

Water Resources Services

Water Resources Planning

DBS&A works with state and local governments, water districts, and private water companies to assist them with making the best use of limited water resources. Our planners develop, augment, or support state, regional, and local water plans and programs to enhance water supply, quality, and sustainability. We regularly participate in the Environmental Impact Report (EIR) process for complex development and water use projects, including water supply assessments. We also conduct public involvement and stakeholder participation processes and perform water rights analyses and acquisition studies.

Managed Aquifer Recharge

Based on our expertise in vadose zone processes, DBS&A has become a national leader in the design of managed aquifer recharge systems. We developed the first permitted and operating artificial recharge project in New Mexico, which involved extensive coordination and negotiation with state regulators as they interpreted and applied new statutes.

Hydrologic Analyses

A solid understanding of available water resources and their hydrologic framework is essential for informed decision-making. DBS&A routinely provides clients with quantitative hydrologic analyses of groundwater and surface water systems. Studies we perform regularly include:

- ◆ Recharge and infiltration studies
- ◆ Seepage studies
- ◆ Statistical analyses
- ◆ Water balance modeling
- ◆ Groundwater and surface water modeling
- ◆ Watershed runoff hydrology and pollutant load modeling
- ◆ Salt and nutrient management planning

Water Infrastructure Engineering

Combining practical scientific knowledge with standard engineering principles, DBS&A provides full-scale infrastructure design and construction services, including:

- ◆ Managed aquifer recharge
- ◆ Aquifer storage and recovery (ASR)
- ◆ Desalination engineering
- ◆ Injection well design
- ◆ Supply wells and well field design
- ◆ Drinking water treatment
- ◆ Water storage, transmission, and distribution

Water Supply Development

DBS&A can help water supply managers and operators to optimize well designs and other supply infrastructure, obtain permitting and funding, and acquire and manage water rights. From shallow, small-capacity wells to deep, high-capacity well fields serving entire cities with growing populations, our key services in water supply development include:

- ◆ Geophysical logging oversight and analysis
- ◆ Exploratory drilling and hydrogeologic characterization
- ◆ Aquifer testing
- ◆ Identification of production zones
- ◆ Municipal well and well field design and development
- ◆ Permitting
- ◆ Construction oversight
- ◆ Water rights analysis and acquisition
- ◆ Conjunctive use studies
- ◆ Assessment and prediction of water quality

Water Rights

DBS&A regularly provides clients technical hydrologic analyses and expert testimony for water rights applications, transfers, and disputes. Technical analyses may include development of groundwater flow or solute transport models; identification or evaluation of the



potential water resources and water rights available to support new or existing needs; hydrogeologic analyses to establish well yields, water quality, and operational safe yield of groundwater basins; and negotiation for purchase, lease, or transfer of water rights. Our staff have legal expertise working within the frameworks of state adjudication and administrative processes, interstate water compacts, pueblo and tribal water rights, and other operational protocols under which water rights are administered.

Stormwater Management

Our hydrologists assist clients in navigating regulations regarding stormwater runoff, including flood control hydraulic analyses and point source discharge compliance with the U.S. Environmental Protection Agency's National Pollutant Discharge Elimination System Municipal Separate Storm Sewer System requirements. Because stormwater quality best management practices (BMPs) are not one-size-fits-all, we help our clients to evaluate and pinpoint those BMPs that work best with each client's unique stormwater incidence and conveyance system. Our services include water sampling, infrastructure monitoring, preparation and implementation of Storm Water Pollution Prevention Plans and low-impact development (LID) studies and design.

Water Quality Investigations and Treatment

DBS&A investigates chemicals in water supplies that negatively impact water quality. We have the expertise to evaluate the presence, source, transport, and optimal methods for treatment of undesirable constituents impacting water resources. Key services include:

- ◆ Water quality sampling and monitoring
- ◆ Forensic geochemistry and contaminant source assessment
- ◆ Hydrochemical modeling
- ◆ Fate and transport analysis
- ◆ Bench- and pilot-scale testing
- ◆ Total Maximum Daily Load studies

Brackish Water Supply and Desalination

DBS&A has experience with deep brackish water, saltwater intrusion issues, and aquifers contaminated with brine from oil production and industrial processes. Specific capabilities include modeling, extraction, treatment, and investigation of the sources of salinity. DBS&A can assist in evaluating, permitting, and implementing the most effective method of concentrate disposal, including sewer discharge, land application, evaporation, or deep well injection. DBS&A also has the expertise to characterize the geochemical and isotopic composition of water and identify the contributing source(s) of salinity in rivers.

Watershed Management

We work with land and resource managers to keep forests healthy and protect water quality on forest and range land in the central and western U.S., where fire danger is a major concern, including:

- ◆ Storm runoff water quality sampling and data analysis
- ◆ Nonpoint source pollution management
- ◆ Erosion control
- ◆ Watershed restoration
- ◆ LID studies
- ◆ Mudflow/debris-flow hazard analysis and mitigation
- ◆ Forest thinning
- ◆ Biological and archaeological survey coordination

Water Recycling and Reuse

Water can be recycled by reusing treated wastewater and stormwater for beneficial uses such as landscape irrigation, industrial processes, and replenishing a groundwater basin (groundwater recharge). With adequate treatment, water can also be reused for human consumption—either directly or by blending with another supply source. DBS&A is familiar with various recycled water policies and offers proven strategies and the resources necessary to successfully overcome regulatory hurdles. We work with our clients, regulators, potential water users, and other stakeholders to ensure maximum reuse of water.

