



High Resolution Site Characterization for the Design of an In Situ Bioremediation System in Dual-Porosity Bedrock

Presented for: Battelle Fifth International Symposium on Bioremediation and Sustainable Remediation Technologies
Baltimore, MD

Presented by: Johannes Mark

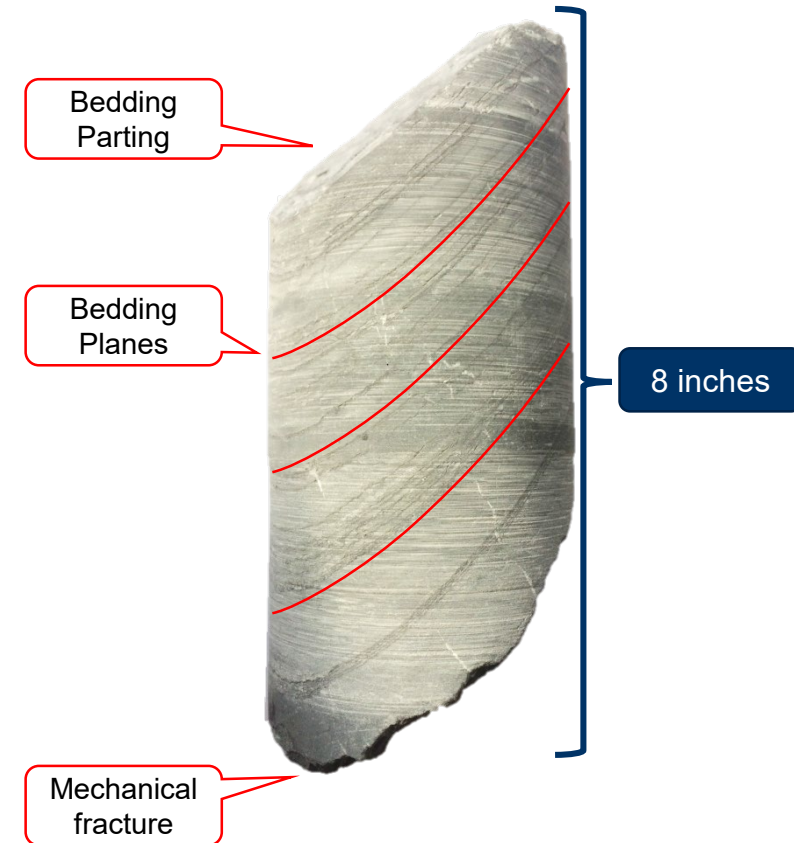
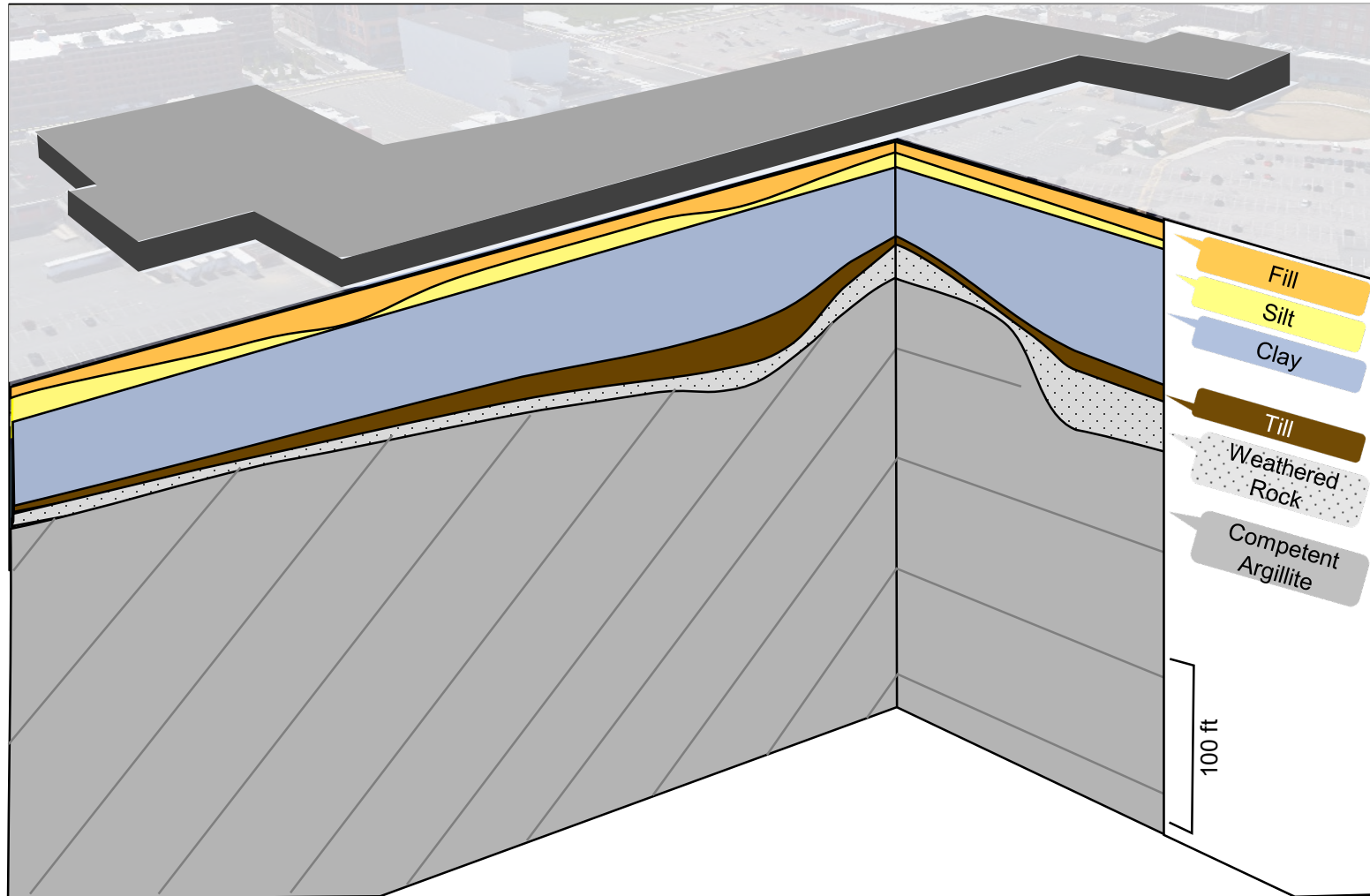
16 April 2019

