

Water Resources Services



MWH®

now
part of



Stantec

MWH, now part of Stantec is Leading
INTEGRATED Water Resources Management
Around the World

As one of the world's leading water firms, we work closely with clients to provide innovative, affordable solutions to manage, protect, store and distribute water. We have conducted thousands of investigations, water quality evaluations and basin management studies; and we have provided planning, design, and construction management services for water resources projects around the world.

Our focus:

*Conservation of the
world's irreplaceable
resource - water.*

We are Building a Better World

A sustainable future for our planet and its people is a top priority for our company and employees. As global leaders in the water and natural resources sectors, we know firsthand how critical water is for life on Earth. We partner with organizations who strive to ensure that every community – and every human being – has access to clean water while protecting our environment.

We have the technical resources, knowledge, and multi-disciplinary expertise to bring socially and environmentally responsible water resources solutions that satisfy our clients' needs and successfully address diverse stakeholder interests and regulatory requirements. Our team confidently applies experiences gained and emerging technologies to provide technical solutions that are sustainable, robust, and based on sound scientific and engineering analysis.

Our Expertise Includes:

Water Resources General Services

- Watershed planning
- Integrated regional water management
- Alternative water supply planning
- Water supply asset management
- Water recycling and reuse
- Natural resources economics
- Water resource information management
- Water use regulatory policy assistance
- Water system master planning
- Water conservation program assistance
- Public relations and stakeholder facilitation

Surface Water

- Hydrology and hydraulics
- River systems modeling and operations
- Flood management planning
- Storm water master planning
- Water quality evaluations

Groundwater and Hydrogeology

- Groundwater management planning
- Aquifer storage and recovery (ASR)
- Managed aquifer recharge
- Brackish groundwater supply development
- Deep injection wells design, permitting, and construction
- Groundwater modeling
- Water resource evaluation associated with carbon sequestration

Environmental Stewardship

- Ecosystem restoration
- Riverine, lacustrine, wetland, and coastal environments
- Resources assessments and compliance
- Permitting assistance
- National Environmental Policy Act (NEPA)
- Federal Energy Regulatory Commission (FERC)
- Impact analysis and mitigation strategies

MWH, now part of Stantec offers integrated planning, permitting and infrastructure services to help **MANAGE WATER RESOURCES** from localized needs to watershed-wide assessments.

Water Resources Planning

We provide integrated water resources management (IWRM) services that provide solutions at local, regional, watershed, and landscape scales. IWRM is a holistic approach to developing and managing water resources that balances environmental, social, and economic needs. It considers the inter-dependent management of surface water and groundwater, quantity and quality, rivers and watersheds, weather extremes from droughts to floods, ecosystems, and inland and coastal waters. IWRM places projects in the context of a large geographic region; engages stakeholder interests and priorities; and respects the authorities, perspectives, roles, and responsibilities of different levels of government. Our Water Resources Planners coordinate inter-disciplinary studies for federal, state, regional, and local clients, and develop solutions that adhere to our clients' policies and decision-making frameworks.

Numerical Analysis

Our teams have broad-based expertise in computer modeling, statistical analysis, predictive analysis, data management, data visualization and related numerical evaluations that support of water resources planning, compliance, and permitting. Our numerical analysis expertise includes:

- Surface Water Hydrology, Hydraulics, and Quality
- Groundwater Flow and Quality
- Estuary Hydrodynamics and Salinity
- Multi-purpose River Operations for Water Supply, Flood Control, Hydropower Generation, Navigation, Recreation, and Environmental Protection
- Integrated Surface-Groundwater System Operations
- Biological System Response
- Coastal and Ocean Hydraulics
- Resources Economics
- Geographic Information Systems (GIS)
- Decision Support Systems

Environmental Compliance and Permitting

We help clients understand and comply with environmental laws and regulations for projects that affect water resources. Our experts offer the following services:

- Provide strategic advice on regulatory policies and procedures, influence the environmental regulatory and legislative landscape, and support the development of new or modified regulations.
- Manage the regulatory compliance and permitting processes, including preparing environmental compliance documents pursuant to the National Environmental Policy Act (NEPA), state-equivalent regulations, and Federal and State Endangered Species Acts.
- Prepare and obtain environmental permits pursuant to Clean Water Act, National Pollutant Discharge Elimination System (NPDES), and other federal, state, and local requirements.
- Conduct or direct biological and cultural resources studies for all phases of a project development life-cycle, from planning through construction.

Stakeholder and Public Communication and Engagement

We have the expertise in stakeholder facilitation, public relations and government affairs. Our skilled professionals assist clients in support of public involvement programs for all aspects of water resources planning and management, collaboration and engagement with stakeholders and project influencers, and development and adoption of policies and rules that affect project/program implementation. This expertise is applied at all phases of projects, from conceptual planning, through feasibility planning, environmental compliance, permitting, policy and regulations, design, acquisition, and construction.

*We Provide **World-Class Water Resources Services***



Qualified Expertise Exceptional Projects



San Joaquin River Restoration Program
U.S. Department of the Interior, Bureau of Reclamation
San Joaquin Valley, CA

We have provided planning, permitting, and implementation support to Reclamation for the San Joaquin River Restoration Program (SJRRP) since its inception. This historic effort to restore naturally producing and self-sustaining salmon to over 150 miles of the San Joaquin River in the California Central Valley is one of the largest and most ambitious ecosystem restoration projects in the US.

