US Magnesium Superfund Site Hydrogeochemistry

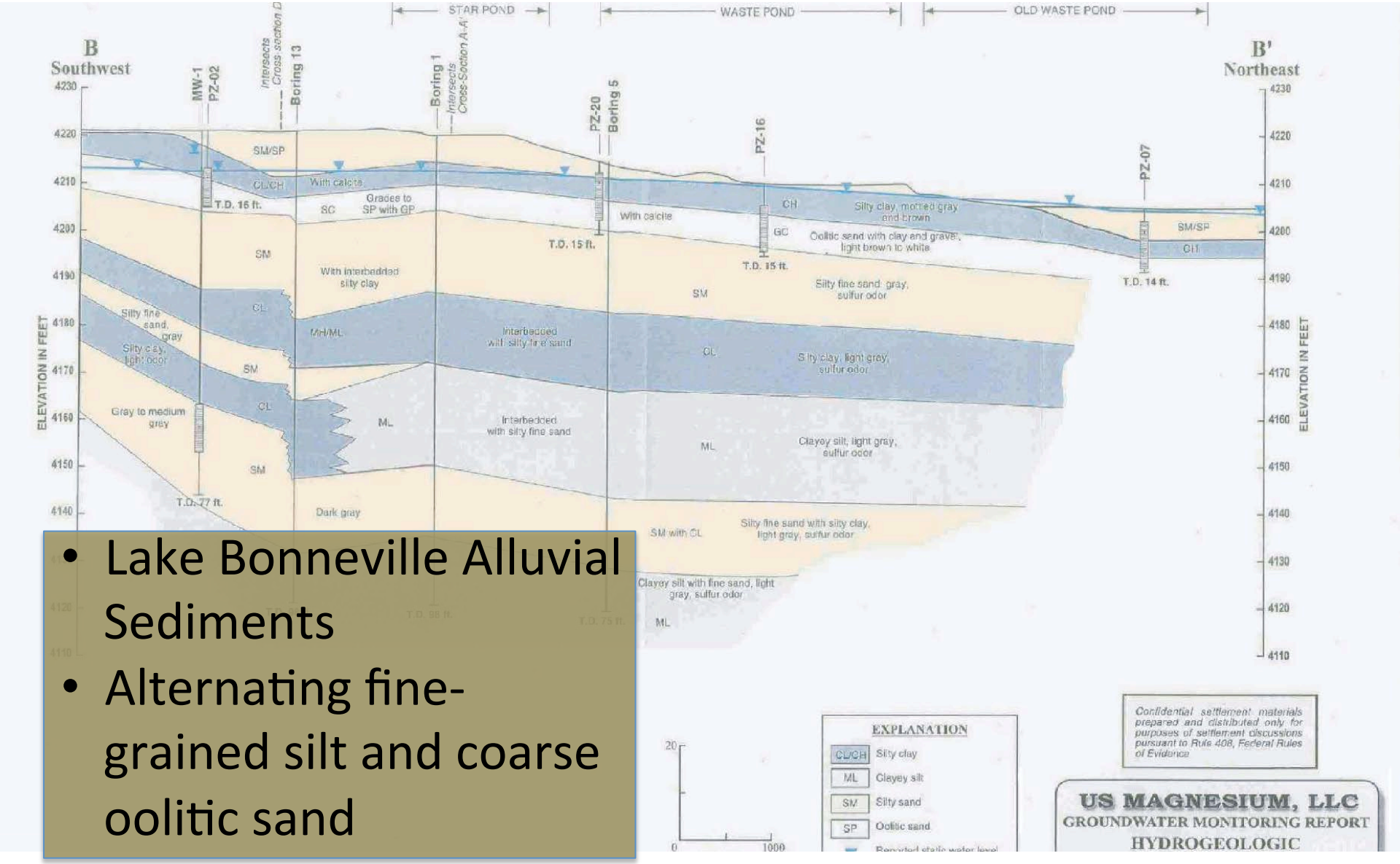
Documents used:

- Phase 1A Remedial Investigation Sampling and Analysis Plan to Identify Chemicals of Potential Concern in Soils, Sediment, Solid Waste, Water, and Air, and Receptor Surveys

Phase 1A Attachment 10B Site Photog

- Northern Tooele County, Utah
- Southwest shore of Great Salt Lake
- 15 miles north of I-80
- 33 miles north of Grantsville

Geology



- Lake Bonneville Alluvial Sediments
- Alternating fine-grained silt and coarse oolitic sand

Surface Water

- Great Salt Lake
- Man Made Features (Ditches, Lagoons, Evaporation Ponds)
- Seasonal Runoff