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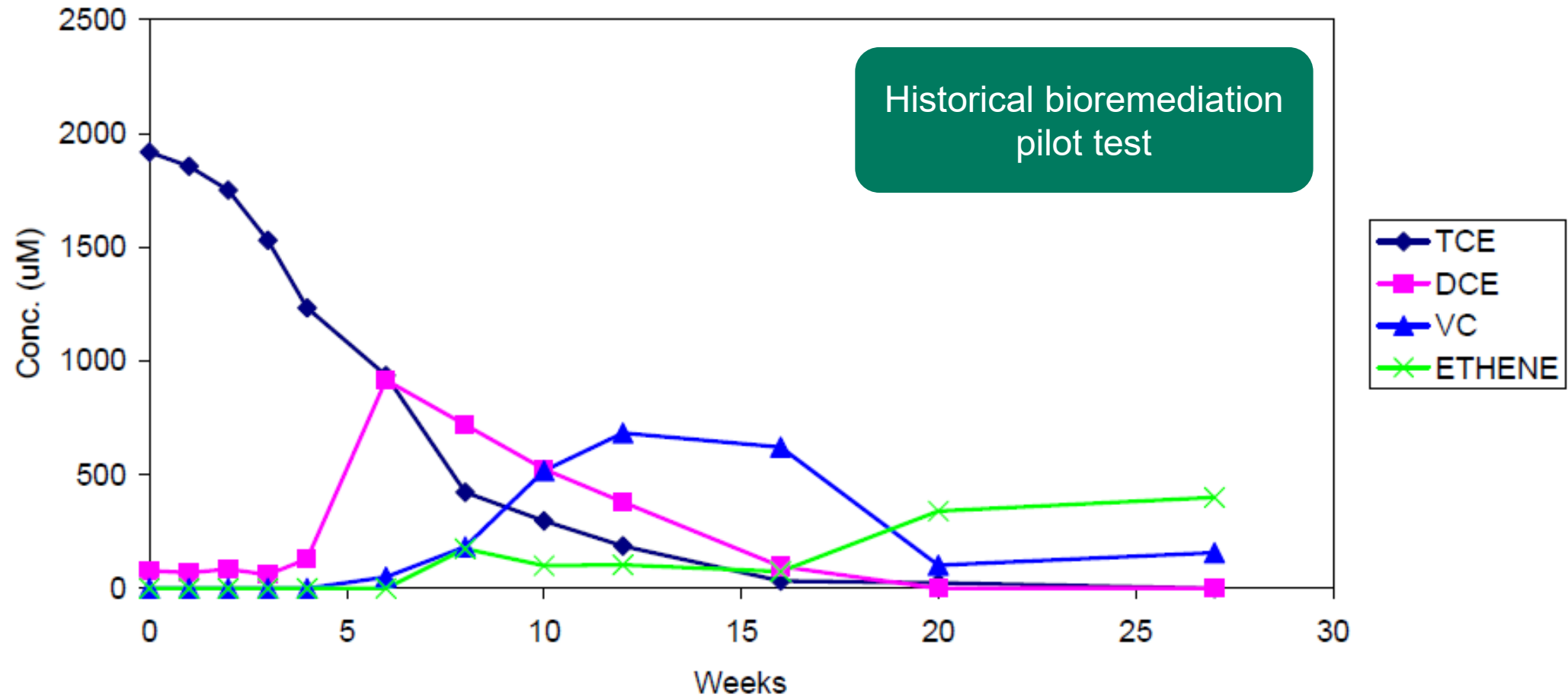
The business of sustainability



