
HYDRAULICS AT A ZVI PRB

SITE

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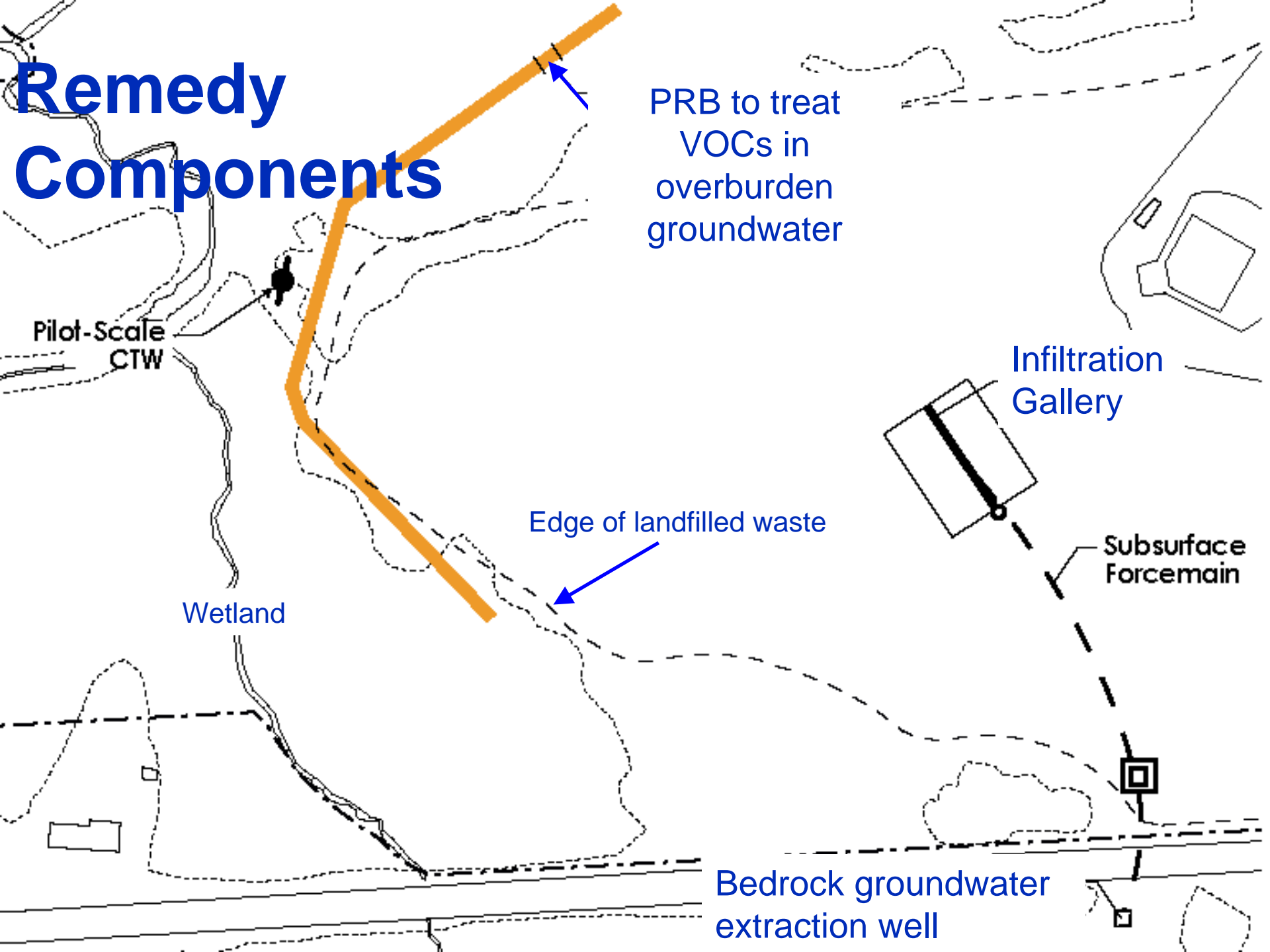


Overview

- Background Information
- “Hanging PRB”- Flow Diversion
- PRB Hydraulic Testing
- Seasonal Gradient Reversals