Groundwater Basics

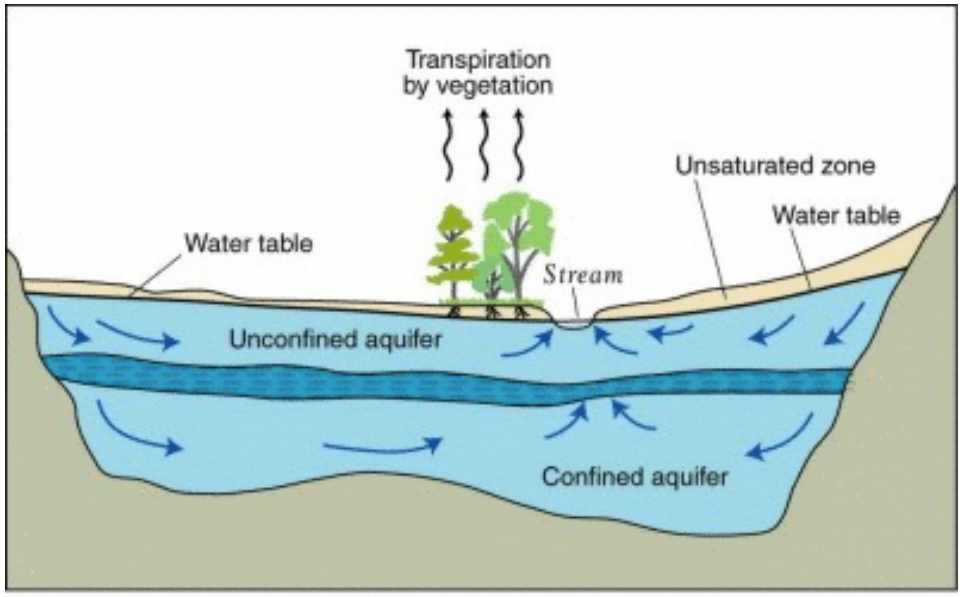
Definitions

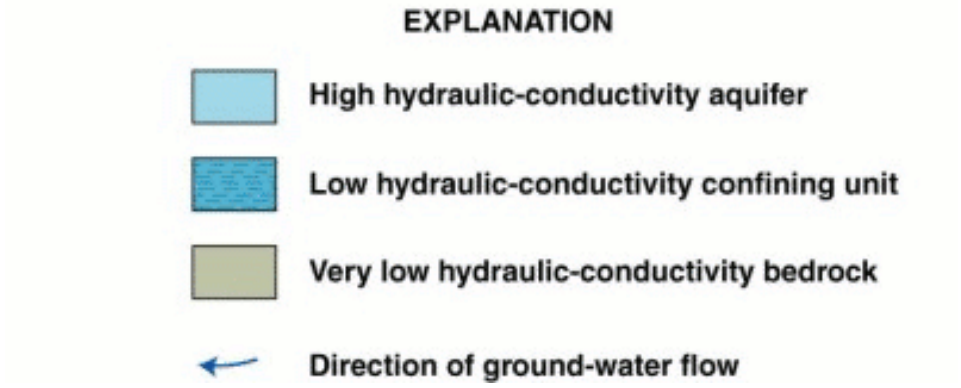
Aquifer: Underground water stored in pore spaces and gaps.

