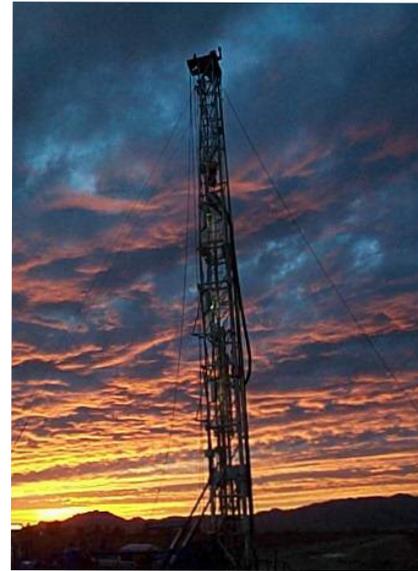


Groundwater Management Plan City of Phoenix, Arizona

As a subconsultant to Carollo Engineers, Clear Creek Associates was retained to provide hydrogeologic services for the development of a comprehensive City-wide Groundwater Management Plan for new water resources development. The goal of this project was to evaluate both short-term and long-term shortage conditions within the 1,344-square mile study area. The project included evaluation of new water resource development options, support for the City's Designation of Assured Water Supply with the Arizona Department of Water Resources and water quality evaluation and treatment options. A groundwater flow model encompassing the Salt River Valley portion of the Phoenix Active Management Area was also constructed to support the evaluation. An extensive database was developed to manage well information, hydraulic parameters and complete data presentation. Groundwater resource management scenarios were evaluated for water planning to address drought conditions, recharge project siting and system operation.



During Phase I of the Groundwater Management Plan, Clear Creek developed a prioritization matrix for the entire municipal planning area to rank areas based on new public supply well installation feasibility. The prioritization matrix assessed each ¼-section parcel within the 1,344-square mile study area and ranked each parcel with respect to: proximity to point-source groundwater contamination; well impact; distance from Underground Storage Facilities; concentrations of nitrate, arsenic, and TDS; aquifer transmissivity; depth to groundwater; and depth to bedrock. These weighted criteria were used for a selection of candidate well sites by the City of Phoenix. We also used our 3-dimensional groundwater flow model of the study area to predict the impacts of groundwater extraction on groundwater levels over time. Using the groundwater flow model, locations for up to 15 new wells were evaluated. The results of this analysis suggested that new groundwater resources would be sufficient to mitigate short-term operational shortages, but may not be adequate for long-term shortage conditions.

Phase II of the Groundwater Management Plan included more specific well siting assessments, recharge evaluation, field evaluation of existing wells and continued support and development of the groundwater flow model. This phase of the project included evaluation of existing City production wells using dye tracer flow profiling and/or spinner logging, under both dynamic (pumping) and static (non-pumping) conditions. Depth-specific groundwater sampling and aquifer testing were also performed. Four wells were evaluated during Phase II of this project, and the results of these analyses supported the siting and installation of several ASR wells, and enabled us to identify several possible water quality mitigation options for the City. Phase II of this project also included development of a groundwater flow model of McMullen Valley in west-central Arizona, to evaluate options for development of City-owned resources in that basin. The McMullen Valley groundwater model was used to evaluate long-term groundwater production potential in that area.

Reference: Gary Gin, R.G
(602) 495-5654, gary.gin@phoenix.gov
City of Phoenix Water Services Dept.,
200 West Washington St., 8th Floor, Phoenix, AZ 85003

