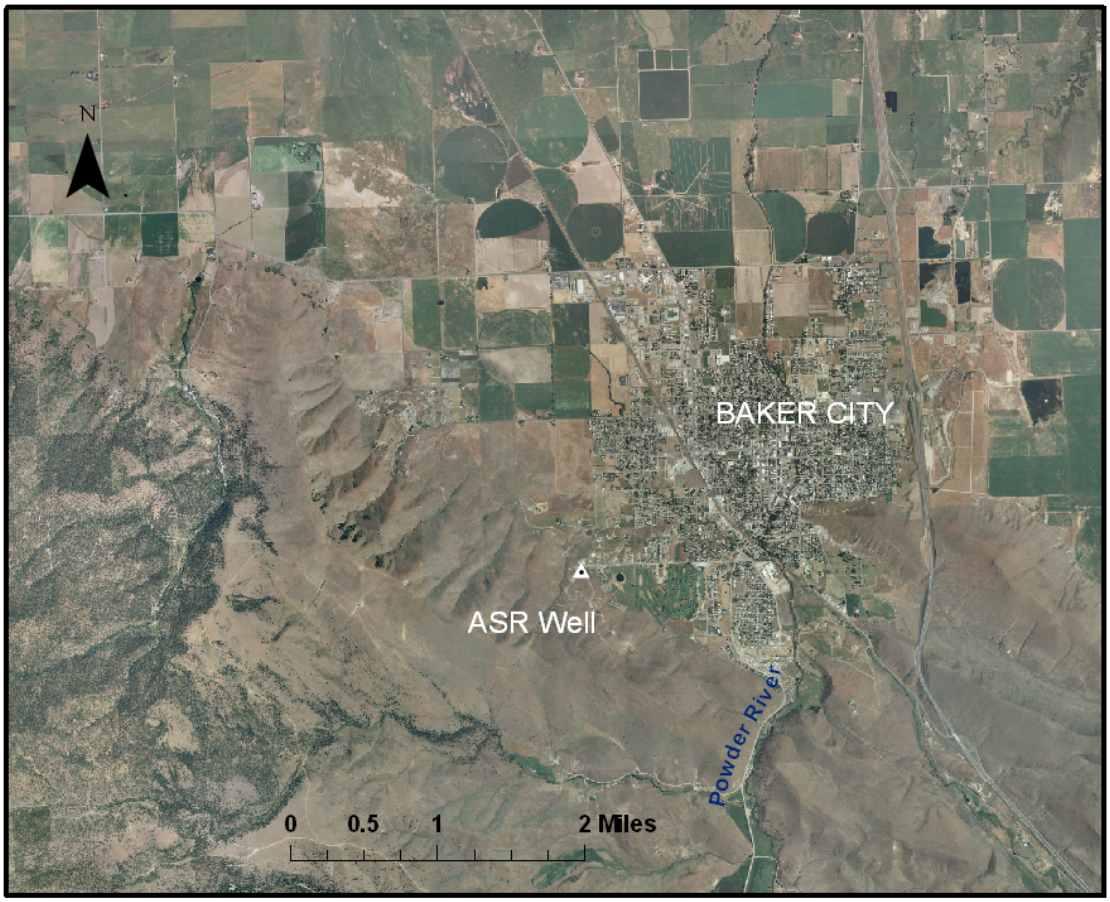
Oregon Underground Storage: Baker City ASR