Water Table: Level where pore spaces are completely saturated

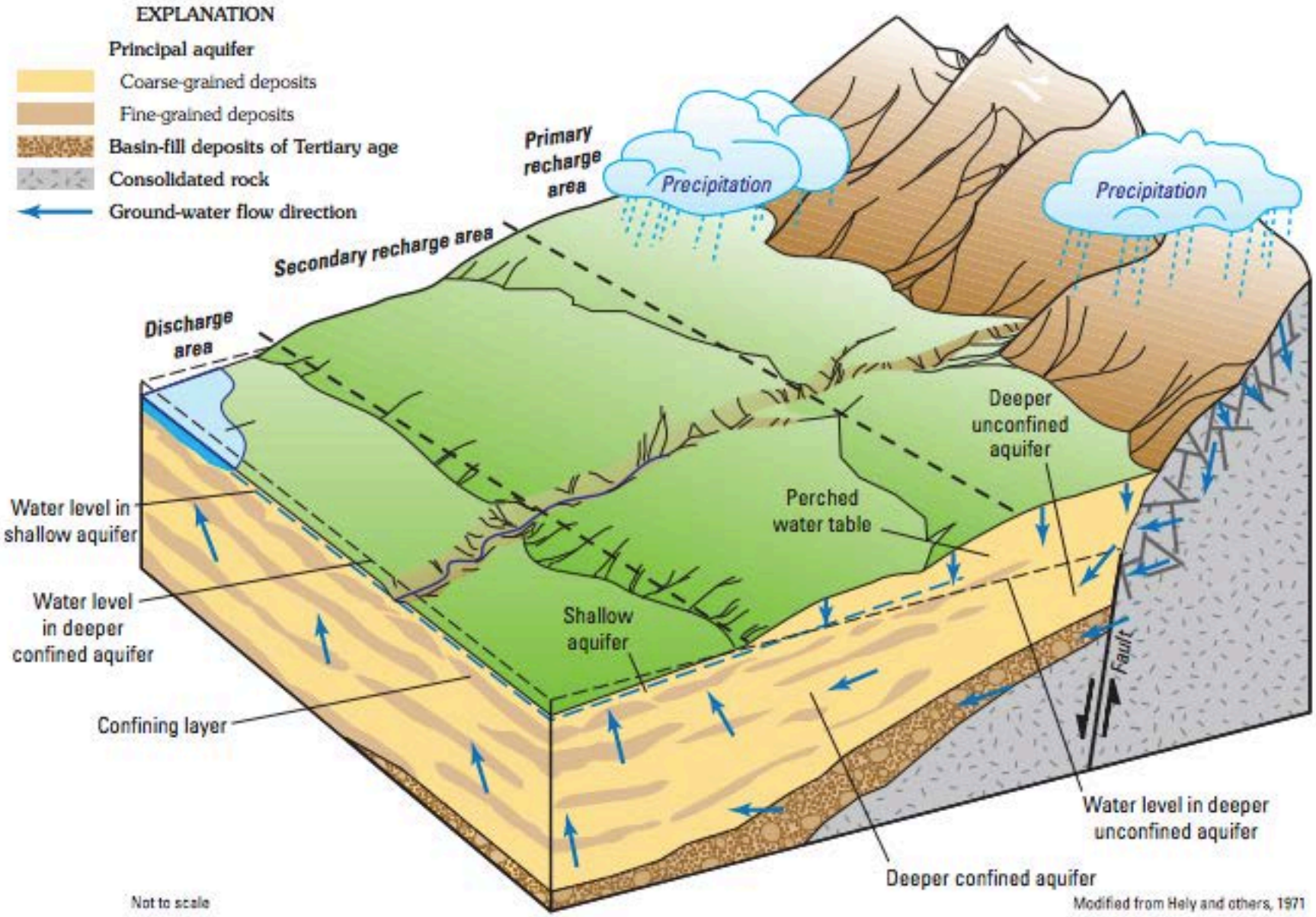
Hydraulic Conductivity (K): Ease of flow through a material

