

Water Supply Evaluations

Population growth and scarce water resources are pressuring water purveyors to develop innovative solutions to meet municipal water supply demands. Brown and Caldwell is currently assisting the Hunt Building Corporation to identify and develop a private groundwater source for the City of El Paso.



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BACKGROUND

According to a memorandum of understanding between the City of El Paso and Hunt Building Corporation, Brown and Caldwell has evaluated selected aquifer systems in far west Texas and southern New Mexico. The purpose of the studies was to identify a minimum 15,000 acre-feet/year source of potable water. The studies have focused on critical hydrogeological and engineering issues related to:

- Assess if the aquifer is capable of maintaining sustained production
- Determine whether the aquifer meets, or may be treated to meet, State of Texas standards for drinking water
- Evaluate the economic feasibility of pumping and transporting the water to the City of El Paso, or other Southwestern communities in need of potable water

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Overlying the technical issues, are the financial issues associated with the final cost of the water. Therefore, the evaluations needed to understand the potential to produce the water, but also deliver the water to the consumer at a cost that is comparable to other water supply options.

P E R F O R M A N C E

Hunt Building Corporation is searching for a sustainable groundwater production of 15,000 to 45,000 acre-feet per year for the next 40 to 60 years. To meet that objective Brown and Caldwell assessed regional and local hydrology and groundwater quality. This also included evaluation of regulatory issues and assistance in legal issues associated with water rights.

The work has involved identifying and quantifying potential water sources, evaluating potential impacts on other water users and developing preliminary engineering design and capital costs. Based on initial work, the two key areas that were selected for further analysis were lands surrounding Dell City and Valentine, Texas. In Dell City, the key technical issues related to the quantification of groundwater recharge, evaluation of groundwater quality and understanding the impacts of farming practices on the aquifer system. In Valentine, the key hydrogeological issue was mining of the aquifer and the volume of water in the aquifer that was economically viable for water production. Solutions were developed in Dell City based on the past relationship between agricultural pumping and water levels. In Valentine, a numerical groundwater flow model was developed to predict long-term water level declines due to pumping.

Typical water supply evaluations end with an assessment of the available water supply. However, because this work was being performed as part of a private water supply assessment, the key decisions would be based on the economics of delivery of the water to the municipal supplier. This analysis utilized the combined talents of Brown and Caldwell's hydrogeology and engineering expertise. The analysis included evaluation of water treatment options, routing studies for 90 to 140 miles of pipeline, well field design and long-term operation and maintenance costs. The results of study showed that although water treatment would be required using the Dell City water source, the overall costs were less than the long-term costs to deliver water from the Valentine water source. The project report has been delivered to the City of El Paso, which is currently using the study results in water development planning.

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