We led preparation of the Programmatic Environmental Impact Statement/Report to enable SJRRP implementation, assisted in a water right amendment process, prepared fisheries management and water management plans, and prepared an Environmental Assessment for the release of initial restoration flows to the San Joaquin River. We continue to support a complex stakeholder engagement program and provides landowner coordination for all SJRRP activities. We also helping develop creative approaches to manage restoration water supplies and reduce or avoid water delivery impacts resulting from SJRRP implementation, including an assessment and prioritization of over 160 water supply projects.

The Department of Interior recognized our contributions to this program through a "Partners in Conservation" award.



Central Valley Flood Management Planning Program
California Department of Water Resources (DWR),
Central Valley, CA

We led the preparation of the State of California's Central Valley Flood Protection Plan (CVFPP), a first-ever comprehensive framework to guide investments and policy changes needed to modernize a State-Federal flood management system that protects more than one million people and over \$70B in assets.

As the lead planning consultant, our team helped DWR develop a strategy to address legislative intent and implementation requirements, and developed sustainable floodplain land use policies and regulations. In support of these policies, we conducted detailed technical analyses of existing conditions and alternative modifications to a flood management system comprised of thousands of miles of levees and channels within a watershed of about 42,000 square miles. Our team prepared a program-level environmental review document and engaged thousands of stakeholders to solicit input on policy development, program design, and implementation strategies.



Polk Power Station Deep Injection Wells
Tampa Electric Company (TEC)
Tampa, FL

We provided engineering design and construction oversight assistance to the Tampa Electric Company (TEC) for construction of two 8,000-foot Deep Class I deep injection wells at their Polk Power Station, which are among the deepest injection wells in Florida. These wells will be used to mainly dispose of RO concentrate from water treatment and also for certain industrial process streams. The wells were constructed in the Upper Cretaceous Formations below the Lower Floridan aquifer, which the Florida Department of Environmental Protection (FDEP) protects as an Underground Source of Drinking Water (USDW) in the area.

During construction, we were responsible for submittal review, well design modifications, formation lithology and permeability evaluations, formation and review of cement plans, preparation of hydrologic testing and water storage handling plans, permit coordination with FDEP, preparation of casing seat and confinement justification/request letters to FDEP, and FDEP construction summaries.



CALED Surface Water Storage Program
U.S. Department of the Interior, Bureau of Reclamation
Central Valley, CA

We are the lead consultant to the Bureau of Reclamation for the planning and permitting of three large surface water storage projects in California: A new reservoir on the San Joaquin River, an enlargement of Shasta Lake, and an expansion of the Lost Vaqueiros Reservoir. These multi-objective feasibility studies evaluate options to address water supply reliability, ecosystem restoration, water quality improvement, flood risk management, recreation, and hydropower generation.

We have performed inter-disciplinary planning, engineering and cost estimating, economics, environmental compliance, stakeholder engagement and public communications, and numerical analyses for reservoir operations, water temperature, reservoir and river (salmonid) fisheries, power operations, water quality, and estuarine hydrodynamics. We prepared milestone documents for all three projects and the Draft and Final Feasibility Report and Draft and Final EIS for the Shasta and Upper San Joaquin projects. These documents support Federal, State of California, and local agency decisions regarding project implementation and financing.



Southern Delivery System
Colorado Springs Utilities, U.S. Bureau of Reclamation
Arkansas River Basin, CO

The Southern Delivery System (SDS) is a regional water supply project for Colorado Springs that includes 50 miles of pipeline, two new 25,000 ac-ft reservoirs, three raw water pump stations, and a water treatment plant.

We were responsible for all technical, administrative and public involvement aspects of the EIS for Reclamation. This included public involvement, development of the project Purpose and Need, alternative analysis including other conveyance alignments, other reservoir sites, aquifer storage and recovery, and potable reuse; impact assessment for all resource areas, including hydrology, water quality, geomorphology, aquatic species, cultural resources, and socioeconomic; and evaluation of potential mitigation measures. To support these evaluations, we enhanced the water resource simulation model of the Arkansas River basin that we developed over the past decade.

In addition to preparing the EIS, we were program manager for implementation of Phase I of the SDS project, managing the planning, permitting, design and construction. SDS design and construction were completed early and over \$100 million under budget.



We're active members of the communities we serve. That's why at MWH, now part of Stantec, we always design with community in mind.

The MWH community, now part of Stantec, unites approximately 22,000 employees working in over 400 locations across six continents. We collaborate across disciplines and industries to bring water and infrastructure projects to life. Our work as architects, engineers, and consultants from initial project concept and planning through design, construction, and commissioning begins at the intersection of community, creativity, and client relationships. This work is built on a nearly 200-year history. With a heritage in water, our world's most precious resource, we safeguard and sustain lives, communities, and businesses worldwide.

Our local knowledge and relationships, coupled with our global expertise, qualify us to go anywhere to solve our clients' challenges in more creative and personalized ways. With a long-term commitment to the people and places we serve, we have the unique ability to connect to projects on a personal level and advance the quality of life in communities around the globe. Stantec trades on the TSX and the NYSE under the symbol STN. Visit us at mwhglobal.com and stantec.com, or find us on social media.



We provide responsive service and expertise from offices around the globe:

North America, Latin America, Europe, Africa, India, the Middle East, Asia and the Pacific



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