Darcy's Law:
Flow (Q) = -K*dh/dx



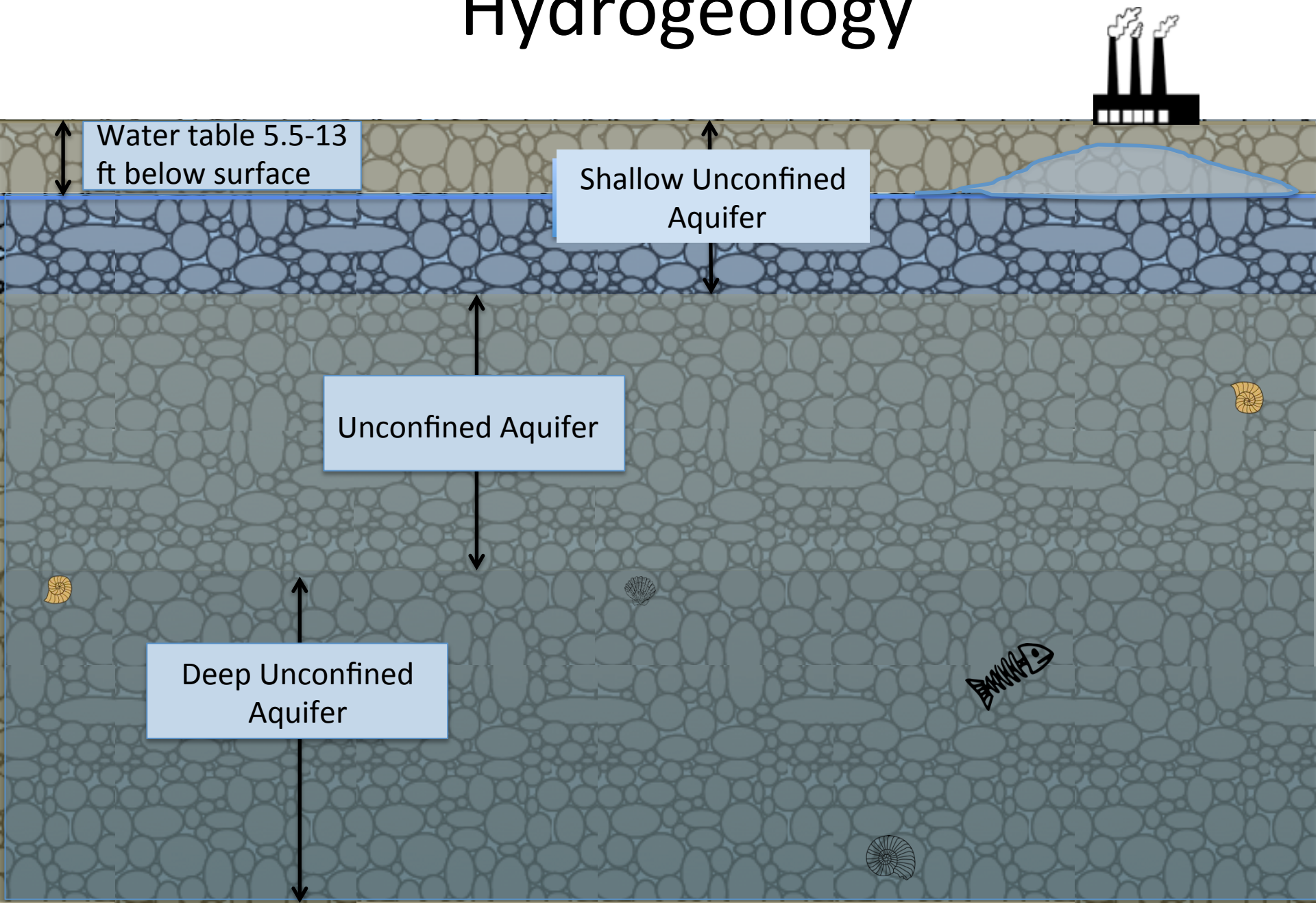


Courtesy of the U.S. Geological Survey

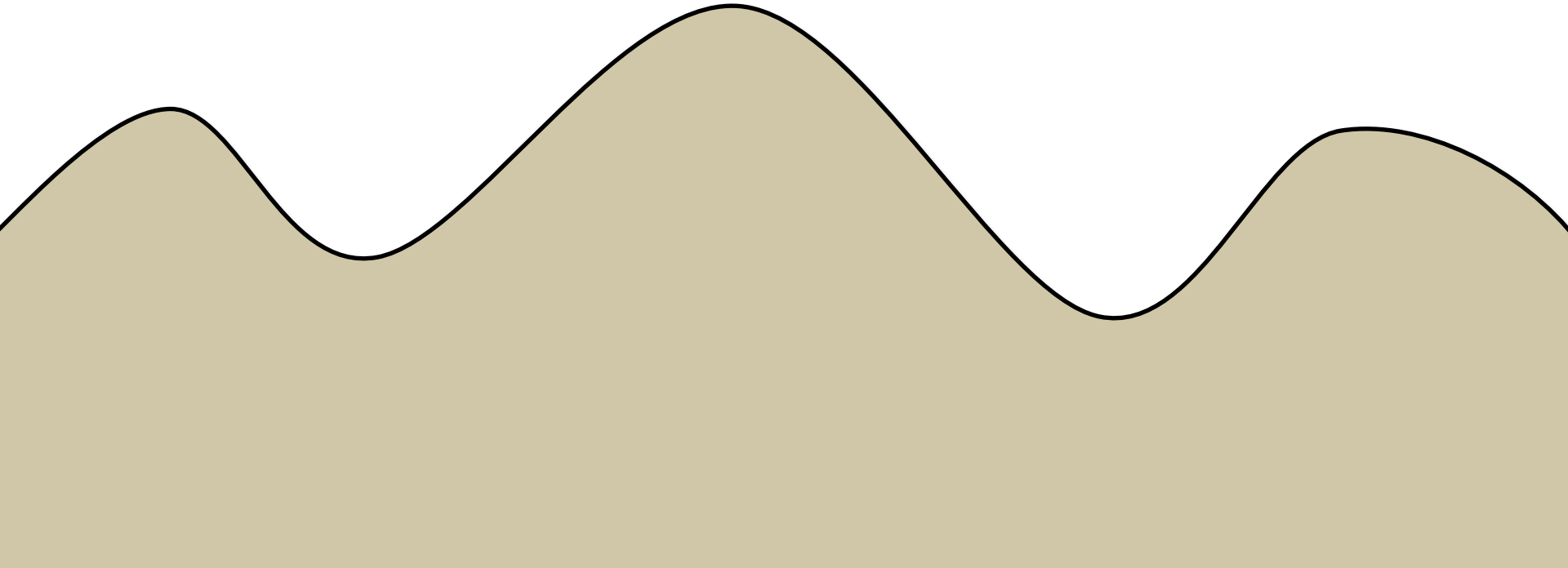