Background

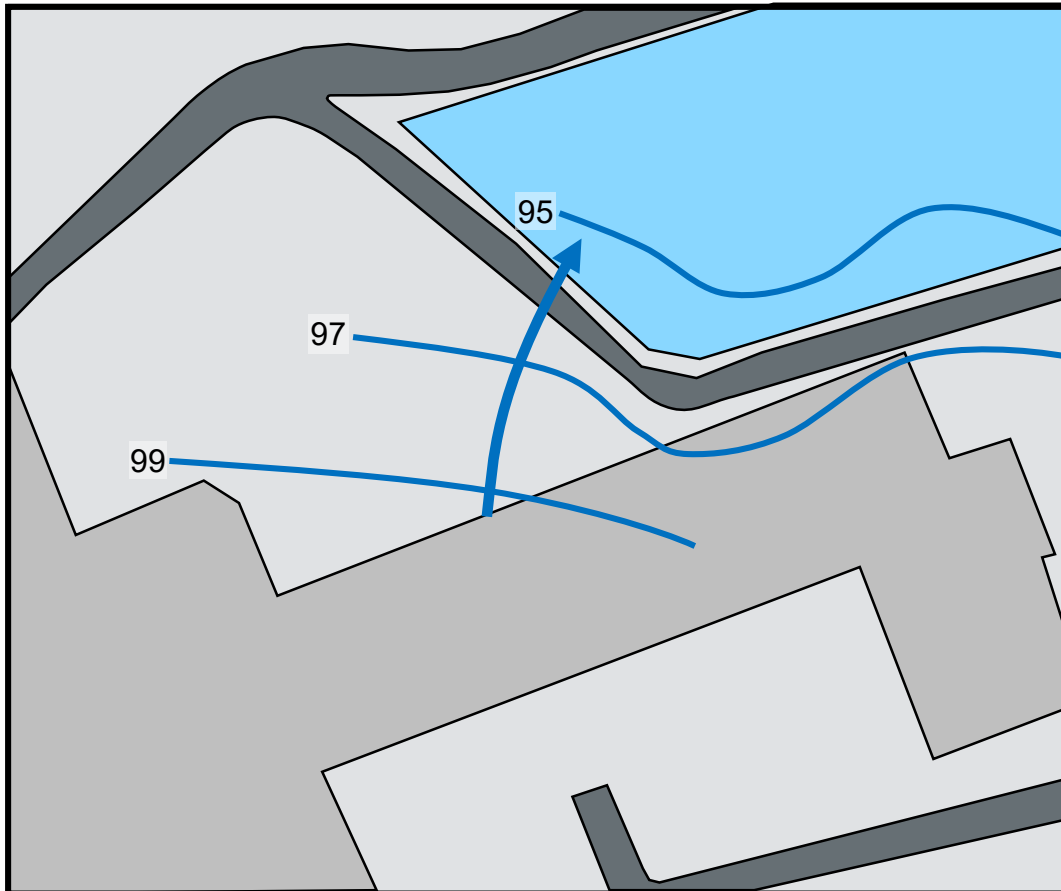


Background

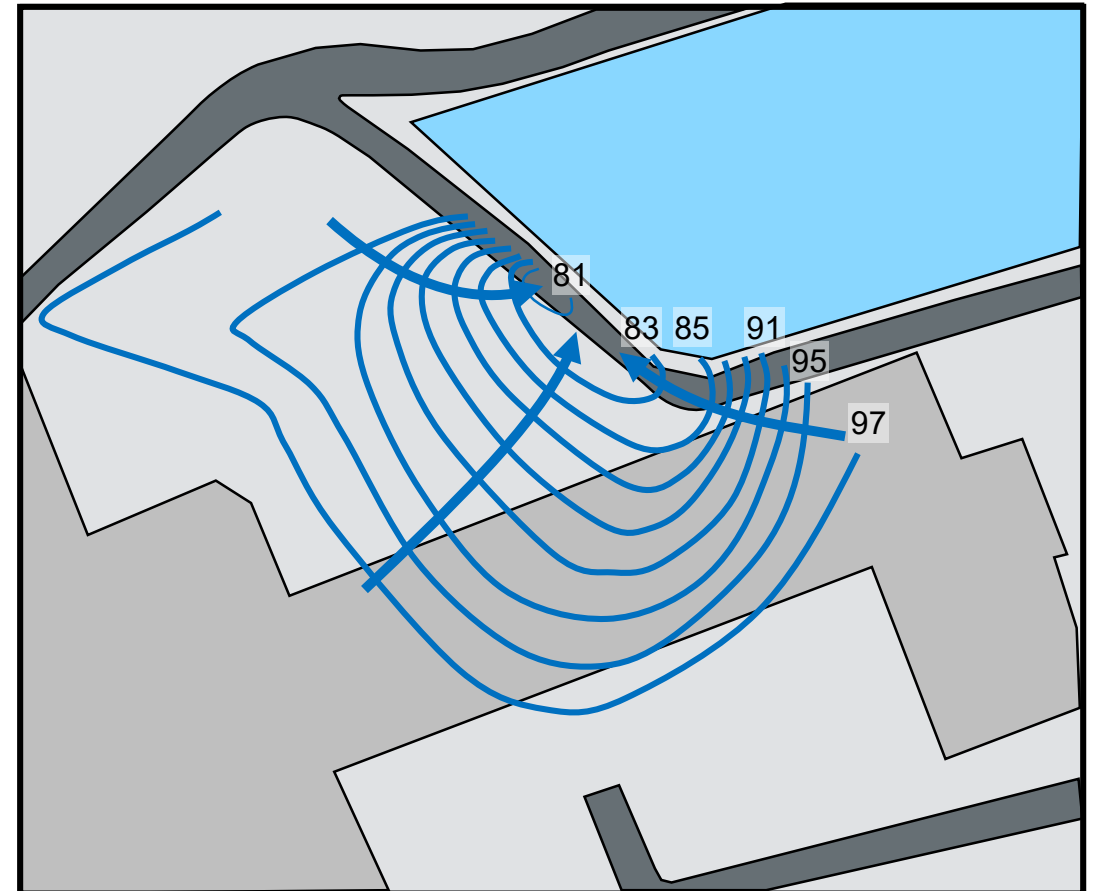


Background

Historical