Project Background

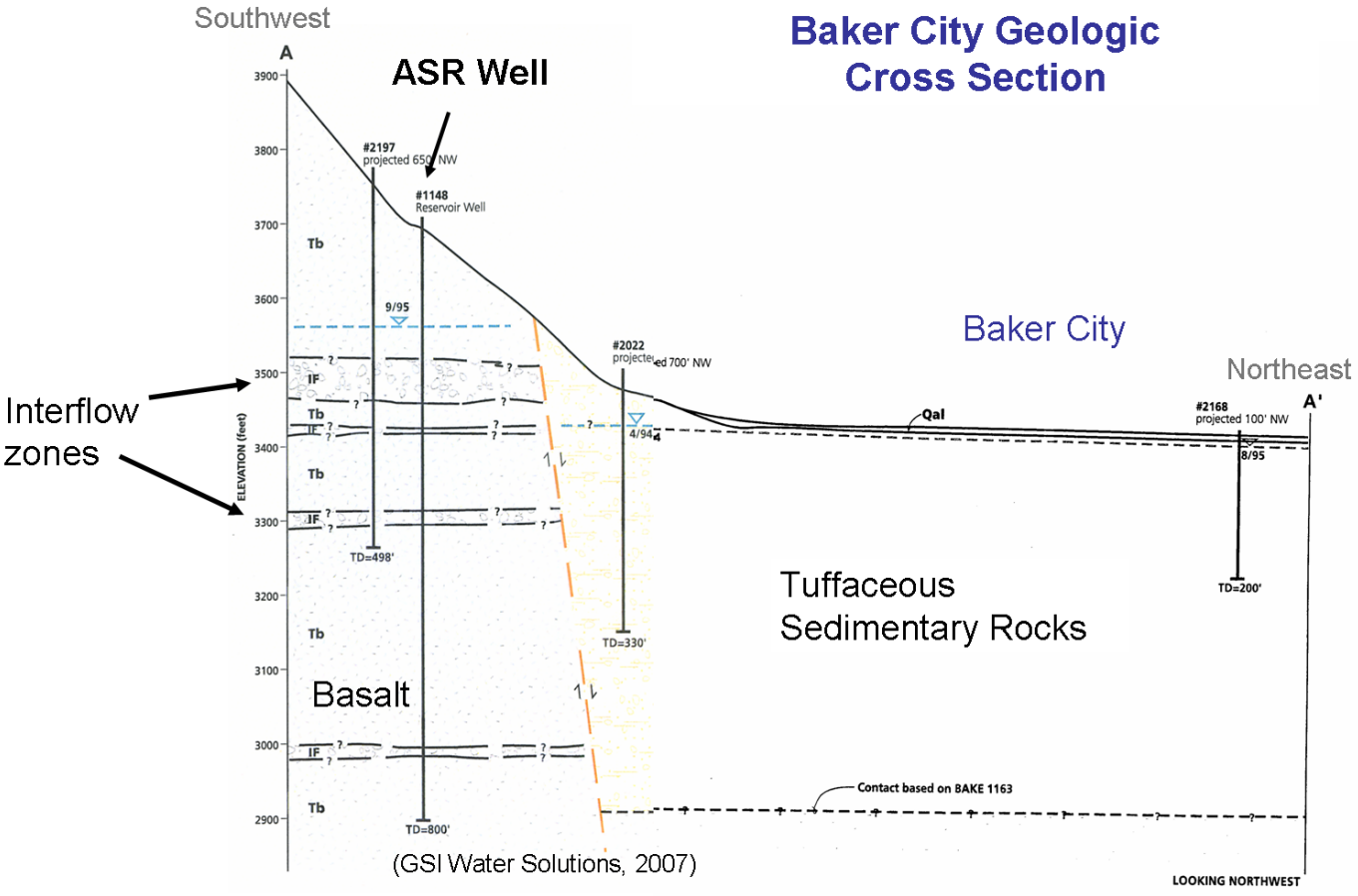
- Baker City is located on the Powder River in NE Oregon.

- Average precipitation ranges from 5 to 12 inches per year.
- Baker City obtained an ASR limited license and began testing in 2004. In 2008, the city applied for and ASR permit to continue the project.
- The project provides supplemental, high-demand reserves for municipal supply.

