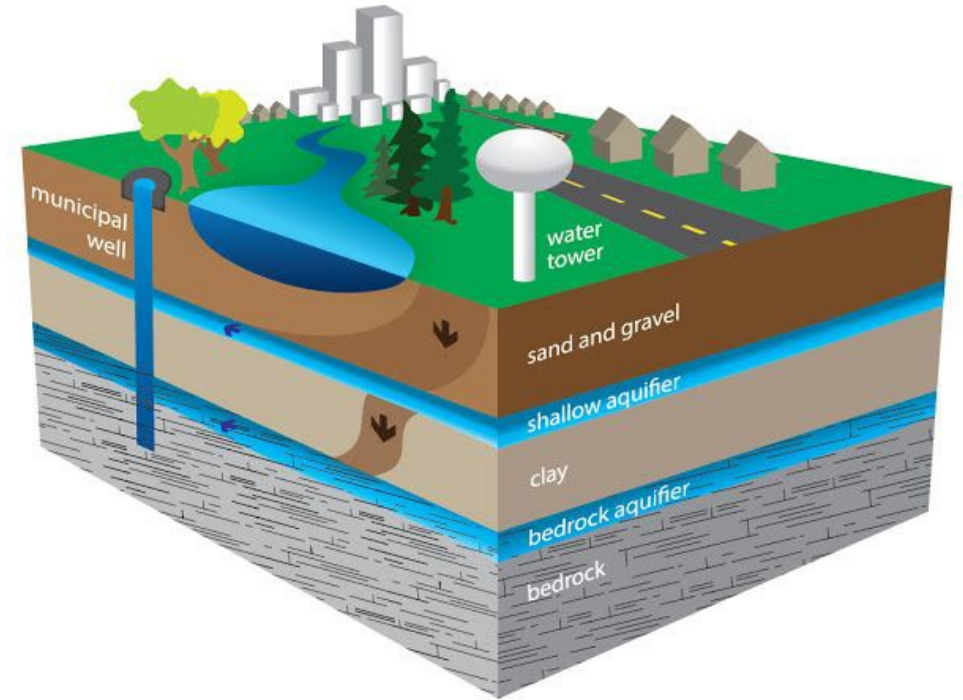


STPUD Stateline Test Well Project



Mark Seelos

Water Resources Manager

February 20, 2025

Outline



1. Water Supply Challenges Recap
2. Conventional Zone Testing
3. BESST Method
4. Proposed Work



Supply Shortage in Stateline Zone



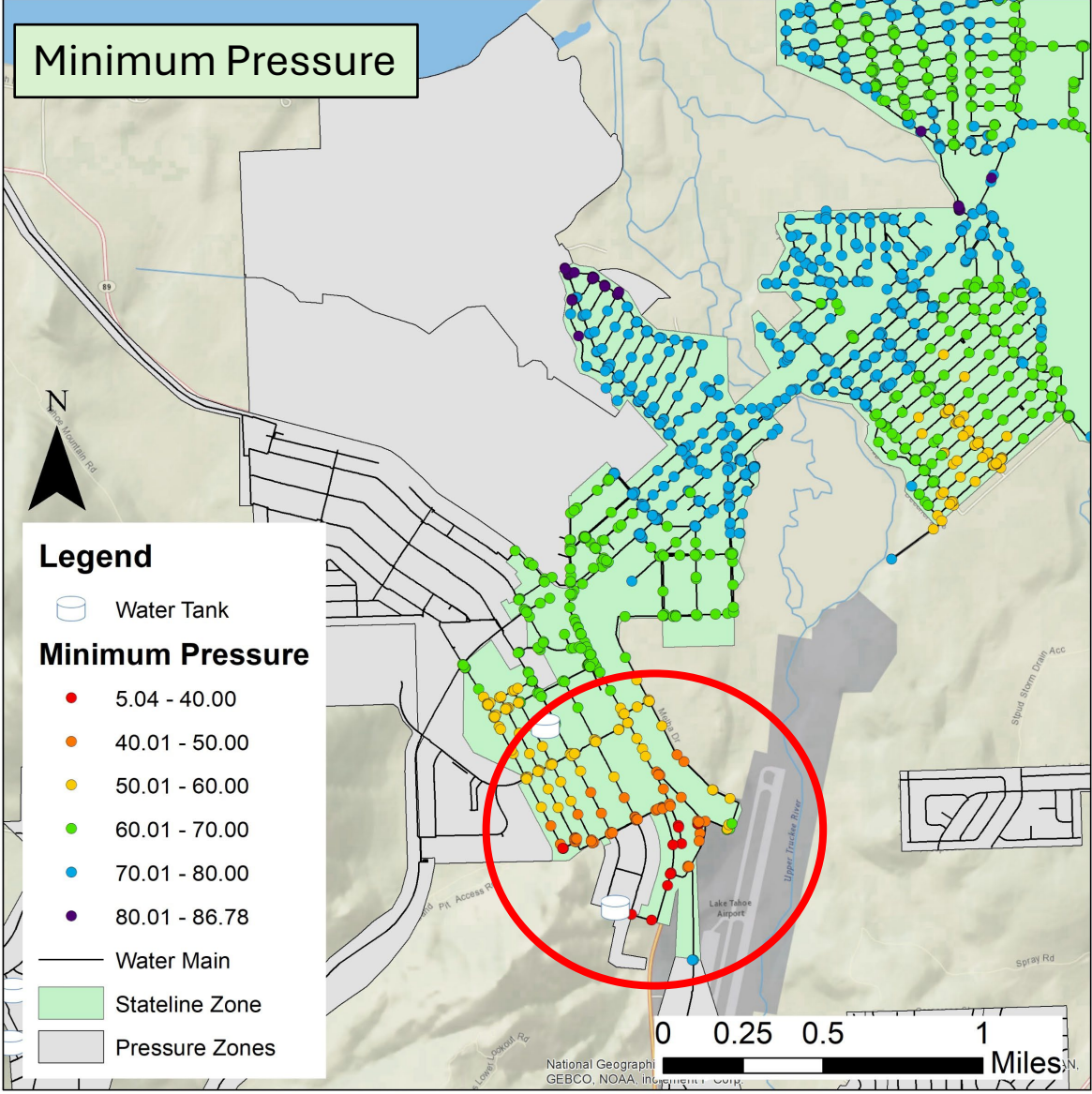
Firm Capacity: Suppliers must meet Maximum Daily Demand with largest unit offline (CCR Tit. 22, § 64554)

Bayview Well offline: Short of MDD in Stateline Zone by 1,250 GPM.

Grouped Zones	MDD (mgd)	Total Supply Capacity (mgd)	Firm Supply Capacity ⁽¹⁾ (mgd)	Surplus/Deficit (mgd)
Stateline Zones	10.41	14.10	8.94	-1.50
Meyers Zones	2.00	5.33	3.17	1.17

