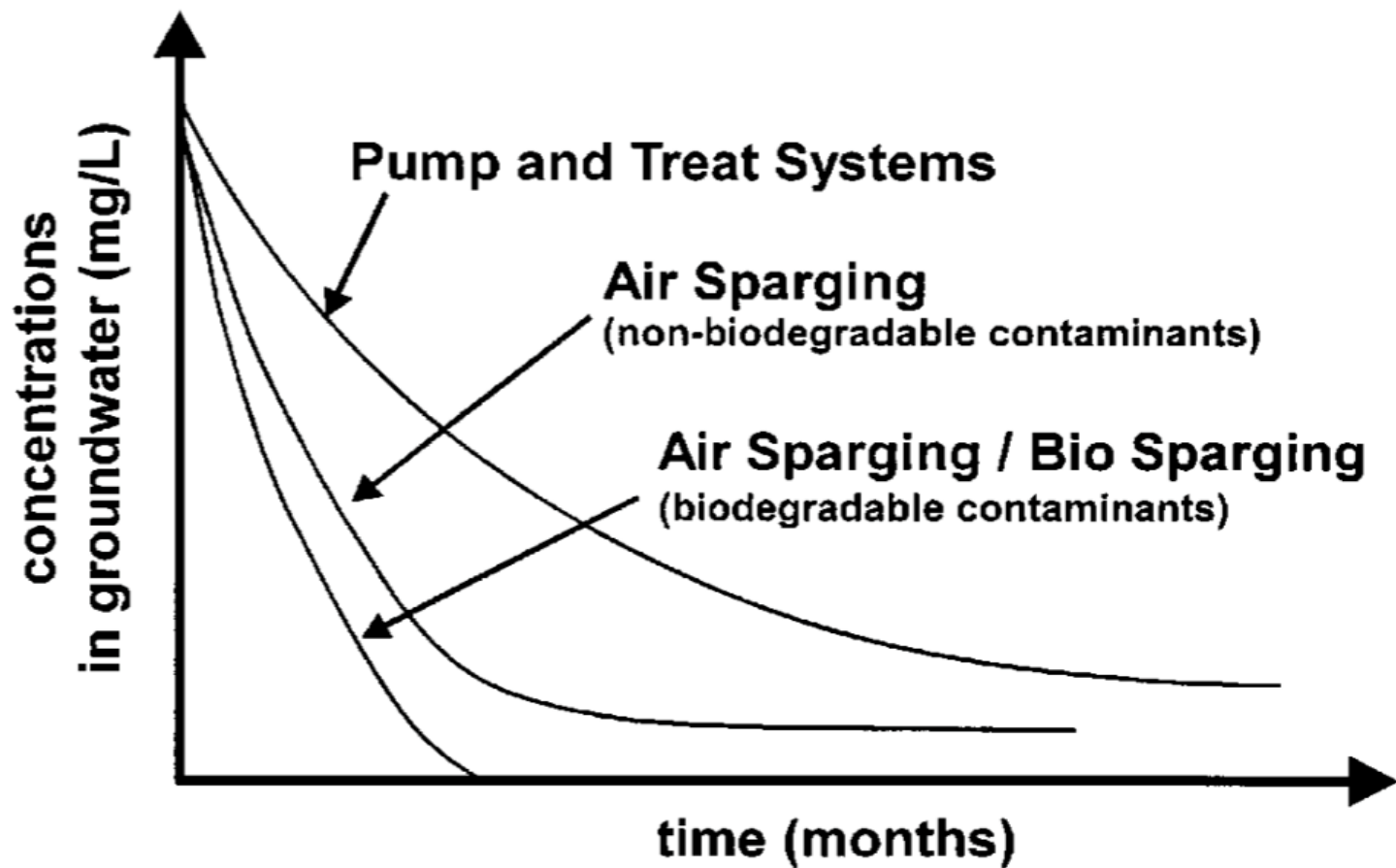
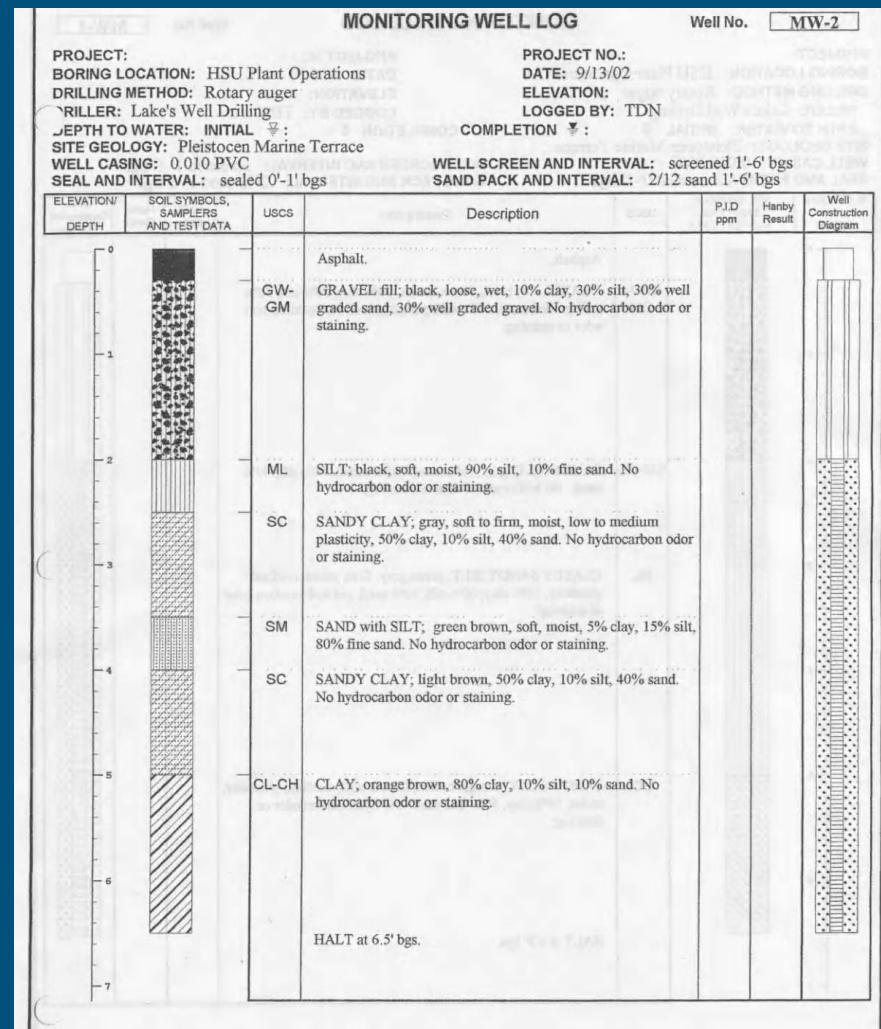