pre-pumping conditions



Current
pumping conditions



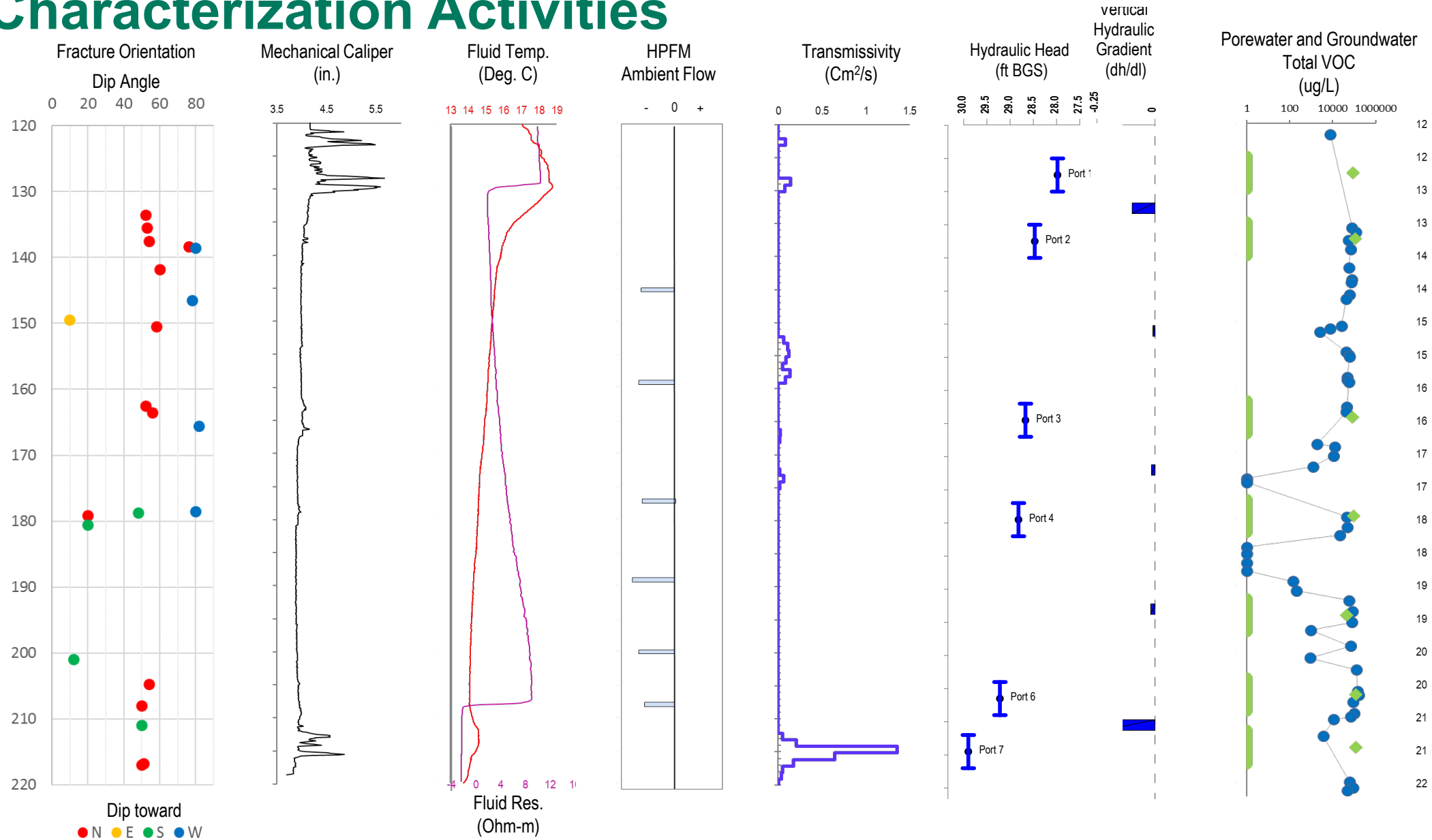
Background

Objective