Remedy Components



PRB to treat VOCs in overburden groundwater

Pilot-Scale CTW

Infiltration Gallery

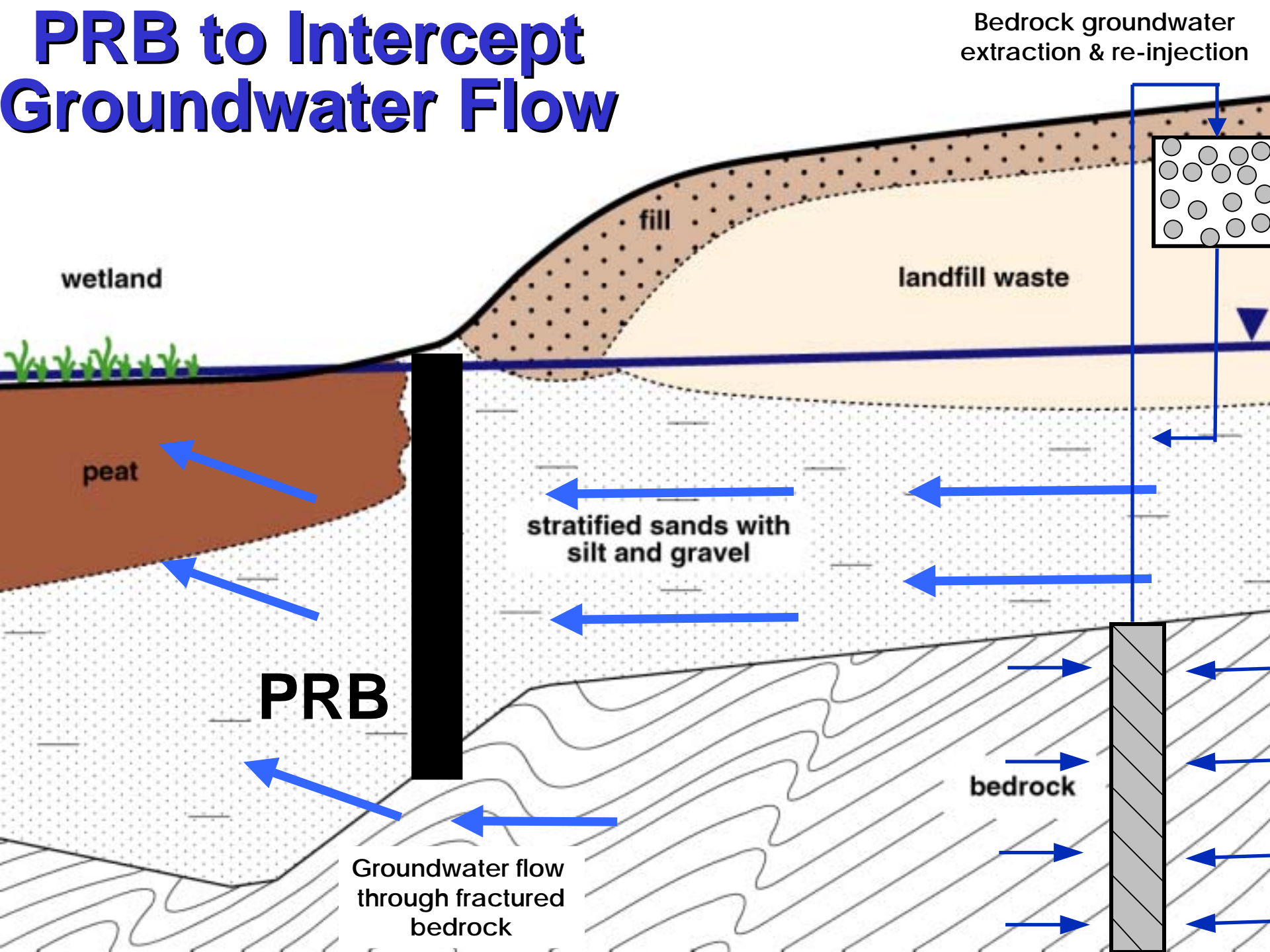
Edge of landfilled waste

Subsurface Forcemain

Wetland

Bedrock groundwater extraction well

PRB to Intercept Groundwater Flow