Water Supply Challenges

Low Pressure at the Y

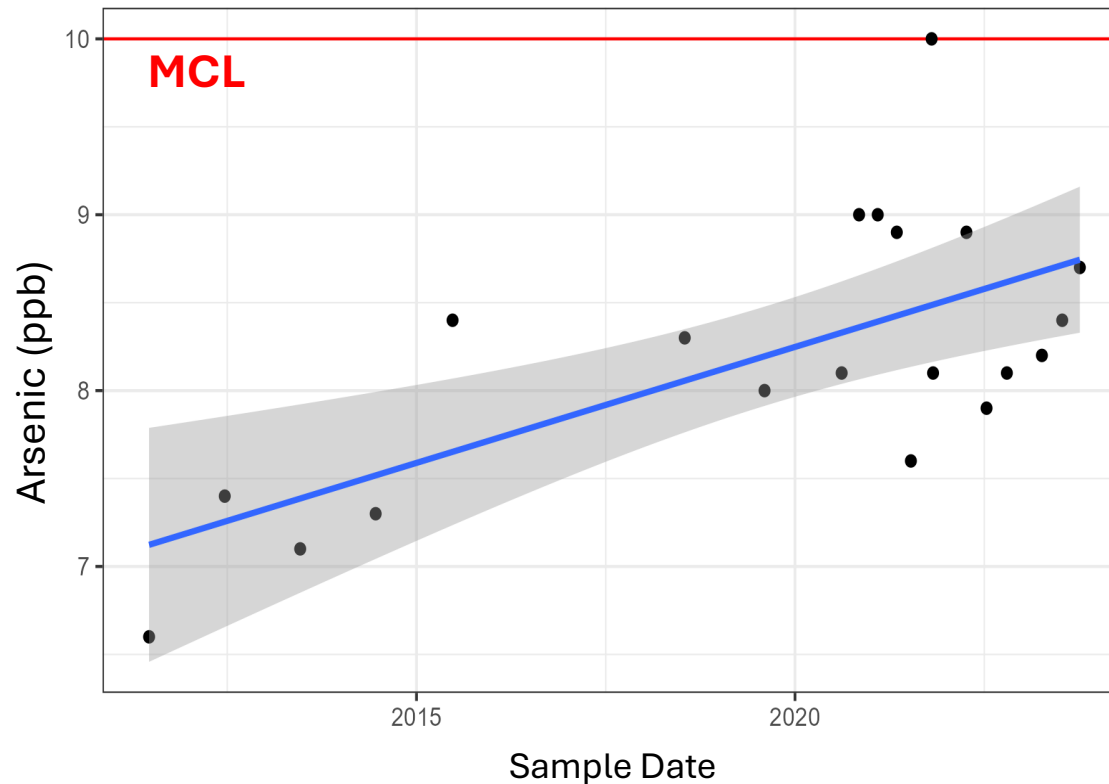


- Model Simulation of 72-hour period of MDD (Taylor Jaime)
- Pressures near H Street Zone: **<20 PSI - 60 PSI**