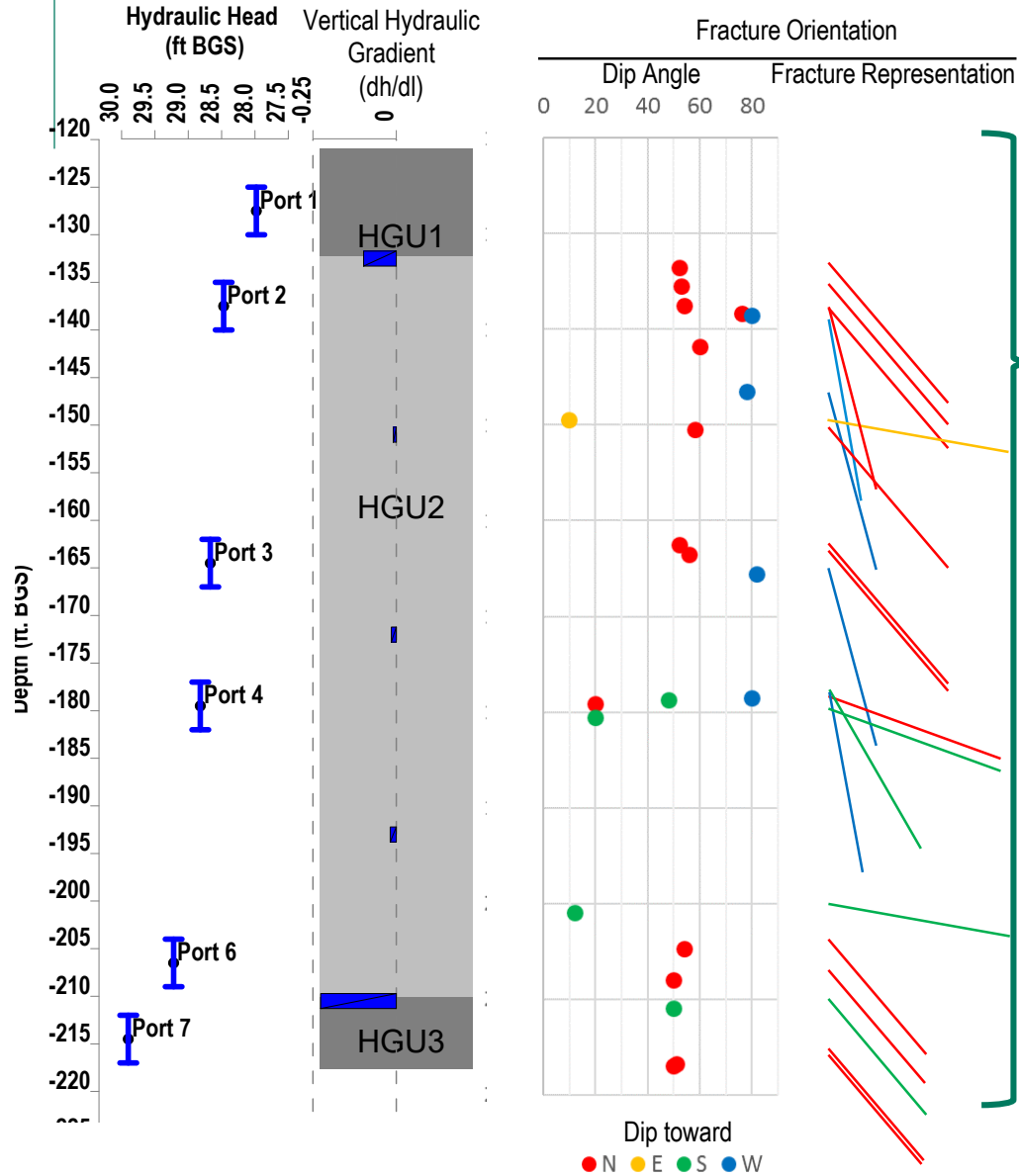
Pilot test of in-situ bioremediation during on-site containment of VOC impacted groundwater