Bedrock groundwater extraction & re-injection

wetland

fill

landfill waste

peat

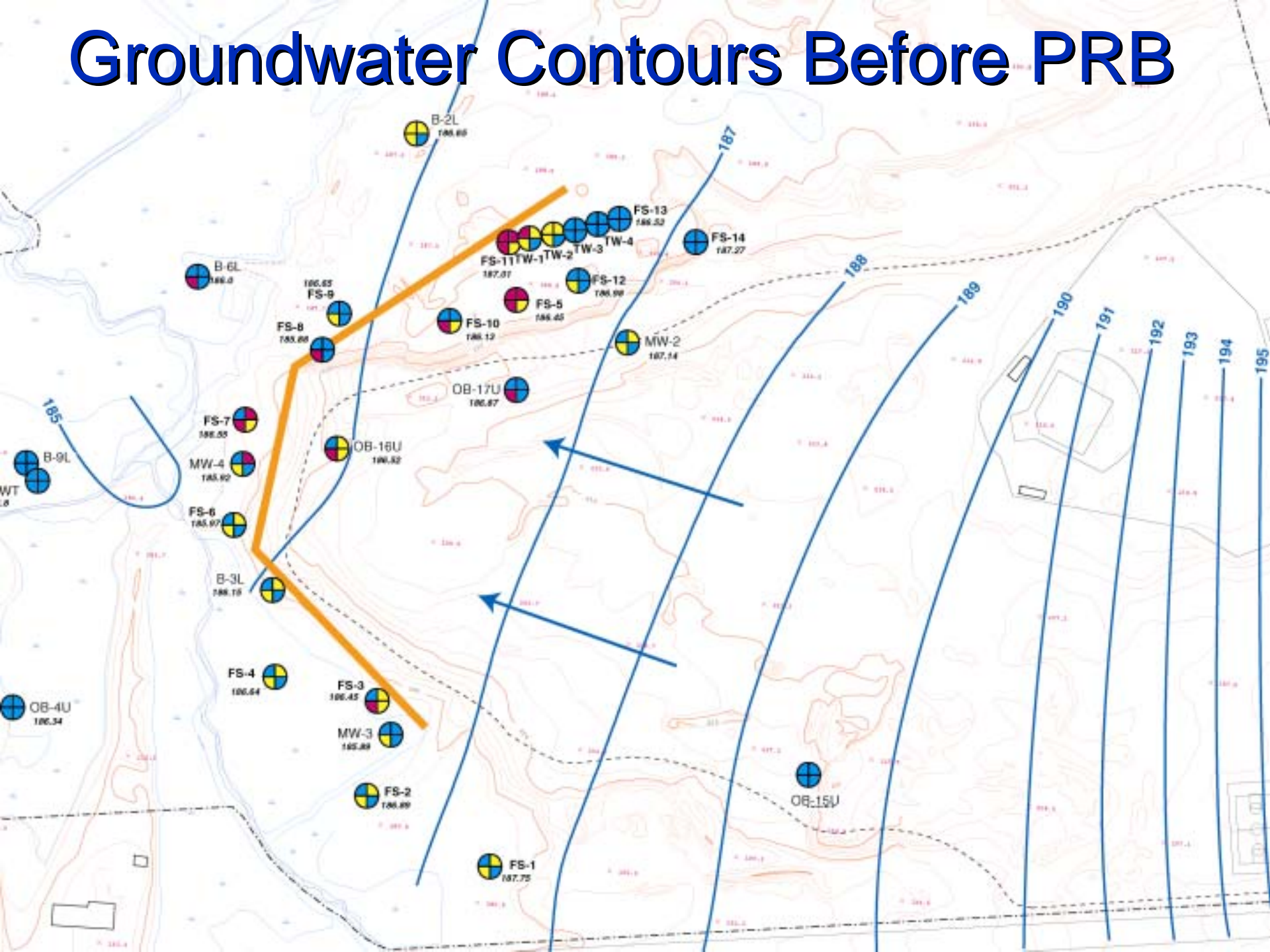
stratified sands with silt and gravel

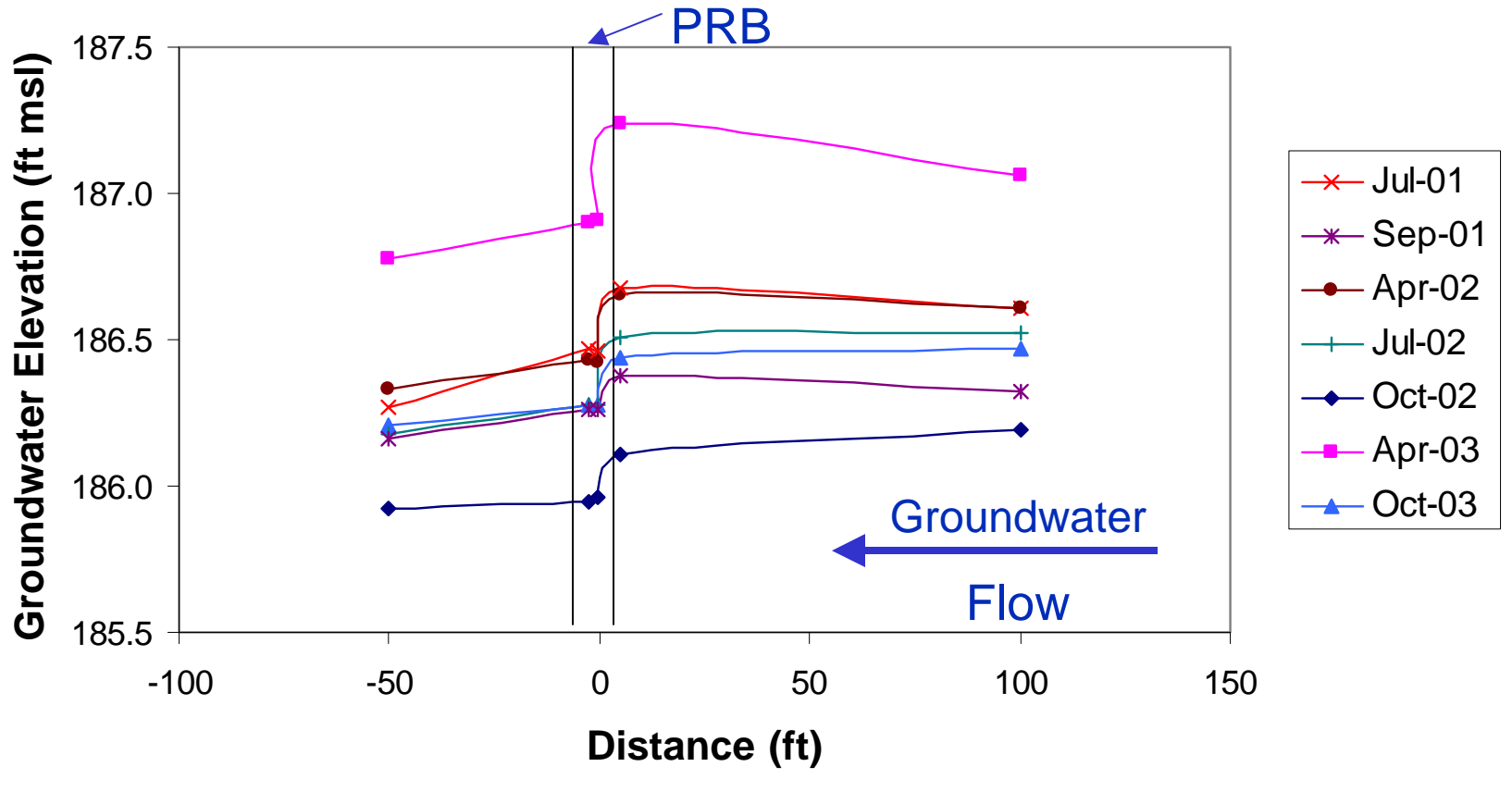
PRB

bedrock

Groundwater flow through fractured bedrock