Supply Vulnerability in Meyers



Bakersfield Well Arsenic

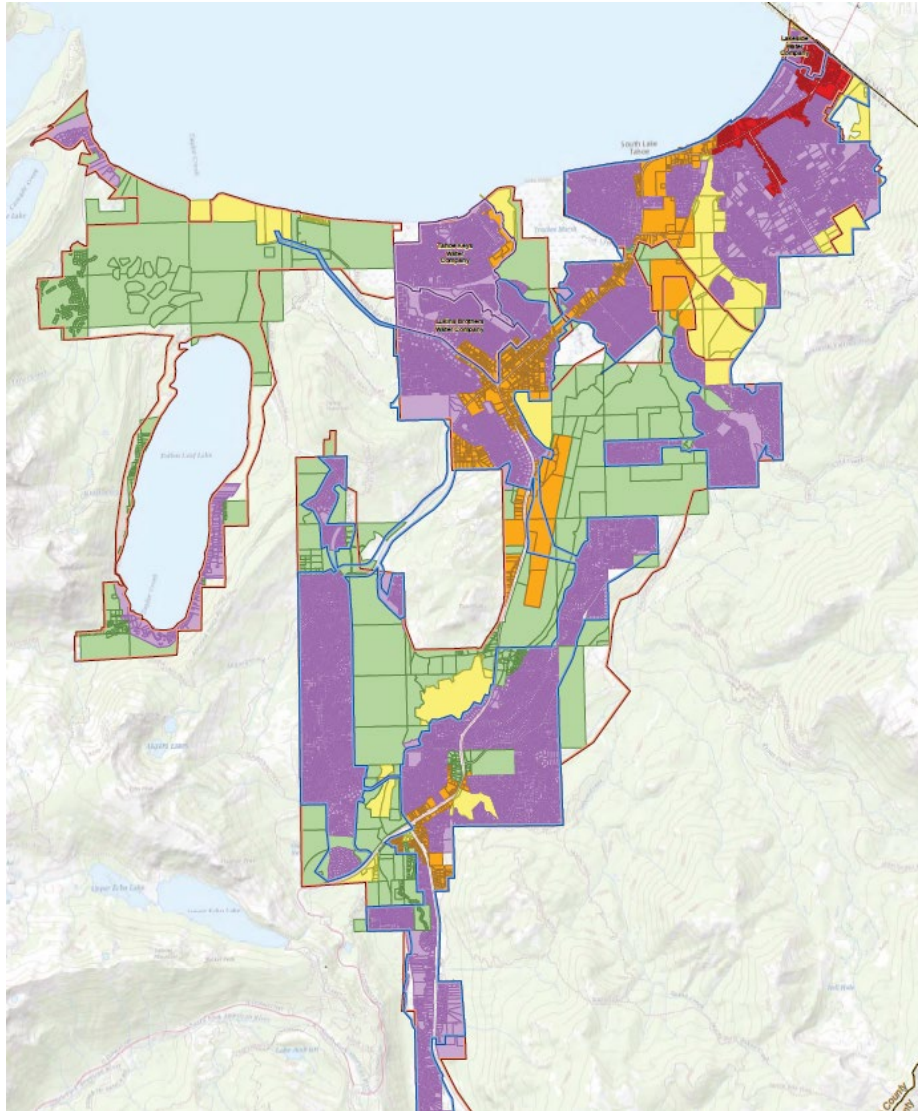


Firm Capacity excess of ~965 gpm, but:

- Bakersfield Well produces ~60% of water in Meyers and is threatened by rising Arsenic.
- 45% of pumping capacity in Meyers requires wellhead treatment to meet water quality standards.
- Lost redundancy in Meyers reduces redundancy in Stateline Zone via Gardner Mountain.

Water Supply Challenges

Increasing Water Demand



2023 Demand: **6,438 AFY**

2045 Demand: **6,972 AFY**
(2020 UWMP District Demand + 10%)

Full buildout: **10,808 AFY**
(2020 Water Demand Analysis)

MDD ↑↑↑

Groundwater Development Process



Step 1

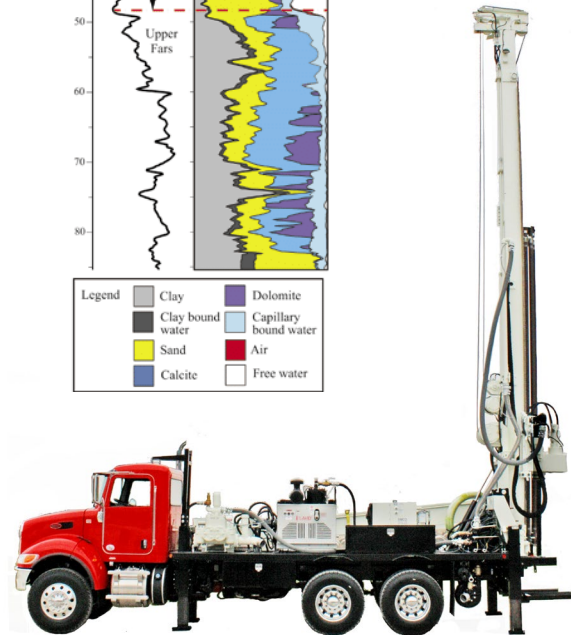
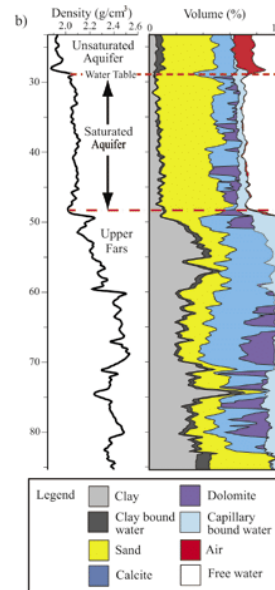
Desk Study