Preference for batch injections

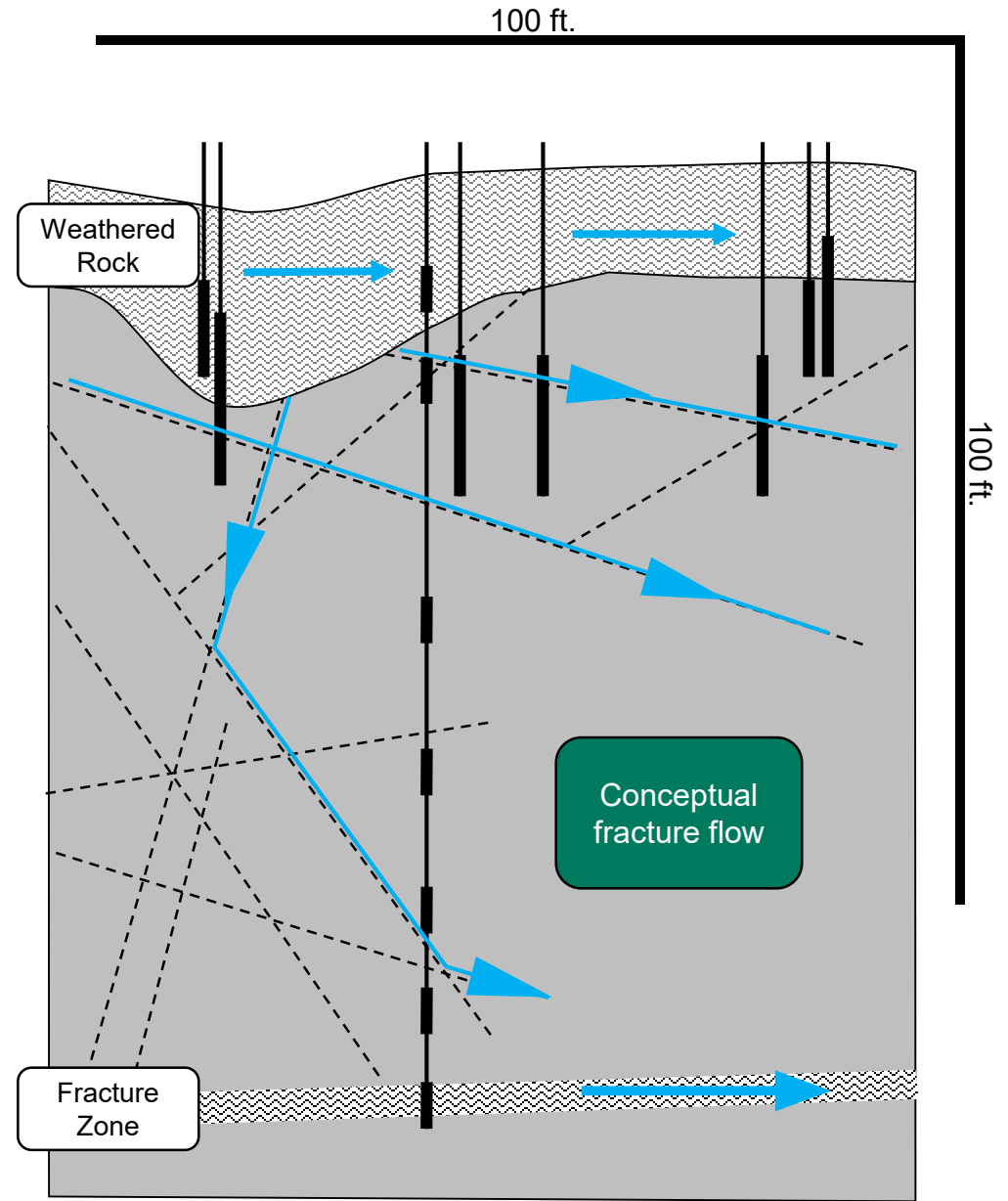
Characterization Activities



Characterization Activities

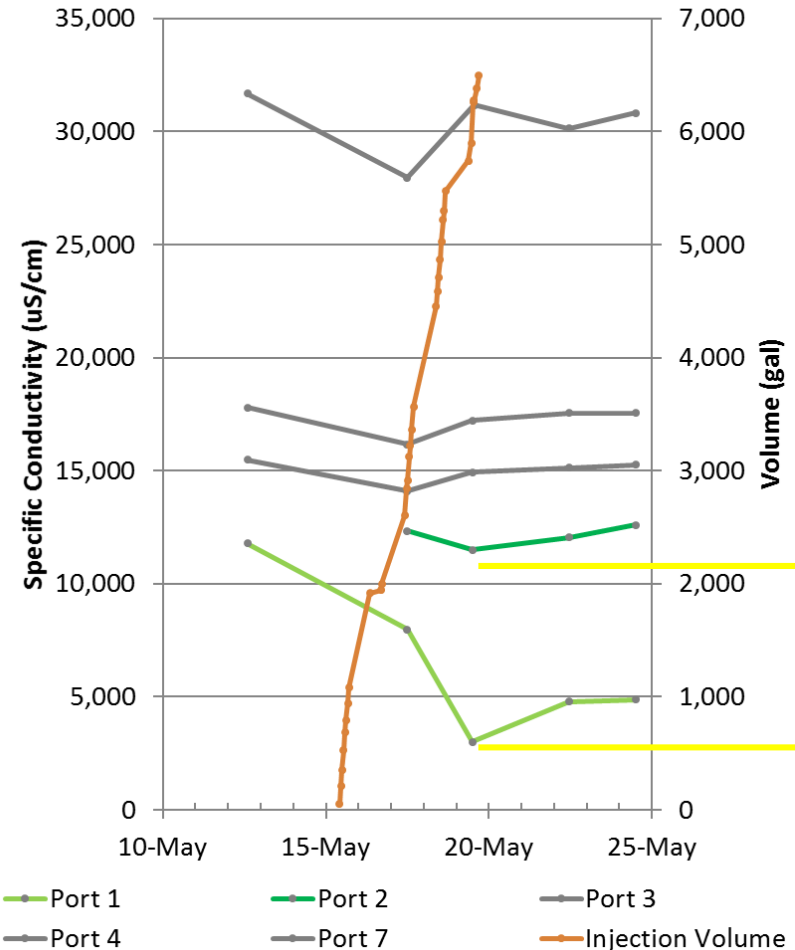


