

## Advanced Water Treatment and Direct Injection Facility

Rio Rancho, New Mexico

### Client

City of Rio Rancho

### Highlights

- ◆ Hydrogeologic investigation for recharge
- ◆ OSE and NMED permitting for recharge (Underground Storage and Recovery and Discharge Permits)
- ◆ Pilot testing and full-scale facility design for both treatment and injection well
- ◆ Planning and design of advanced treatment for direct injection of reclaimed wastewater

DBS&A has provided planning, permitting, design and construction support to the City of Rio Rancho on the Advanced Water Treatment Facility for Direct Injection project since 2010. Services included hydrogeologic investigation, pilot testing of both treatment systems and injection well, full scale treatment design, construction oversight, baseline monitoring, and quarterly monitoring and reporting to the New Mexico Environment Department (NMED) and Office of the State Engineer (OSE).

DBS&A completed a pilot-scale advanced water treatment study to demonstrate that a high-quality reclaimed water source can be consistently produced for aquifer recharge. We also conducted pilot testing of the injection well through temporary connection to the potable water system to show achievable injection rates. The deep injection well is constructed with 16-inch casing to a depth of 1,700 feet and is capable of replenishing groundwater at a rate of one million gallons per day (gpd), based on pilot testing. Data collected during the treatment pilot study were used to identify design and operational concerns for the full-scale direct injection recharge demonstration permitted by the OSE.

The design includes an Advanced Oxidation Process to treat 1 million gpd of tertiary treated effluent from the Cabezon Membrane Bioreactor (MBR) Water Reclamation Facility. The facility improvements include a 60-foot by 100-foot concrete masonry unit building with a truss and metal roof, two 12 foot-diameter Granular Activated Carbon vessels (BAC/GAC), two Advanced Oxygen Process skids using ozone and hydrogen peroxide as oxidants, process and transfer pumps, plumbing and piping, canister filtration and degassing systems, on-site sodium hypochlorite generator, and raw and finished water storage. The design includes a 750 gpm submersible backwash pump with 250 horsepower motor equipped with variable frequency

drive. DBS&A provided construction oversight for Phase 1, which included the construction of the treatment building and well control building, site improvements, and installation of monitoring wells.

Prior to the first injection, DBS&A provided baseline monitoring at the five on-site monitoring wells and at permit-related production wells to monitor water quality constituents of concern and water levels. We provide ongoing support for quarterly and annual reporting to NMED and OSE. Reporting requirements including volumes injected, water quality, hydrographs for all monitor and injection wells, and groundwater elevation contour map.



DBS&A demonstrated that a high-quality reclaimed water source can be consistently produced for aquifer recharge.