Step 2

Test Holes

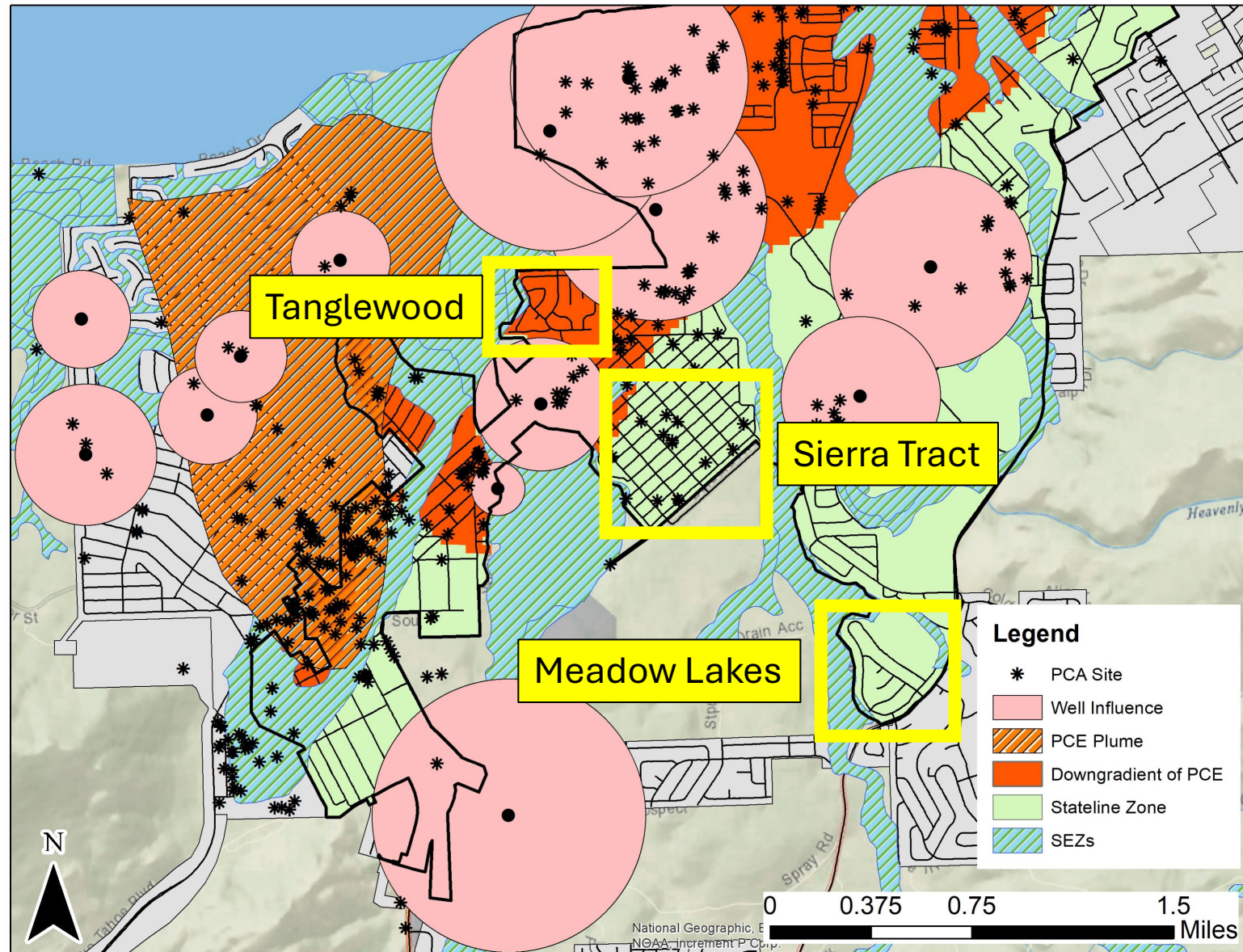
Step 3

Well Construction



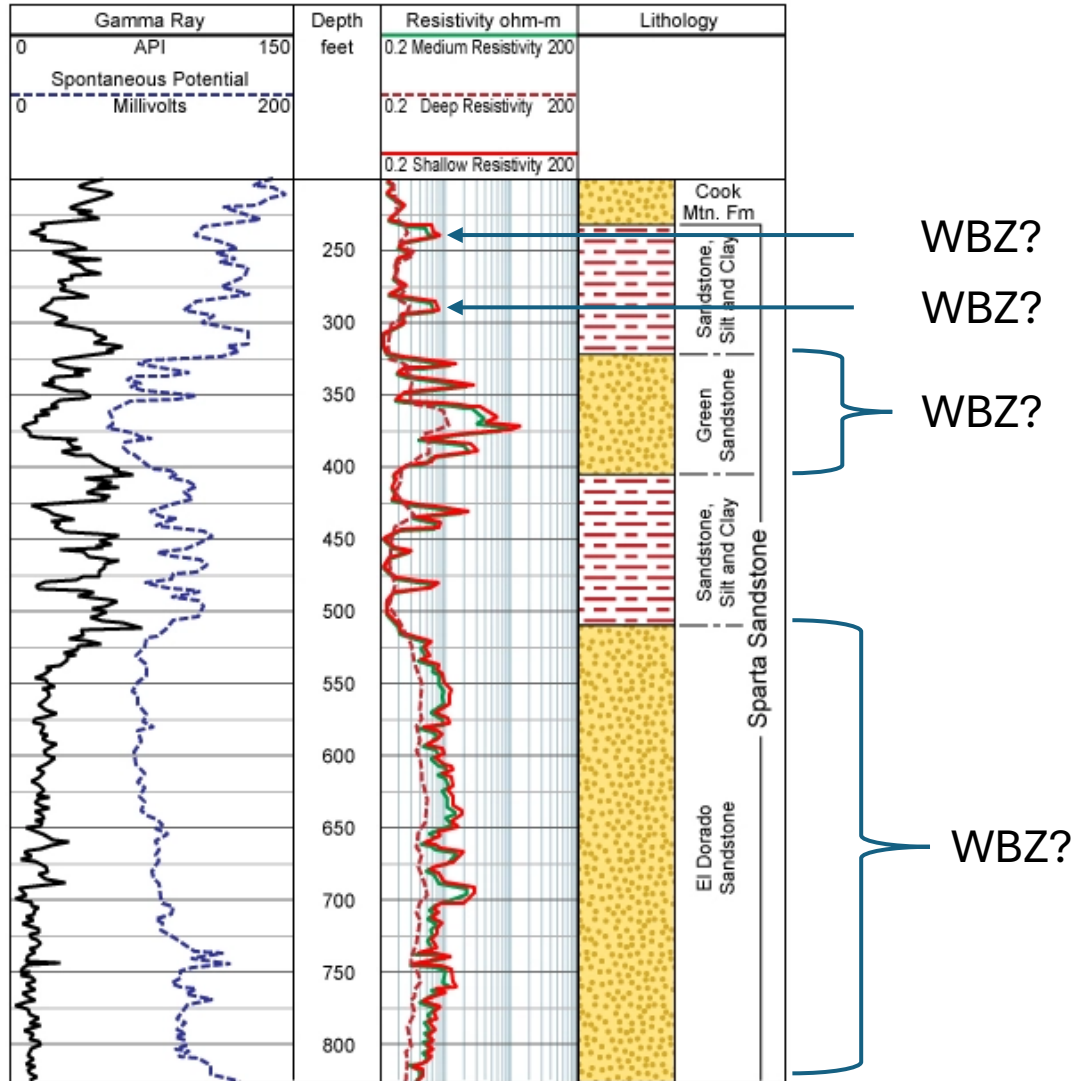
2024 Desk Study and Water Supply Master Plan

Goal: Identify best location in Stateline Zone



Conventional Zone Testing

Lithologic Log and Borehole Geophysics



- Lithologic Log while Drilling
- Electrical Logs
 - Resistivity
 - Gamma Ray
 - Spontaneous Potential

