

Nevada Water Solutions LLC

Thomas K. Gallagher, PE, Manager

STATEMENT OF QUALIFICATIONS

1. Water Rights and Resource Permitting Expertise

- ❖ I am an expert in Nevada water law, water rights and regulations. I am also familiar with the water law in Utah, California, Arizona, New Mexico and Colorado.
- ❖ I provide expertise in Nevada geothermal, oil and gas and mineral resource development statutes and regulations.
- ❖ I have coordinated with Nevada Division of Environmental Protection staff and know what is expected from their permitting requirements from the Bureaus of Safe Drinking Water to Water Pollution Control.
- ❖ I am currently licensed to survey, prepare and sign water right supporting maps
- ❖ I have excellent oral and written communication skills to submit needed appeals to regulatory agencies when things get cross-threaded, and I understand what is needed to appeal to some compromise with both federal and state agencies.
- ❖ I enjoy a good rapport with the current State Engineer and have built good relationships with various other agencies involved in water and environmental regulatory compliance.
- ❖ I worked with the United States Department of the Interior, Bureau of Land Management and the U.S. Department of Agriculture, Forest Service on preparation of Environmental Impact Statements and Assessments for various projects in Nevada.
- ❖ I worked directly with the parties in contested water matters, from field investigations to resolve disputes to formal administrative hearings lasting for many days. I drafted decisions for the consideration of the State Engineer based on detailed analysis and review of the record.

2. Groundwater Development Projects

- ❖ I have successfully completed a major new public supply water well project for the developer and the utility in Washoe County, and a smaller new well for a public water system in Pershing County; completed five large agricultural wells in Lassen County with great success.
- ❖ I have analyzed many USGS Water Supply Papers and Reconnaissance Level Hydrologic Studies that determine regional water availability in various basins statewide, and that are used to advise the State Engineer on whether to approve or deny applications for water.
- ❖ I have reviewed and analyzed groundwater models in Nevada and understand what is needed in model calibration and verification.
- ❖ I have reviewed geothermal reservoir engineering studies to determine possible drawdown impacts to neighboring operators and the suitability of the reservoir to supply a proposed project.

- ❖ I am familiar with well field optimization and offer the permitting expertise to guide you and your company to obtain only the permits necessary to effectively operate your water supply wells.

3. Drilling Engineering and Well Design

- ❖ I have coordinated with nearly every type of drilling operation during well drilling, logging, casing, gravel packing, cementing, development and decommissioning operations, on the location, throughout the state. I have specified engineering design change orders during those operations based on the downhole conditions at each location.
- ❖ I have worked with nearly every drilling contractor in Nevada and therefore offer direct value in obtaining and reviewing pertinent bid proposals and sorting through what the proposal offers and what the client needs. I offer great value in drilling operations oversight so that the client is ensured that the contractor does what he says he is going to do.
- ❖ I wrote and re-wrote the Nevada Division of Water Resources regulation on well drilling and decommissioning three separate times, listening closely to operators statewide on what works and what does not work, and have worked with the National Ground Water Association in developing their National Standard for well completions and decommissioning in 2011-2012.
- ❖ I have promoted geothermal development in Nevada since the early 1980's and have coordinated with small and large scale geothermal drilling operations on the location throughout the state. I have coordinated with Halliburton and BJ Hughes cementing engineers during cementing operations to depths of over 3000 feet. I have approved casing mechanical integrity and pressure testing and blow out preventer testing on numerous operations from Steamboat to Dixie Valley.
- ❖ I have coordinated with Nevada Division of Minerals (NDOM) and the United States Bureau of Land Management Minerals Division staff on geothermal and oil wells, on the location, during drilling and decommissioning operations in Nevada.
- ❖ I assisted the Nevada Division of Minerals in drafting the state's first ever regulation to address hydraulic fracturing, providing careful research and writing the response to public comment all the way through final adoption of the regulation in 2014.

4. Well Development and Rehabilitation

- ❖ I have conducted step-drawdown and constant discharge well testing statewide and have analyzed drawdown and recovery data to determine aquifer hydraulic characteristics and then used the data to recommend well capacity and predict future drawdown scenarios.
- ❖ I developed a simple computer program to provide drawdown scenarios over various and future pumping scenarios.
- ❖ I have coordinated well development projects to bring in wells where the well screen had been clogged or the formation contaminated with drilling mud and fines, most recently using line swabbing techniques and a double surge block with a pump. The most important aspect of well development is getting sufficient energy into the formation by using the correct tools.