PROJECTS AND MANAGEMENT ACTIONS: EXPANDED MONITORING

WHAT IS IT?

Different approaches are used to monitor groundwater-related conditions:

- **Groundwater levels** are directly measured for depth to water level (or elevation above sea level) using meters called "sounders". Groundwater levels from multiple wells can indicate the direction of groundwater flow. Specialized tubes (piezometers) measure groundwater levels and flow direction.
- **Groundwater quality** involves sending water samples to laboratories for analysis.
- **Land subsidence** (compaction of clay soils that lower the land surface) can be measured using land elevation survey markers or satellite data (InSAR).
- **Interconnected surface water** refers to the interactions between groundwater and surface water (for example: as with springs, marshes and streams). This can be difficult to directly and precisely measure. To get a better understanding of how groundwater and surface water interact, instream measurements can be paired with nearby shallow groundwater levels.

NOTE: Shallow groundwater (located relatively close to the ground surface) can be a main source of water for plants – and the animals that use those plants as habitat. These areas are called groundwater-dependent ecosystems (GDEs) and indicate that groundwater is not too far from ground level.

TYPES OF MONITORING APPROACHES

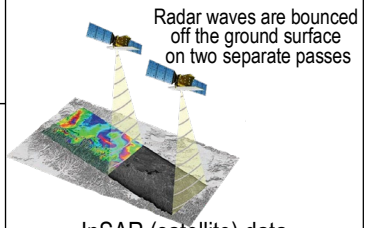
Stream flow

Stream gauge

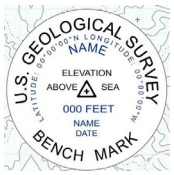
Water Quality

Sampling and analysis

Ground Elevation

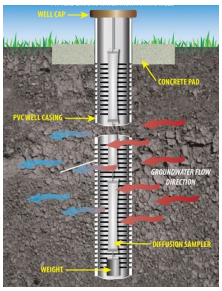


InSAR (satellite) data



Survey monuments

Groundwater Levels



Monitoring well/piezometer

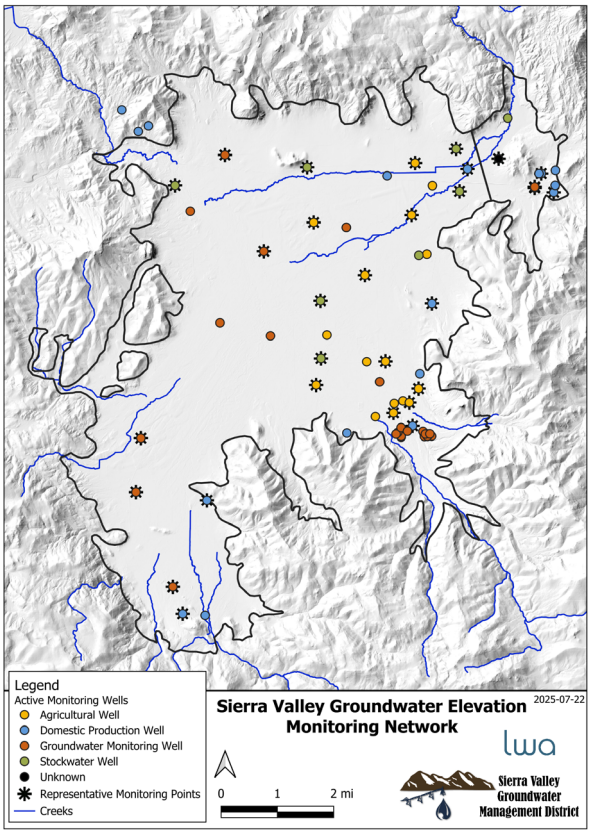
WHY DO IT?