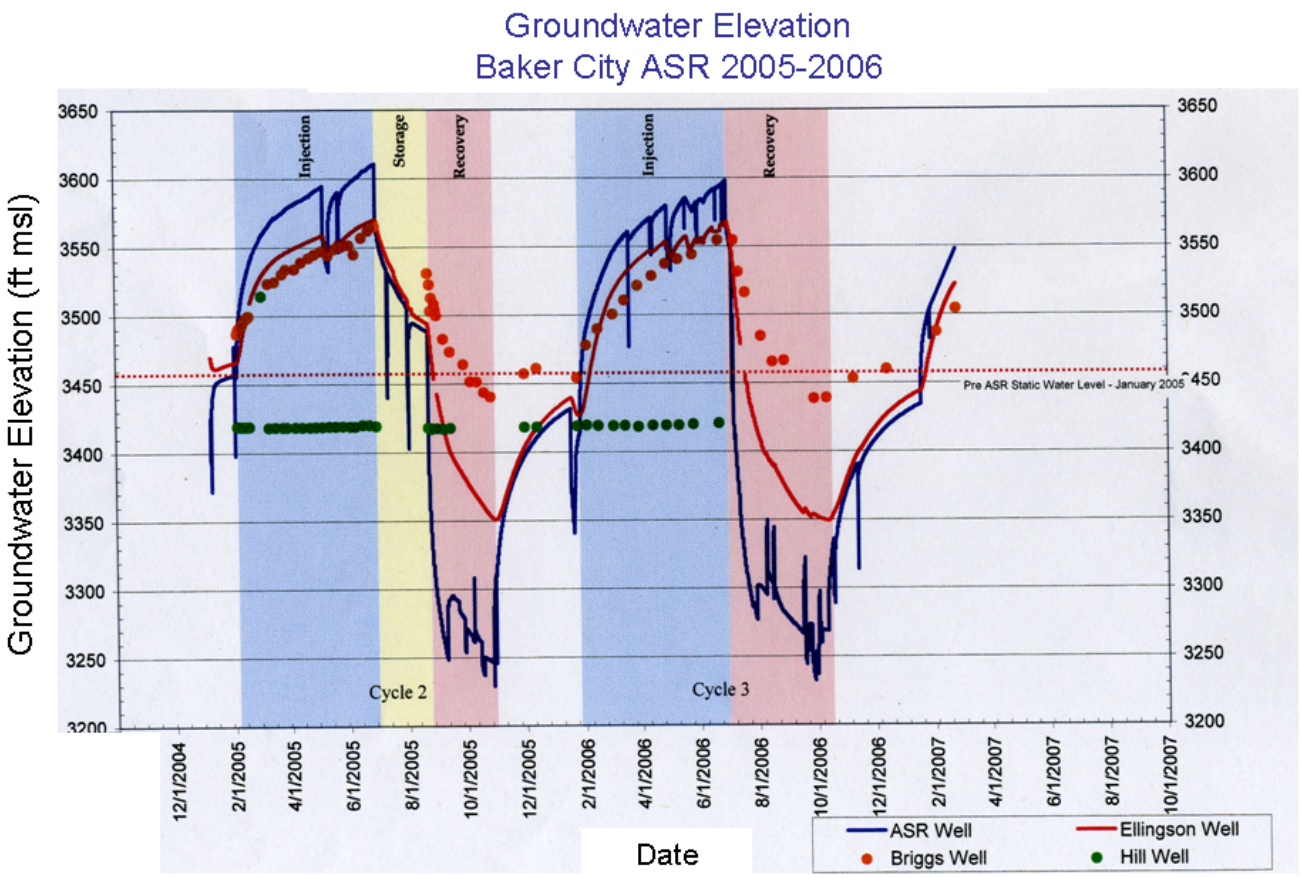


- **Source water:** Baker City relies primarily on mountain springs and creeks for its municipal water supply, and water moves through miles of pipeline into town. Source water claimed at the headwaters of the creeks is generally of high quality. The city activates diversion points on multiple streams at various times throughout the year, balancing flow levels, turbidity, demand, and the needs of other users. After chlorination, the city moves this water into the municipal distribution system. From November 1 through June 30, the city may divert any surplus treated water into the Reservoir well for storage.

- In addition to providing supply during high demand seasons, ASR also eases competition with local ranchers for surface water during the irrigation season. Historically, the city has maintained supply from the pipeline and small reservoirs, requiring nearly constant diversion at the time ranchers need irrigation. The city now relies more heavily on water from the ASR well during peak irrigation season, increasing the flows to downstream users during critical spring snowmelt flows.



- **Aquifer:** Previously, the city relied on a backup water supply well during turbidity events and periods of high demand. However, groundwater level decline, water taste, color and odor complaints from customers made this an unfavorable option. Injected water displaces lower quality native groundwater in the aquifer and the city now enjoys improved water quality from the well.



Cycle 2 Injection Volume: 160.5 Million gallons, Recovery: 122.2 Million gallons

Cycle 3 Injection Volume: 171.3 Million gallons, Recovery: 151.2 Million gallons

- **ASR:** Injection volume ranges up to approximately 200 million gallons per year. It causes a head buildup at the well of about 150 feet above Pre-ASR levels. The Ellingson observation well shows direct water level influence during injection and recovery. The Hill well, which is separated from the ASR well by a fault, shows no direct influence to date. Recovery begins soon after the end of injection, near July 1, and continues as needed throughout the summer and fall months.