USGS Professional Paper 1737-A

Hydrogeology



Contour Reading Background



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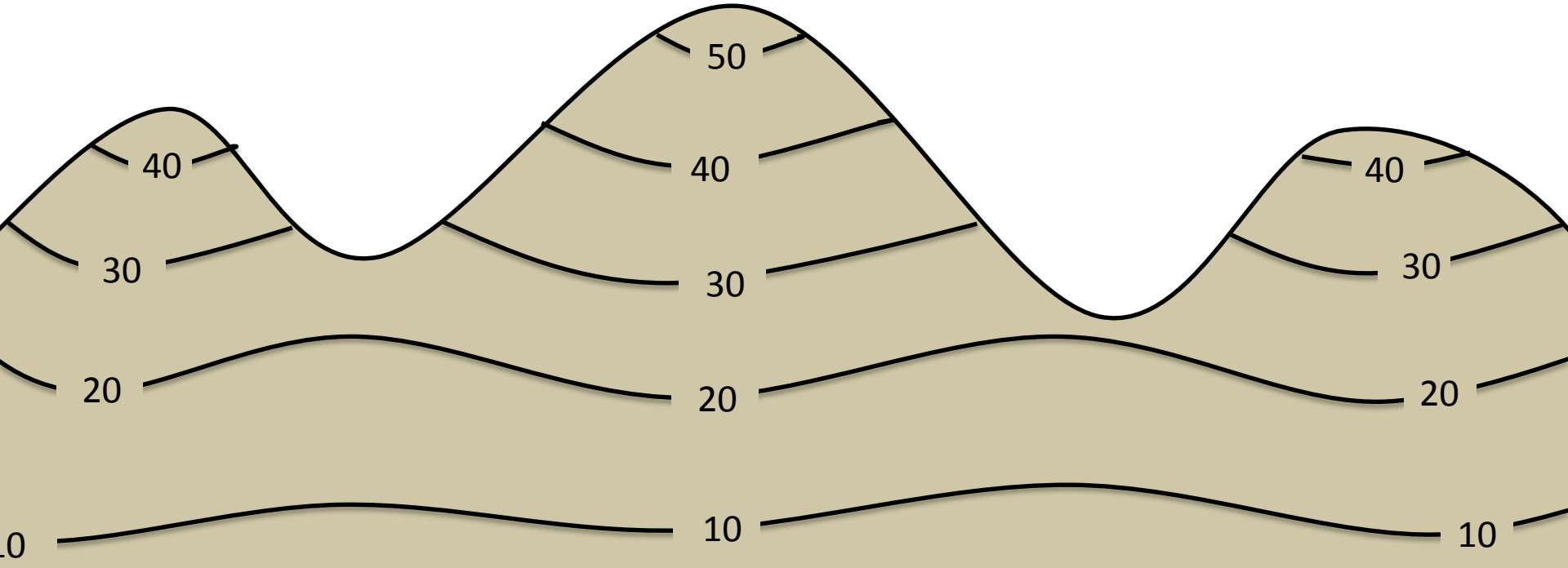