Groundwater Contours Before PRB





Design & Monitoring Considerations

- “Hanging” PRB – flow diversion
- PRB hydraulic testing



Somersworth Site Geology

- Little contrast between permeable aquifer and iron

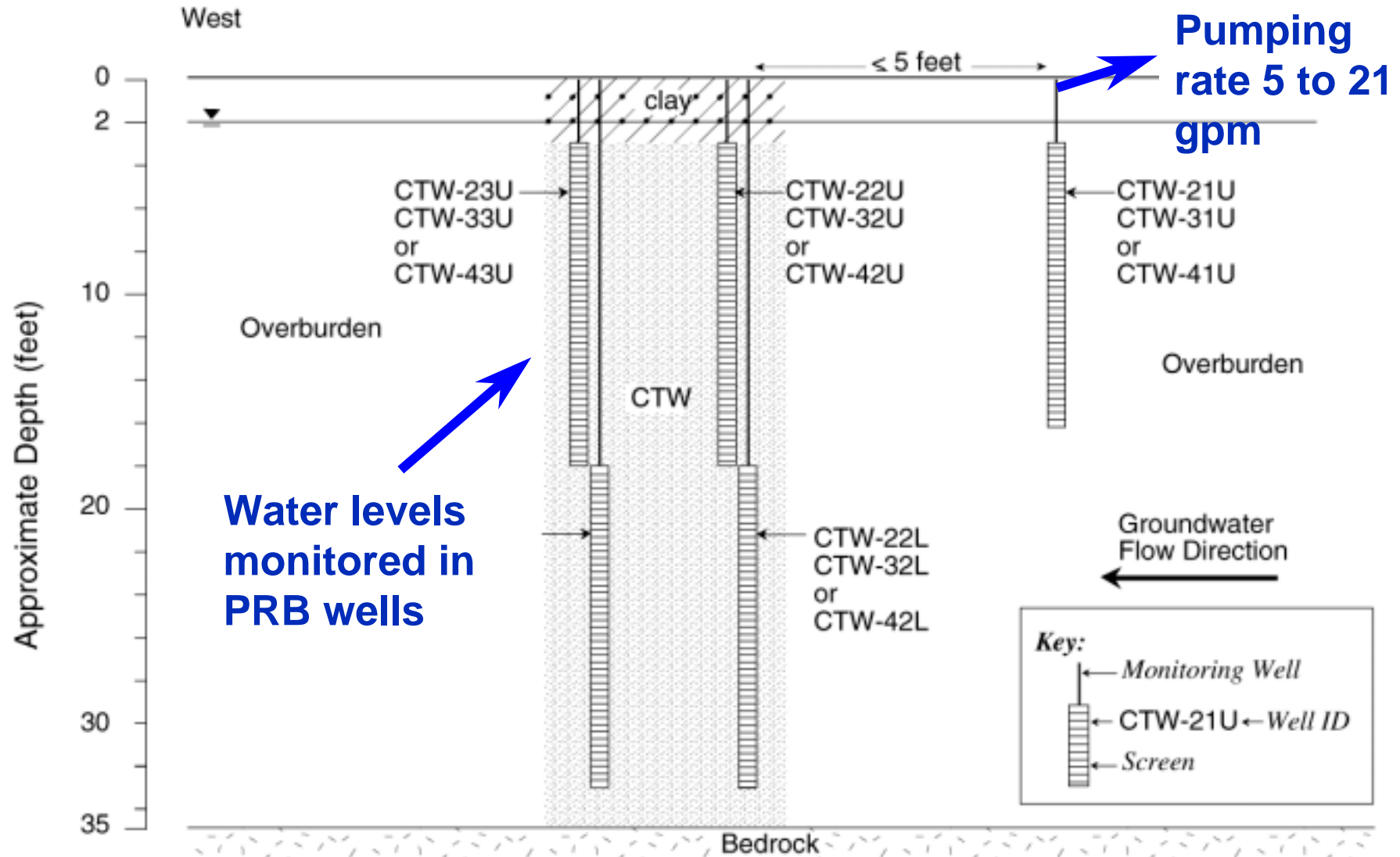