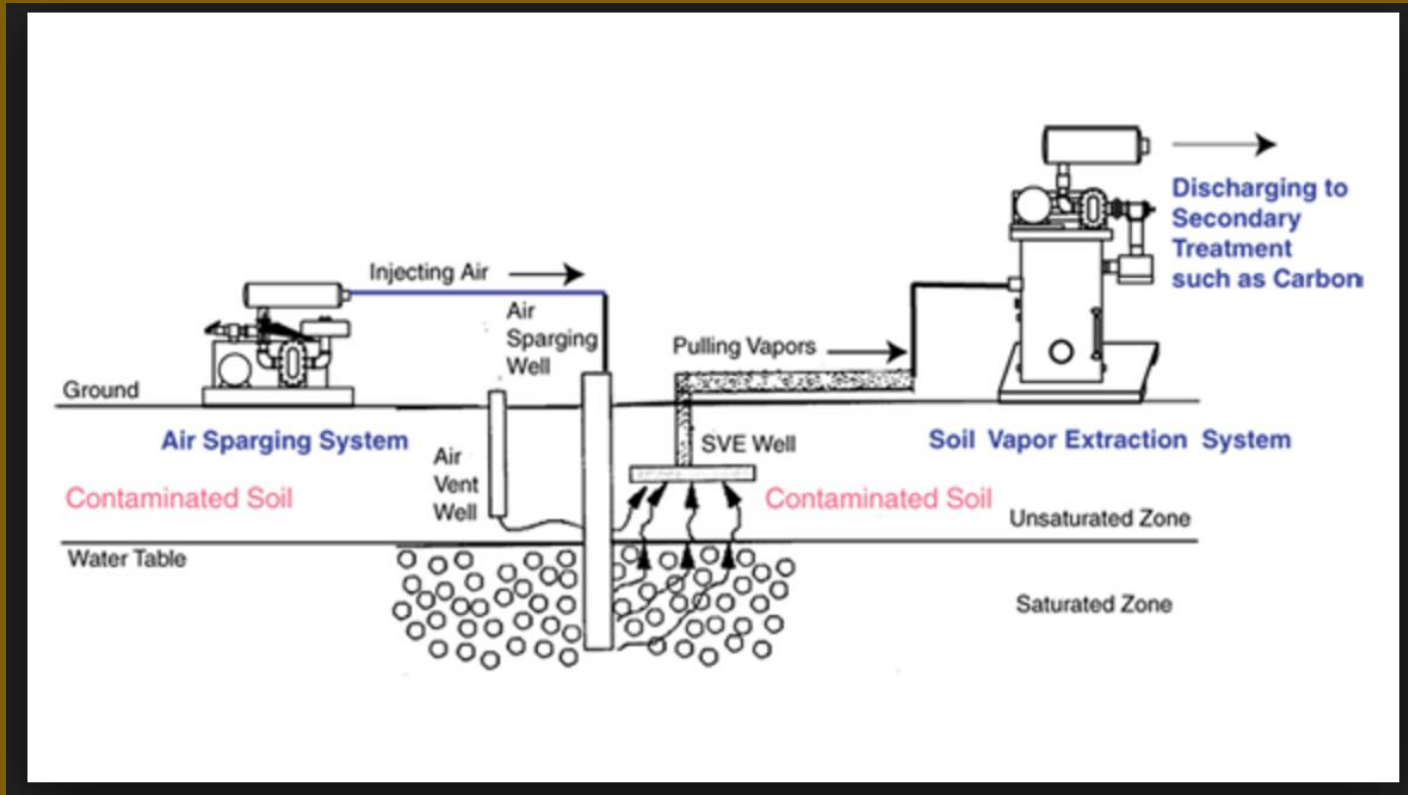
Figure 4.19 Cleanup rates for various contaminants during *in situ* air sparging.

Will this help HSU?

- Think about the lab from last week
- How did having the playdough/clay affect the water and contaminant flow?
- The three soils/sand demonstrated that we have many heterogenous soils



How does it work?



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