Interconnected fracture system with negative vertical hydraulic gradients

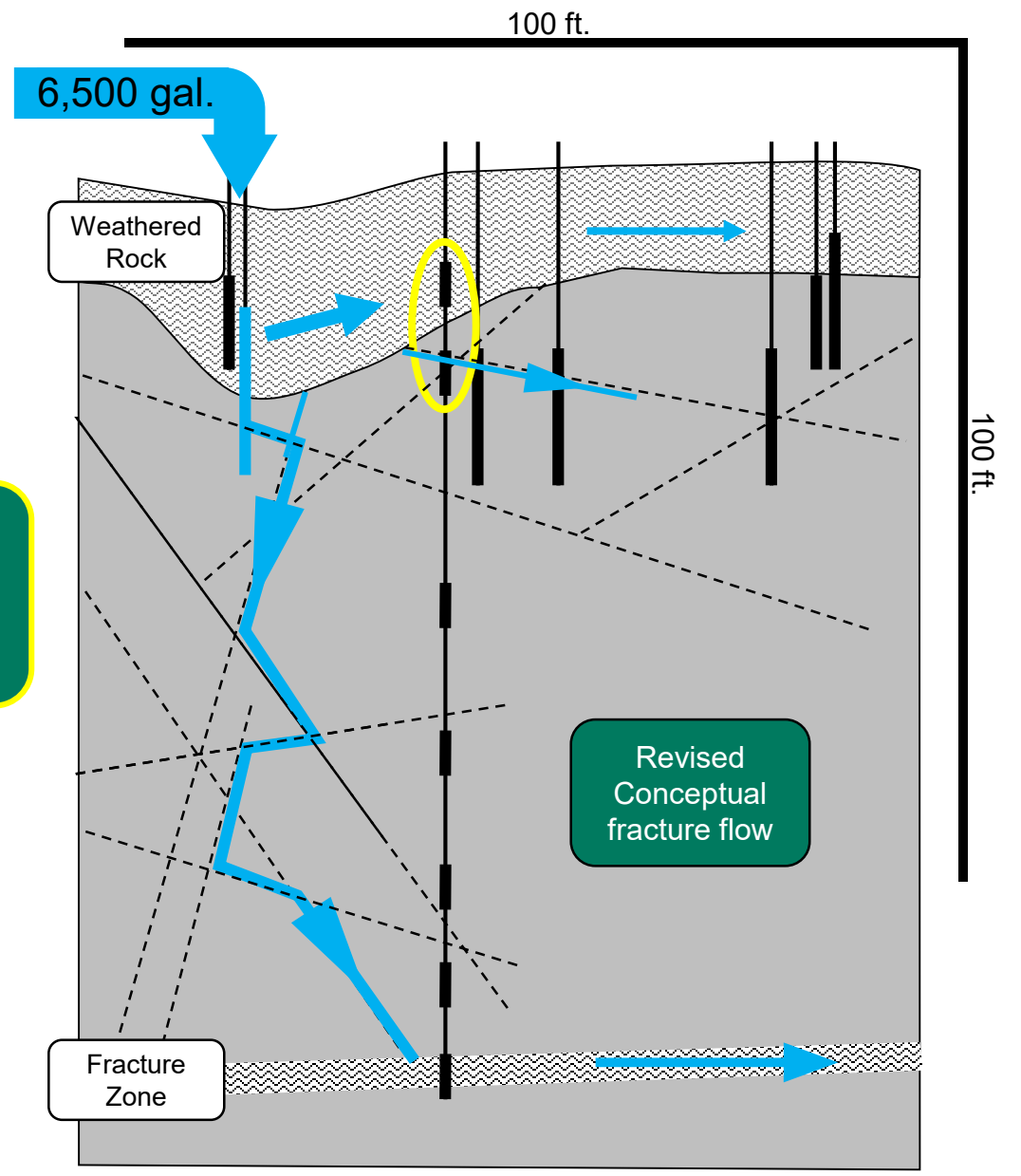


Characterization Activities

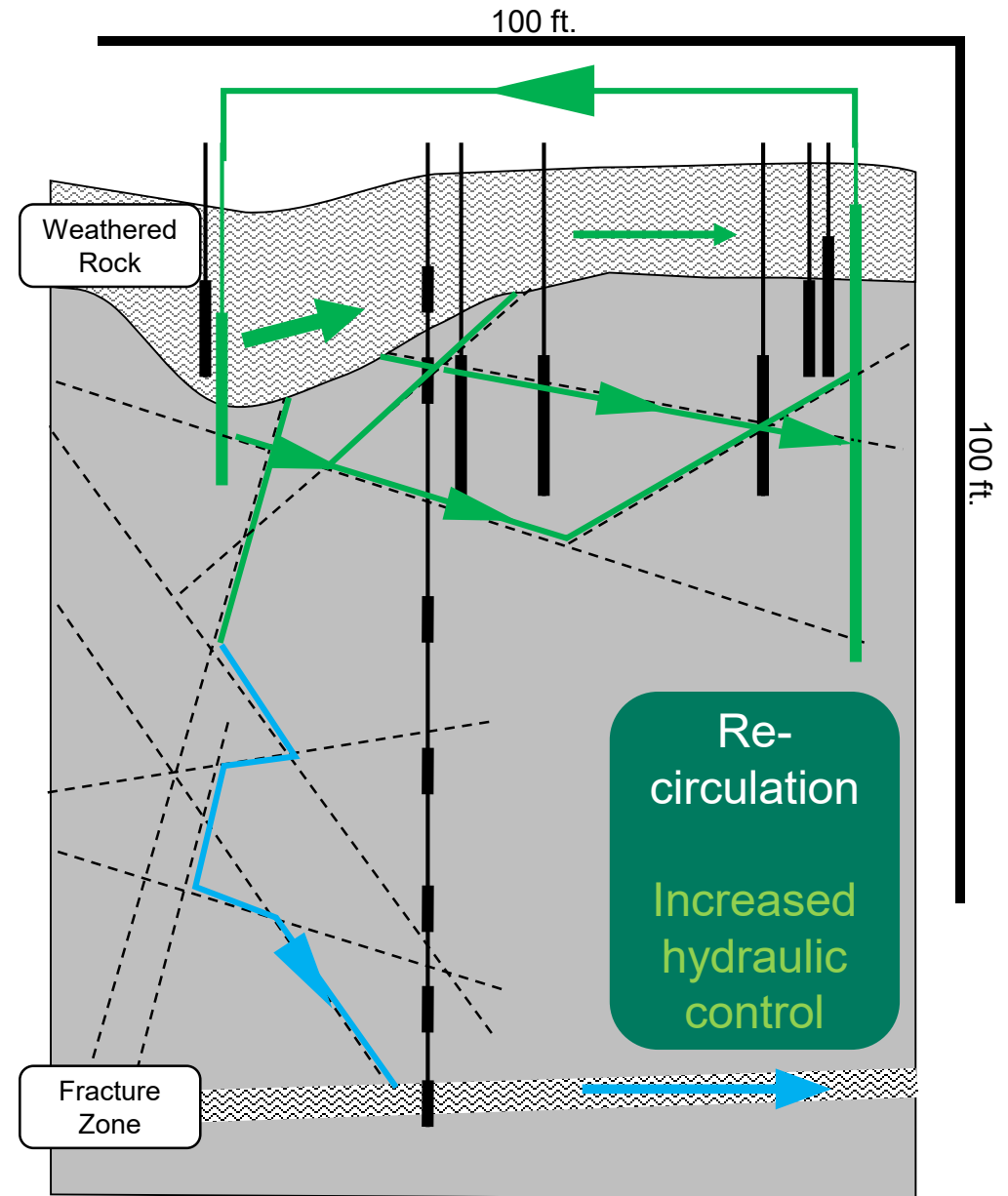