Hydraulic Testing

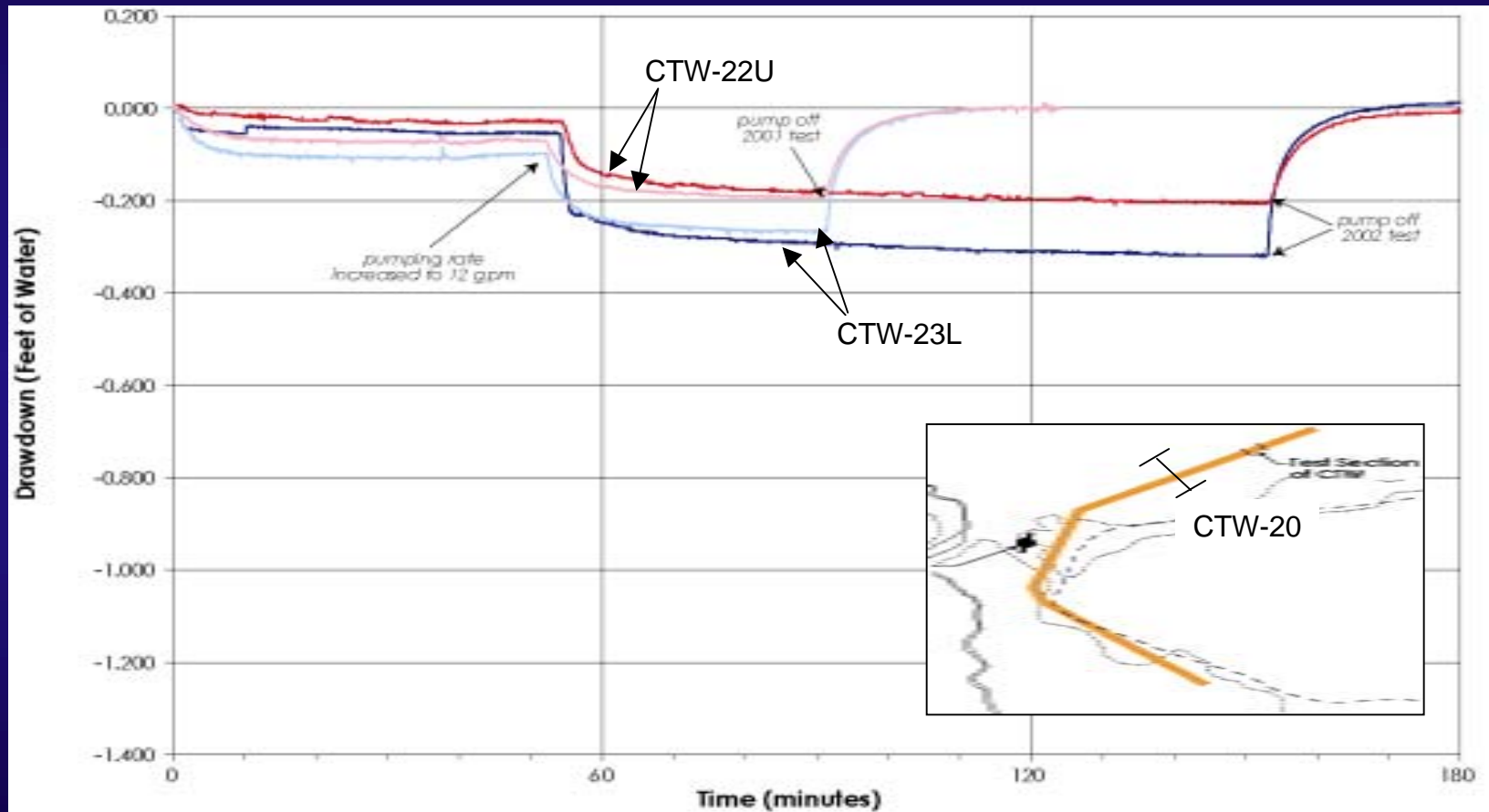
- Evaluate potential PRB permeability changes
- “Lessons learned” from testing in the PRB
 - Slug tests showed instantaneous response
 - Pneumatic tests showed oscillatory behavior
- Pump testing implemented



