
Trenchless PRB Installation Projects Kelly AFB - San Antonio

Jim Ortman

GeoSierra

Atlanta, GA

Website: www.geosierra.com

Kelly AFB PRB Project Scope

- 5 PRBs totaling 3,650'
- 2,100' on 2-Lane City Streets
- 1,550' Within An Active Railroad Right-of-Way
- Average Depth – 20 ft bgs to 40 ft bgs
- 1,000 Tons of Iron
- Complex site circumstances
- Minimum Footprint Requirements

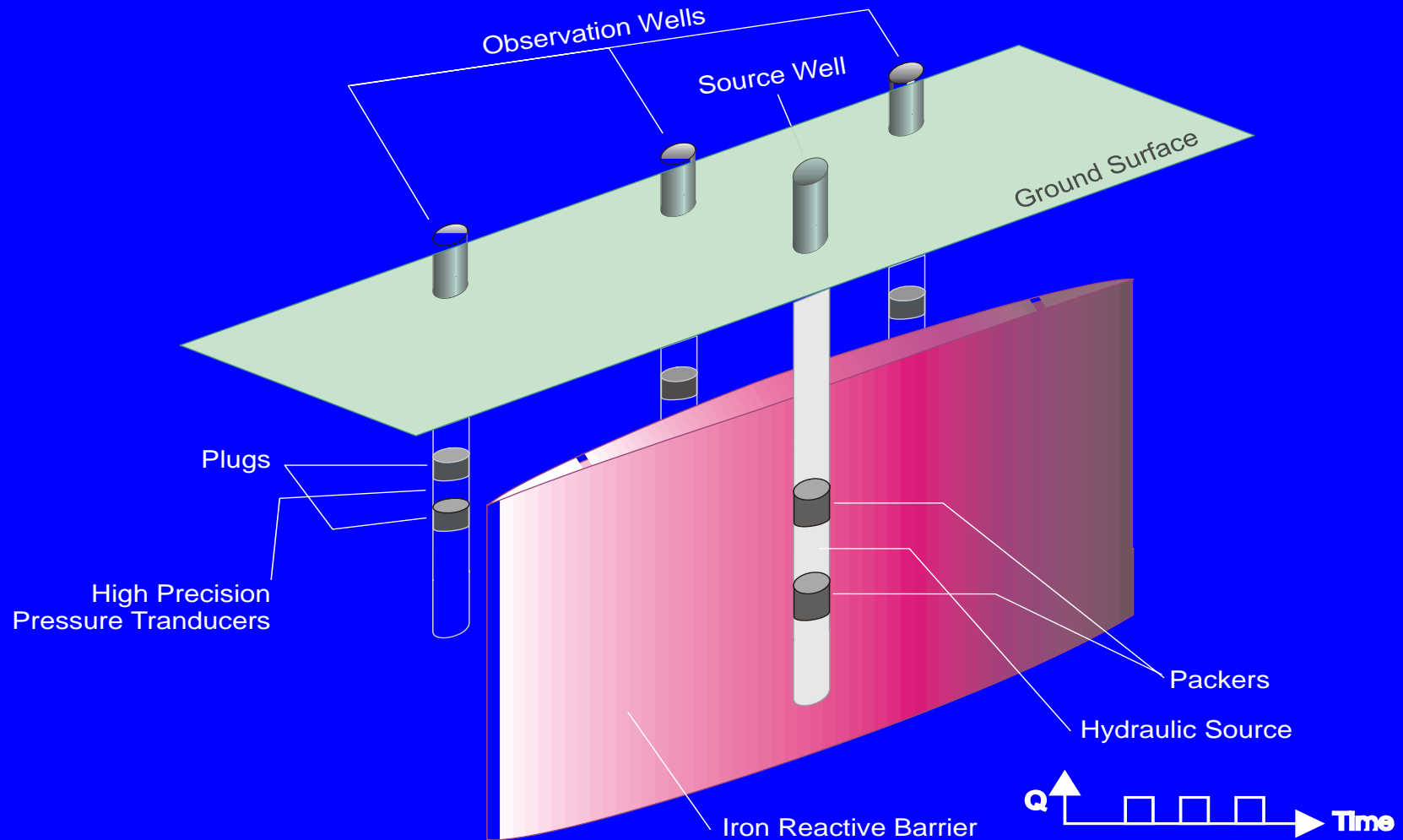
Drilling Frac Casing Boreholes



QA/QC Processes

- Bench Scale Treatability Column Test
- Pre-Construction Hydraulic Pulse Interference Test
- Probabilistic Design
- Active Resistivity Imaging
- Inclined Profile Resistivity or Magnetometer
- Post-Construction Hydraulic Pulse Interference Test
- Ongoing Gel and Iron QA/QC Tests