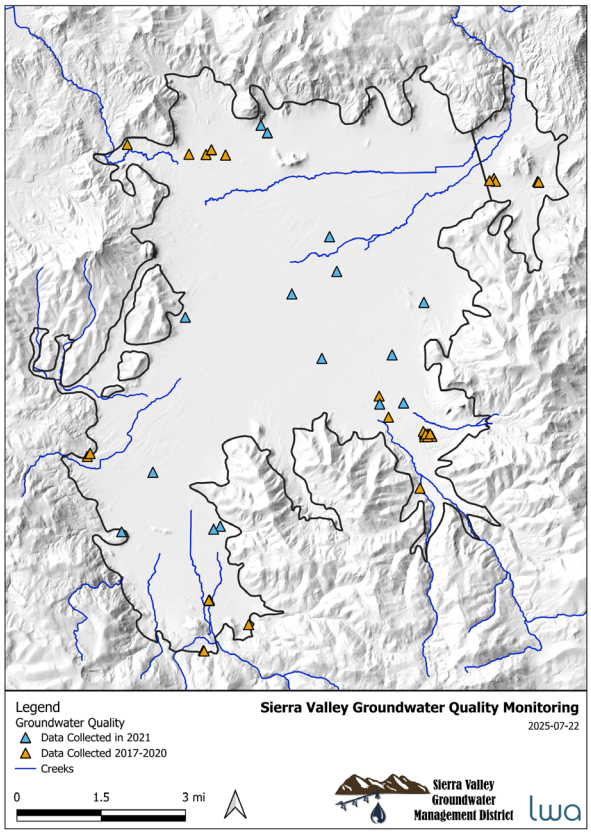
- Monitoring efforts tell the story of current groundwater conditions and trends in those conditions.
- Better understanding of groundwater conditions informs decisions related to groundwater use (such as where to locate a well, how much water is available) and how to sustainably manage groundwater resources.
- Monitoring results provide data for the Sierra Valley groundwater model. The model calculates Sierra Valley water inflows and outflows (the water budget).
- Monitoring helps track the results from groundwater recharge and ag irrigation efficiency projects.

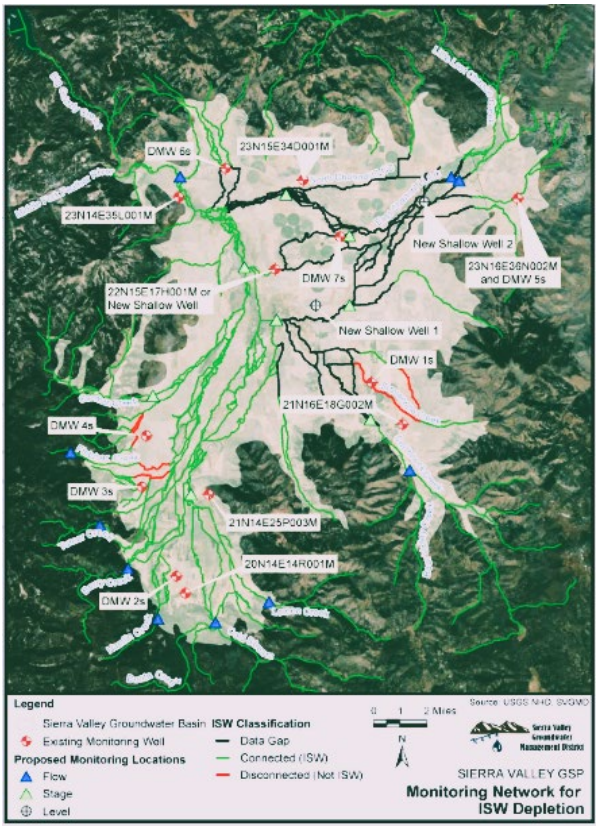
See other side for maps of monitoring networks

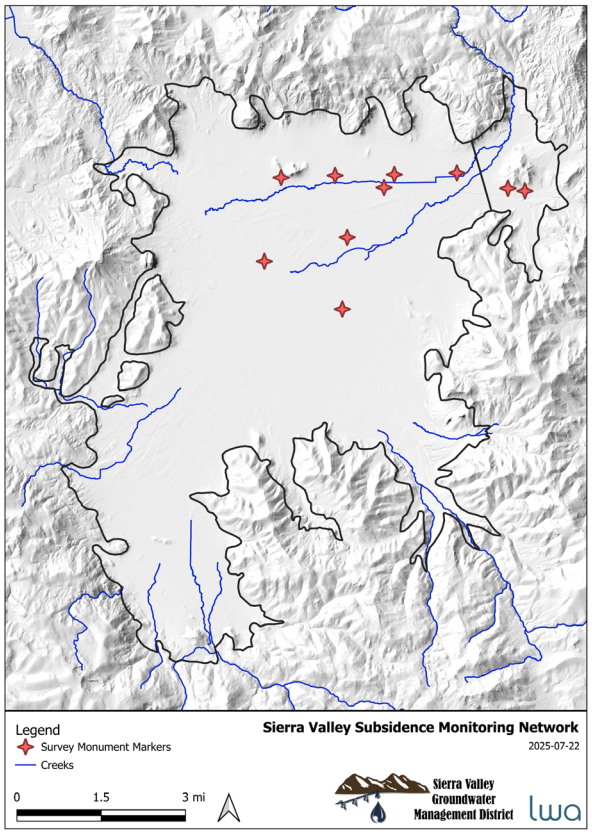
EXPANDED MONITORING NETWORK

SIERRA VALLEY MONITORING NETWORKS









Source: Balance Hydrologics

See other side for overview of expanded monitoring