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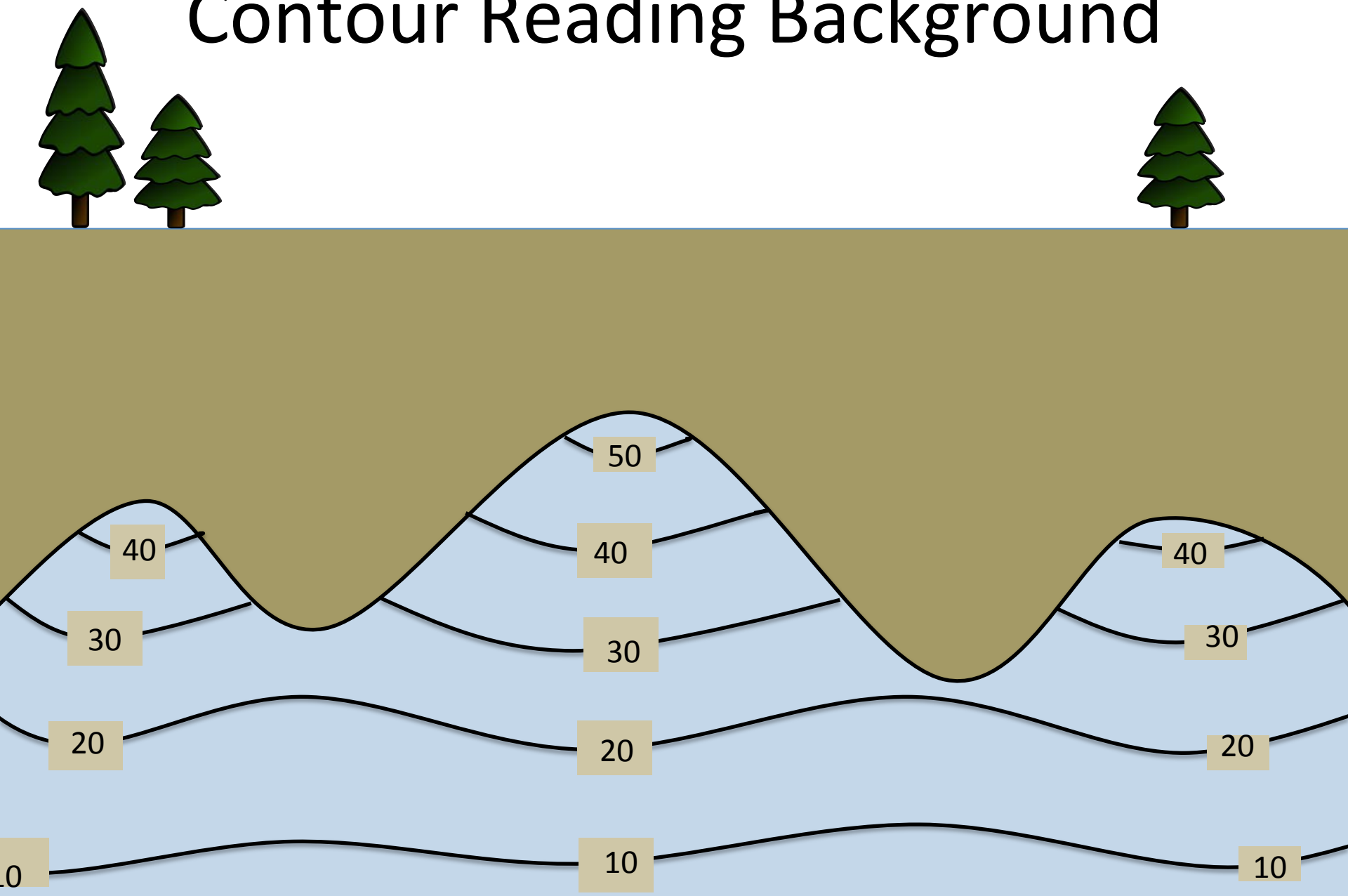
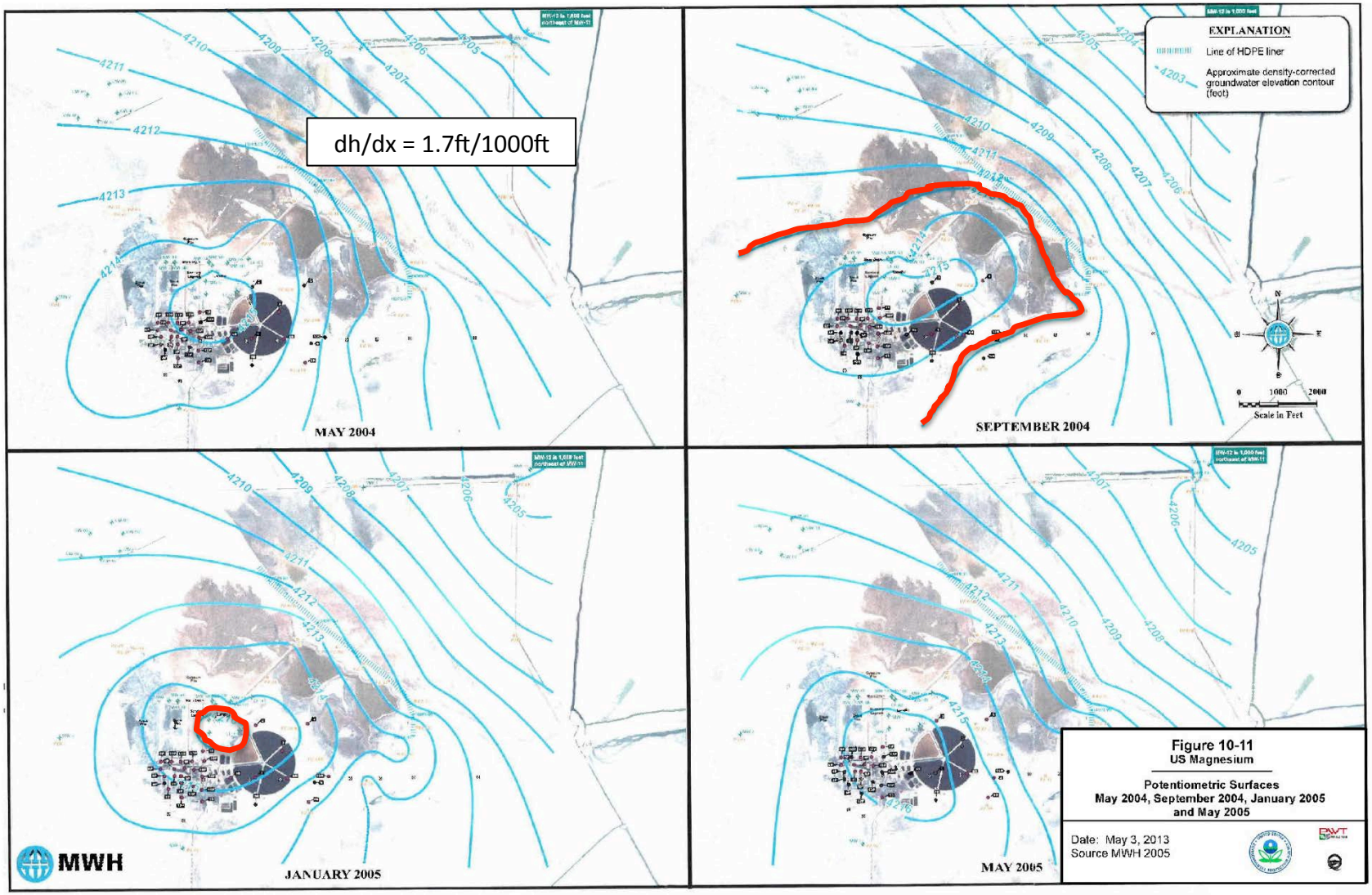