Conventional Zone Testing

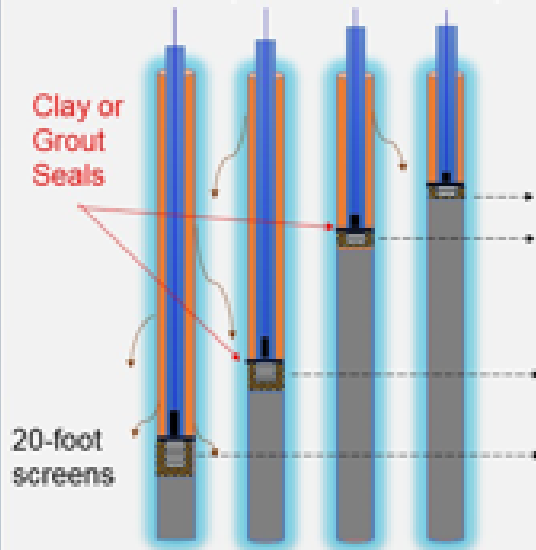
Backfill Zone Test



STANDARD METHOD: BACKFILL ZONE TEST

Pilot Hole → Installation and Failure → Treat, Blend or Abandon

Use Drill Pipe with Stove Pipe

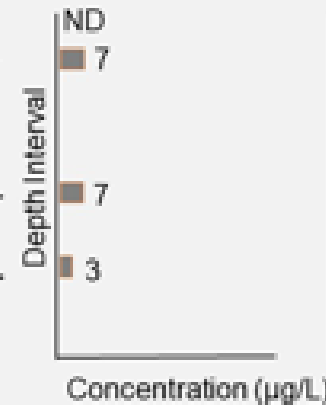


Case Study in Houston, Texas

Arsenic Zone Test Results

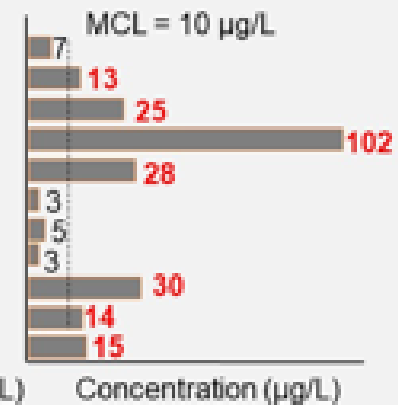
Expected Values

Total As in Pilot Hole
All < MCL = 10 µg/L



Real Values

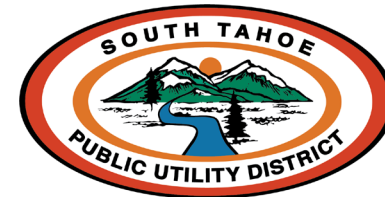
Total As, Tracer
Profile (post-failure)



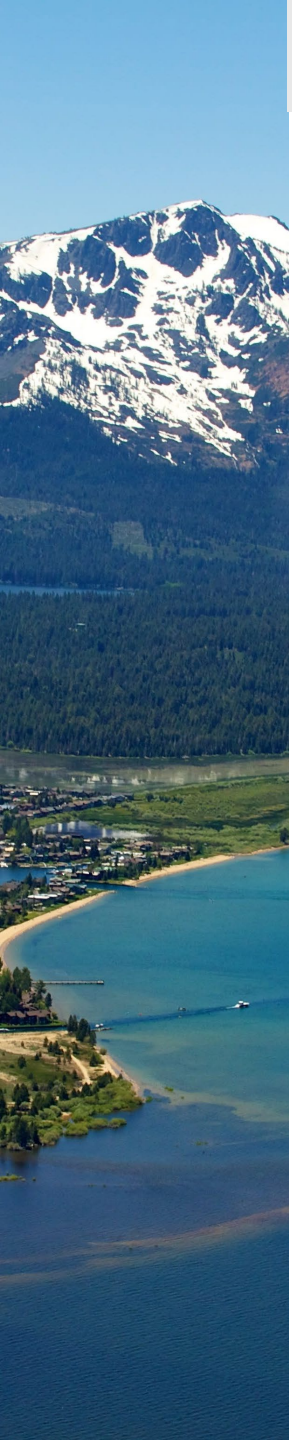


BESST Method

Results



Reaming Fiberglass Test Well to Construct Municipal Supply Well



2025 Test Hole Project

Proposed Scope of Work



1. Planning and Bid Support: Spring 2025

- Finalize Contract and Specifications
- Answer questions from bidders.
- Attend pre-bid and preconstruction meetings.

2. Construction Management: Summer 2025

- Plan and oversee test well construction.
- Lithologic and Electrical Logs
- Specify test well design based on logs.
- Conventional Pumping Tests

3. Well Testing: Summer 2025

- Apply BESST method to produce high resolution profiles of yield and water quality from three test wells.

4. Reporting and Recommendations: Fall 2025

- Well completion reports
- Zone test analyses
- Design of production well(s)

2025 Test Hole Project

Estimated Costs



Summer 2025 (Information Gathering):

- Consultant (BESST, Inc.): \$425,407
- Drilling Contractor: \$1.5 M to \$2M
- Total: ~\$2M - \$2.5M

Production Well, Instrumentation, and Controls:

- Design: Est. \$500,000
- Construction: Est. \$3M
- Total: ~\$3.5

Drill Deeper?