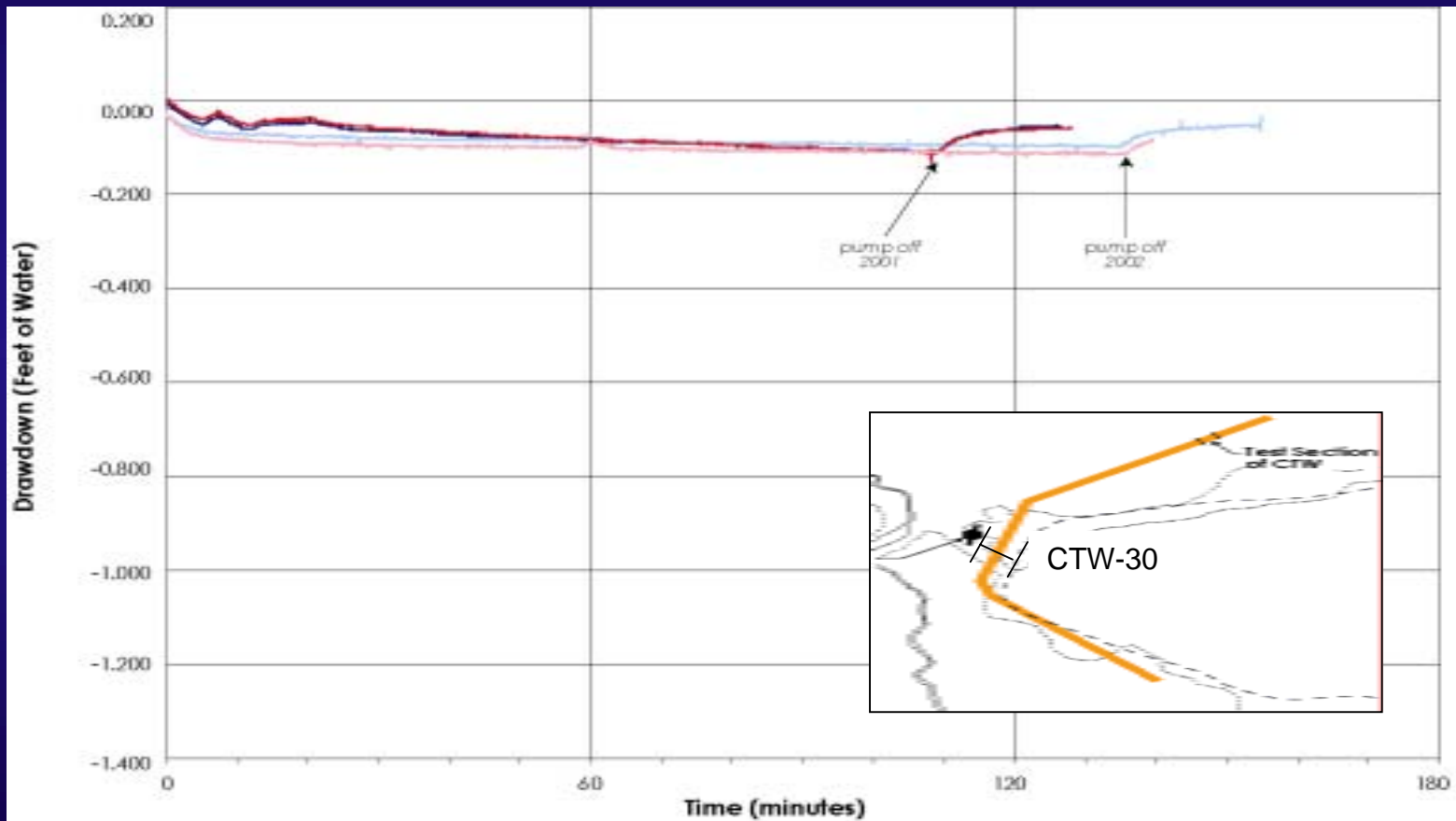
Hydraulic Testing



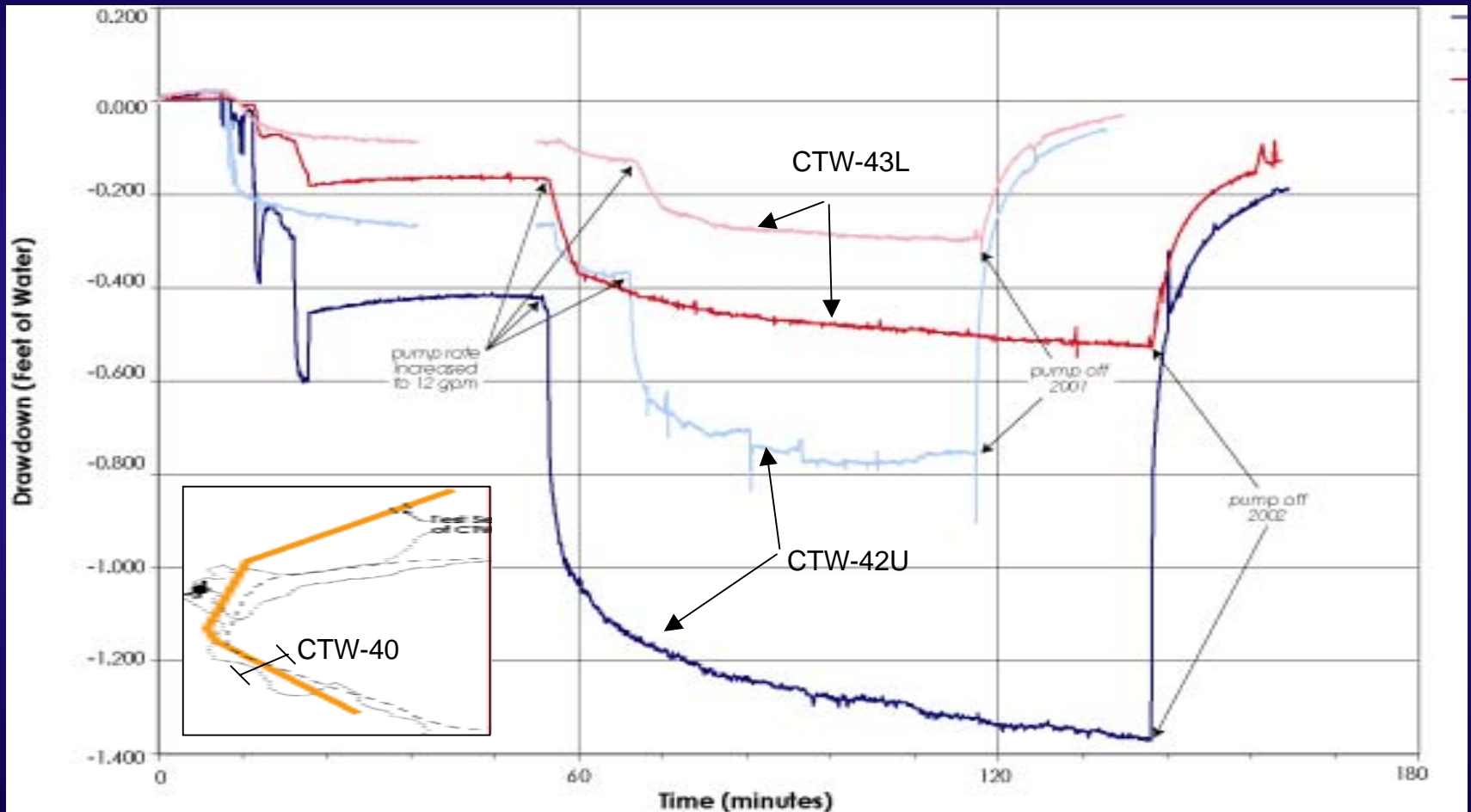
CTW-20



CTW-30



CTW-40

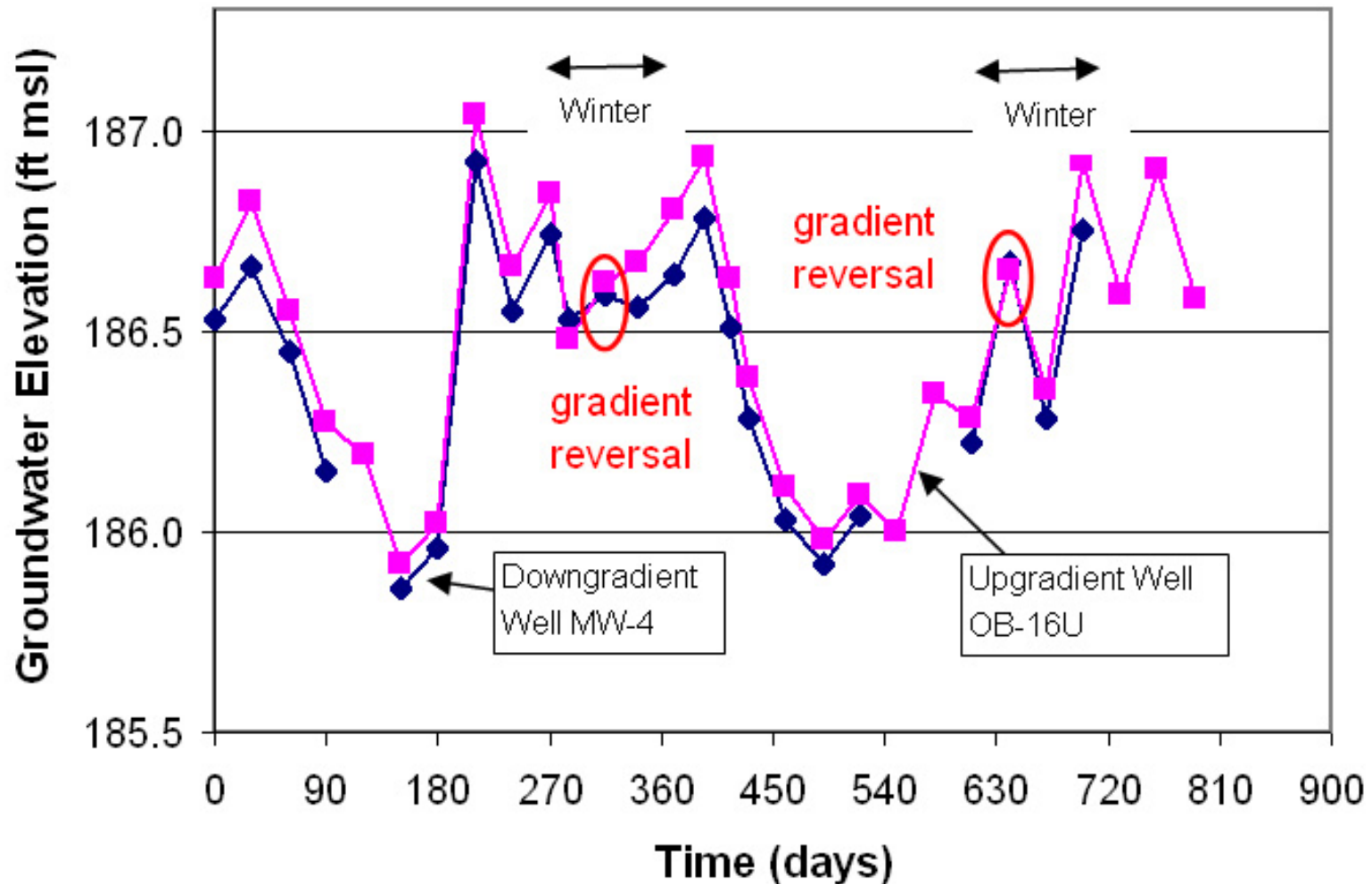


Design & Monitoring Considerations

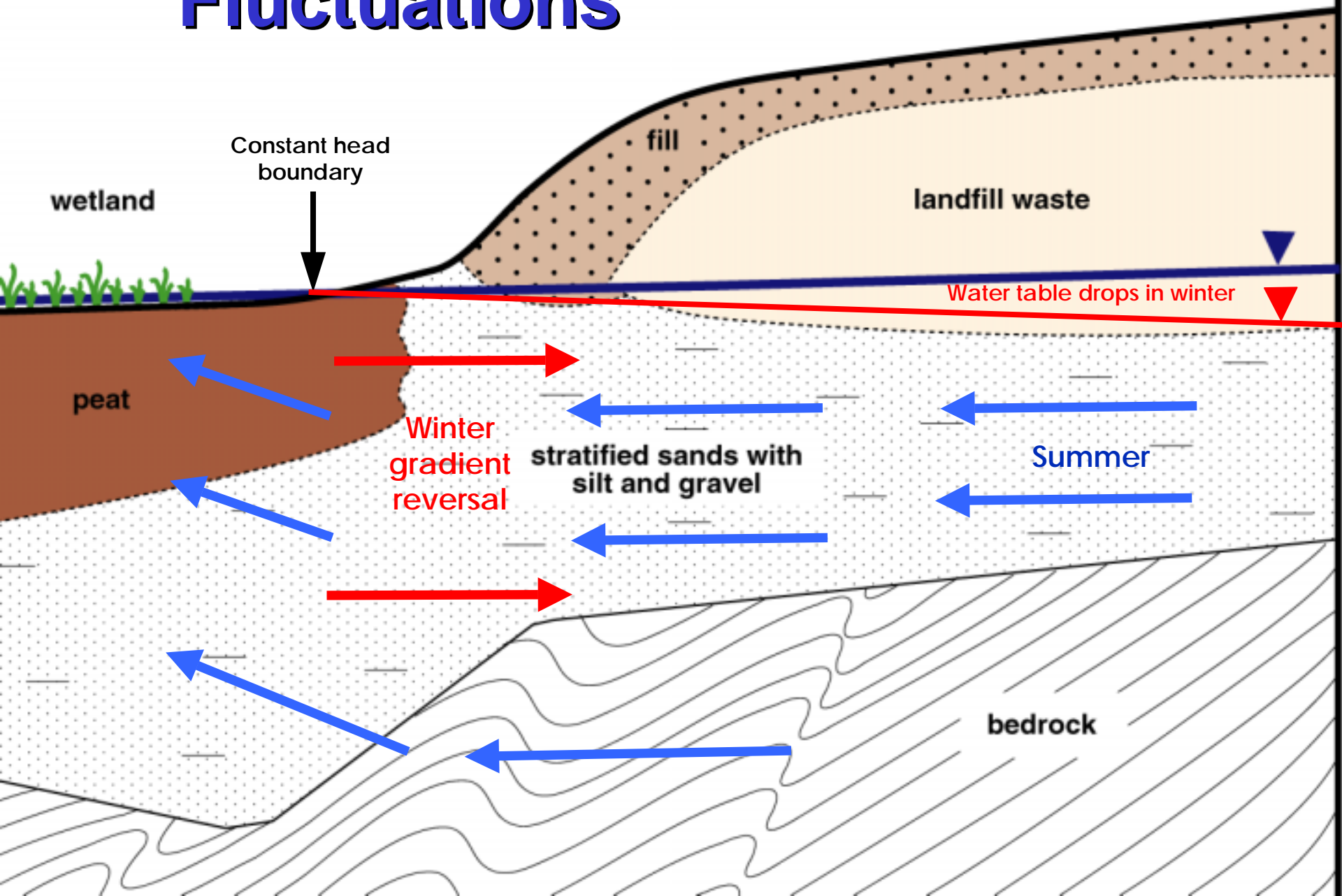
- “Hanging” PRB – flow diversion
- Low permeability contrast – aquifer vs. iron
- Seasonal groundwater flow reversals



Seasonal Reversals



Seasonal Water Table Fluctuations



Conclusions

- Small amount of mounding on upgradient side of PRB but flux of VOCs diverted around/beneath PRB is not significant
- Northern and central PRB segments show no significant permeability changes
- Southern PRB segment shows change – may be result of bioslurry breakdown or permeability reductions
- Winter gradient reversals obscure geochemical profile within PRB, but don't appear to negatively impact PRB performance