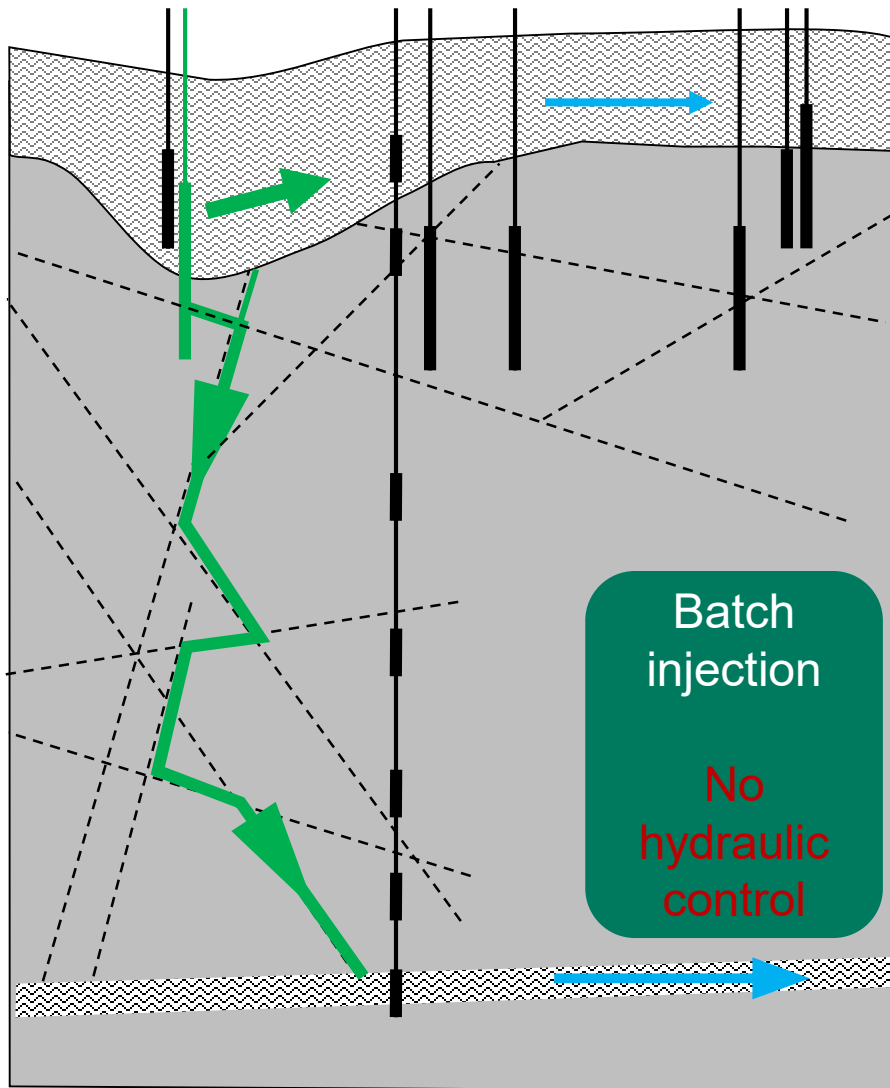
Freshwater Tracer Test



Freshwater only observed in two adjacent shallow monitoring wells



Results



Thank you