Pre and Post-Construction Hydraulic Pulse Interference Test



Pulse Interference Setup and Monitoring



Navigating Around Utilities



Handling and Logging Cores



Gravel and Cobbles Geology City of San Antonio



Frac Casings and Iron Filings in Project Warehouse



Aligning Feeder Pipe and Frac Casing



Setting and Aligning Casing



Confirming Casing Alignment With Downhole Camera and Compass



Surrounding Casing with Cement Grout



Placing Resistivity String at Same Depth as Frac Casing



Frac Casings in Place

Ready to Frac



Frac Equipment Footprint

Tinker AFB

Kelly AFB



Iron Filings over Mixer

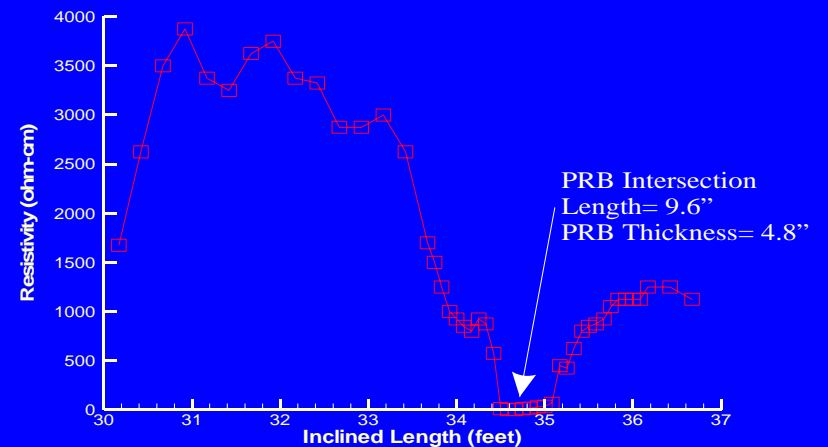
Adding Iron to Gel



