



City of Phoenix ASR Well 6A-W299

The City of Phoenix ASW Well project was unique in that there was an existing well with no water, that we created an injection program for.

The Challenge

The water table was dropping 4-5 feet each year in this region. As the water level drops, the cost to pump it increase. This is the first of many projects where we are injecting water while they are not pumping, stabilizing the formation. This saves the community money.

Our Approach

For most injection wells in Arizona, the injection process starts with shutting the well down then putting water back through the pump. The air is trapped and is pushed into the formation, causing a lot of damage. By using a PLC, series of flow meters and a low frequency drive in conjunction with existing, we can in one clean swoop inject without any air going back in.

The well site has two zones, so our preconstruction team suggested going into the lower psi zone thus reducing horsepower and associated costs. Costs were also reduced by downsizing the chlorination equipment.

In addition, we used a water flush pump to ensure there was no formation contamination as seen in typical mineral oils. This increased the quality of the overall project.

Results

Value engineering resulted in cost savings from \$3.2M down to \$2.5M during the 60, 90 and 100% GMP process. We accomplished this by helping to design the water flush pump from a 700 Hp VFD to a 600 Hp VFD.

This City of Phoenix is extremely happy with exiting the project and is looking to incorporate it into a larger program. In the long run, this project will be a model for water recharge.



Location:

Phoenix, AZ

Owner:

City of Phoenix

Budget (original & final):

\$2,521,677.47 | \$2,638,598.11

Schedule (original & final):

9/1/2009 - 12/31/2010

“As CM@R, the Weber Group did an exceptional job. They understand the process and were diligent in leading the project to complete on time and budget.”

*Gary Gin, Hydrologist
City of Phoenix*



Innovative Application of Techniques

The well site has two zones, so our preconstruction team suggested going into the lower psi zone thus reducing horsepower and associated costs. Costs were also reduced by downsizing the chlorination equipment.

Social & Economic Considerations

The water table dropped 4-5 feet each year. As the water level drops, the cost to pump it increases. This is the first of many where we are injecting water while they are not pumping, stabilizing the formation. This saves the community money. If we can bring it up, there is an overall sustainability benefit to the project.

Complexity

Very complex, in the sense, that to make this work and ASR well in this capacity, with no water in the well, is a first of its kind in the nation. For most injection wells in Arizona, they will shut it down, and then put water back through the pump. The air is trapped and is pushed into the formation, causing a lot of damage. By using a PLC, a series of flow meters and a low frequency drive in conjunction with exiting, we can inject without any air going back in. Programming was the key to the success of this project.

Owner Satisfaction

The City of Phoenix was extremely happy with exiting this project and they are looking to incorporate it into a larger program.

Safety Performance

There were no safety incidents on this project within XX man-hours.

Quality Performance

Weber used a water flush pump to ensure there was no formation contamination as seen in typical mineral oils. This increased the quality of the overall project.

Community Relation

None, this site is extremely remote.

Environment/Sustainability

In the long run, this project will be a model for water recharge.

Unusual Accomplishments

Value engineering resulting in cost savings from \$3.2M down to \$2.5M during the 60, 90 and 100% GMP process by helping to design the water flush pump from a 700 Hp VFD to a 600 HpVFD. Originally the project was well over budget, so we worked with the City to minimize the onsite staff and the need for a trailer.