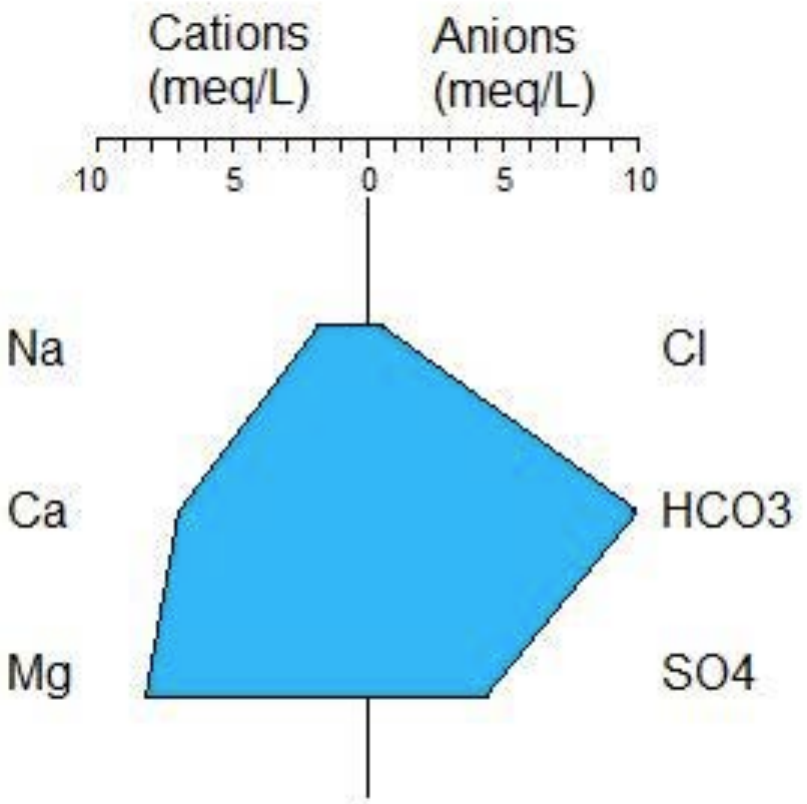
Groundwater Contours

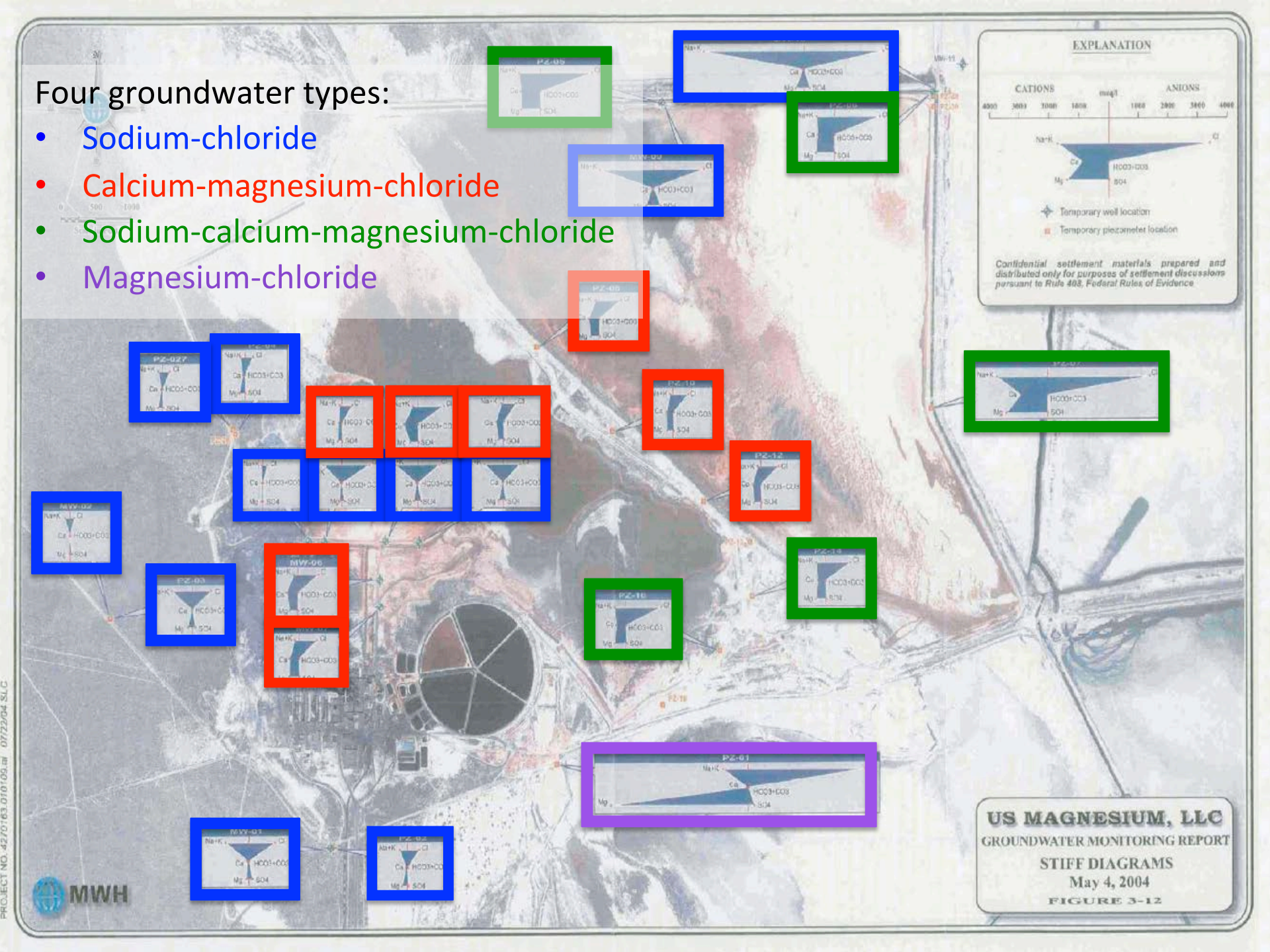


Background Water Chemistry

<u>Stiff Diagrams:</u>

Plot concentrations of cations (+ charge) and anions (- charge)




Four groundwater types:
• Sodium-chloride
• Calcium-magnesium-chloride
• Sodium-calcium-magnesium-chloride
• Magnesium-chloride
EXPLANATION
CATIONS
ANIONS
meq/l
Temporary well location
Temporary piezometer location
Confidential settlement materials prepared and distributed only for purposes of settlement discussions pursuant to Rule 408, Federal Rules of Evidence
US MAGNESIUM, LLC
GROUNDWATER MONITORING REPORT
STIFF DIAGRAMS
May 4, 2004
FIGURE 3-12
MWH

Summary

- Geology: high hydraulic conductivity oolitic sand
- Hydrogeology:
  - Groundwater mounding beneath site
  - Low hydraulic gradient