Real-Time Active Resistivity Image of Frac Injection

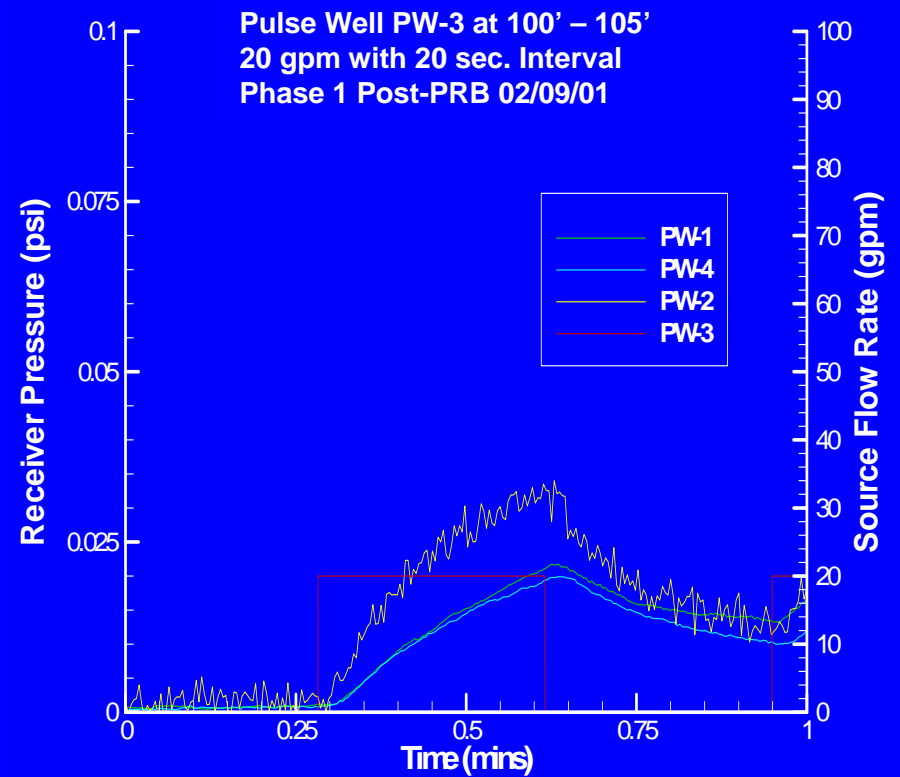
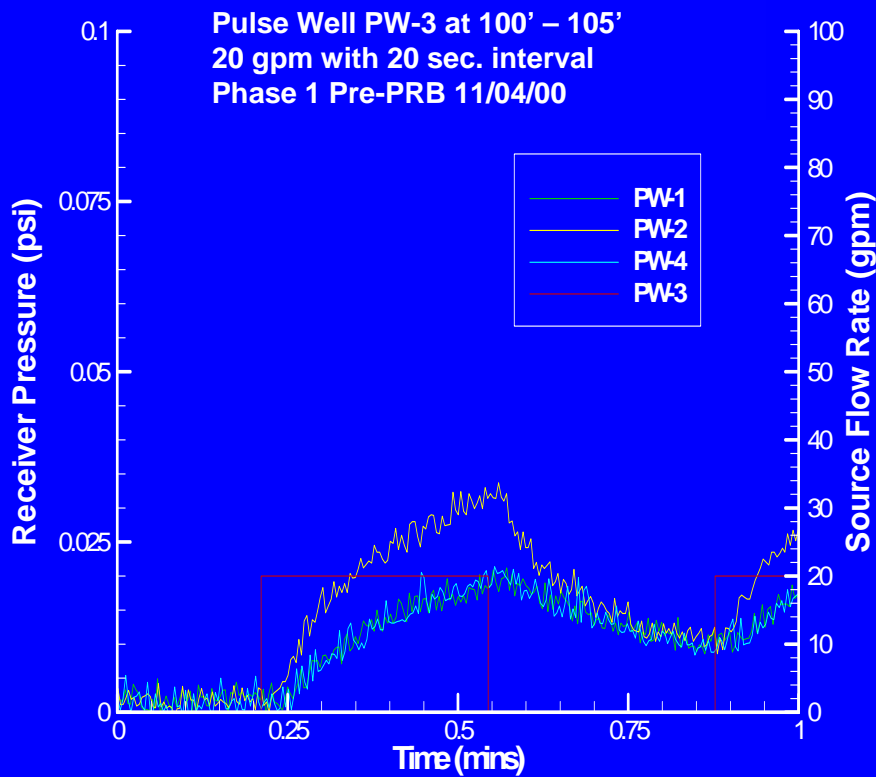


Inclined Profile Soil Resistivity Probe to Verify PRB Thickness



Pre and Post Construction Comparisons

Verify the Permeability of the PRB



GeoSierra Installed PRBs ...Proven Technology

Depth	Length	Site Name
65'	360'	Caldwell Superfund Site - NJ
75'	240'	McGraw Edison Superfund Site - IA
115'	100'	DuPont - Oakley, CA
40'	1200'	Arrowhead Superfund Site – VA
100'	100'	BP - Gardena, CA
115'	75'	Sierra Army Depot - Herlong, CA
95'	500'	Tinker AFB – Oklahoma City
40'	3650'	Kelly AFB (5 PRBs) <i>Installation Underway</i>

Thank You!

Jim Ortman

770-492-8214

Jortman@geosierra.com