

TOTAL INDUSTRIAL WATER MANAGEMENT

Geosyntec's industrial water experts help our clients with water and cooling system optimization to deliver reliability, efficiency, and long-term performance.

Services:

- Water System Design
- Cooling Water Optimization Studies
- Water Reuse and Recycling Systems
- Engineering Design
- Hydraulic Modeling
- Construction and Commissioning Support
- Wastewater Characterization
- Waste Management and Treatment Solutions
- Regulatory Support

Total Water Management Approach: Concept to Commissioning

Turn water and cooling systems into a performance and cost advantage with Geosyntec's fit-for-purpose total water management solutions. Through integrated water system design, data-driven cooling water optimization, and hands-on engineering, construction, and commissioning support, Geosyntec helps our clients reduce fresh-water demand, chemical and energy use, and long-term operating risk while improving reliability and uptime. Our expertise ensures practical, defensible solutions that perform on day one and continue to deliver value over the life of the asset.

Integrated Water System Design

Align water quality, treatment, reuse, and disposal with process needs to reduce overtreatment, lower life-cycle costs, and improve long-term reliability and operability.

Construction Management & Commissioning

Achieve design intent, schedule, and stable operation from day one with constructability review, field-ready engineering support, vendor and engineering, procurement, and construction (EPC) coordination, and startup and performance testing.

Engineering Services

Reduce technical risk, optimize CAPEX and OPEX, and promote reliable performance through integration, hydraulics and heat-load analyses, equipment and materials selection, and constructible design.

Core Capability:

Cooling Water Optimization

Reduce freshwater use, chemical/energy consumption, and scaling or corrosion risks while improving cooling performance, water reuse, and equipment uptime.

Total Water Management Design Services



Raw and make-up water supply systems



Wastewater treatment solutions



Pretreatment (filtration, softening, membrane systems)



Water reuse and recycling



Process and utility water systems



Minimal and zero liquid discharge concepts



Cooling water treatment and conditioning

WATER MANAGEMENT CASE STUDIES



Wastewater Evaluation for Industrial Gases Facility Southeast US

Geosyntec supported an industrial gases facility expansion by assessing wastewater disposal and

permitting options for increased flows. The project involved reviewing data, conducting a site visit, evaluating current permits, and identifying regulatory requirements and modifications. Geosyntec developed preliminary wastewater management options, facilitated a meeting with state regulators to discuss permitting, and provided findings to guide permit changes and future project planning.



Cooling Tower Water Management for Data Center Arizona, US

Geosyntec assessed the feasibility of connecting the site to the local reclaimed water network

and evaluated options for online conductivity monitoring to optimize reverse osmosis operations and support facility expansion. The team is partnering with agencies to develop regulatory guidance for using reclaimed water in evaporative cooling systems, which are currently not allowed. Geosyntec also designed a rooftop adiabatic cooling water reuse system for a future project, expected to reduce facility water use by up to six percent.



Wastewater Improvements, Water Reuse and Water Balance for Metals Recycling Illinois, US

Geosyntec helped a metal recycling facility comply with lead

and mercury regulations after it receiving a cease and desist order. Instead of investing in costly wastewater treatment, Geosyntec implemented sewer reconstruction and separated sanitary and stormwater systems, which achieved compliance. The team also negotiated higher mercury discharge limits, developed an alternative reporting protocol that reduced user charges, and designed a stormwater and cooling water recycling system, allowing the facility to reach zero discharge.



Impaired Groundwater Treatment System California, US

Geosyntec has supported implementation of a potable end use groundwater remedy in the Main

San Gabriel Basin, a site partially listed on the USEPA National Priorities List, through comprehensive strategy, design, regulatory, and construction services. Geosyntec has led technical and design efforts for the remedy involving seven extraction wells, dedicated conveyance pipelines, and an advanced treatment facility now provides a reliable drinking water supply. Geosyntec led coordination with regulatory agencies and multiple stakeholders; developed groundwater models to support remedy design and well optimization; conducted geotechnical investigations and site remediation; delivered full multidisciplinary design; managed easements and multi-agency permitting; supported bidding, procurement, and contractor selection; and provided construction oversight, including trenchless pipeline installation.



Data Center Water Infrastructure Preliminary Design Midwest US

Geosyntec supported the preliminary design of water infrastructure

for a new data center including systems for cooling, potable water, non contact cooling water, and sanitary wastewater treatment prior to surface-water discharge. To support an aggressive project schedule, Geosyntec evaluated multiple water and wastewater treatment alternatives and operational scenarios, with specific consideration of long lead equipment and schedule driven technology constraints, to inform timely decision-making. In parallel, the team identified required county and state permits and supported preparation of permitting applications to reduce regulatory risk. This early, integrated evaluation enabled the client to advance a feasible schedule-aligned water infrastructure strategy, improve project predictability, and minimize the risk of development and permitting delays.

About Geosyntec

Geosyntec is a consulting and engineering firm that works with private and public sector clients to address new ventures and complex problems involving our environment, natural resources, and civil infrastructure.

With a combined staff exceeding 2,800 engineers, scientists, and related technical and project support personnel, we serve our clients from more than 130 offices in the United States, Canada, the United Kingdom, Ireland, Sweden, Finland, Spain, Saudi Arabia, the United Arab Emirates, and Australia.

Geosyntec
consultants