WATER SOLUTIONS
for Power Operations

Engineering services to maximize the value of your water resources, reduce operational risks, meet regulatory requirements, and enhance your bottom line.
Yucca and West Phoenix Power Plant Well Design, Permitting, and Construction Services

Arizona Public Service Company  | Phoenix, AZ

Carollo supported APS with the expansion of well capacity at the Yucca and West Phoenix Power Plants with the addition of Well 3 and Well 1A, respectively. Services for Well 3 included Electrical and Instrumentation & Control Designs and Construction Administration Services through the startup and startup of the well. Additionally, Carollo developed a preliminary design report and design drawings for the Approval to Construct with the Arizona Department of Environmental Quality (ADEQ), and obtaining Approval of Construction from ADEQ. For Well 1A, Carollo provided a peer review for the overall design and provided construction oversight.

Langley Gulch Power Plant Water/Wastewater Evaluation Project

Idaho Power Company  | New Plymouth, ID

Idaho Power Company’s objectives were to optimize the use of existing shallow well river water supply and evaporative pond capacity, optimize costs associated with annual power production costs, and reduce O&M costs through process improvements. Carollo performed an evaluation of the operation of the existing water and wastewater systems at the plant through development and evaluation of an overall water balance in terms of flow rates and chemical composition of each stream. In preparation of the analysis, the project team performed sampling and collected chemical consumption and flow monitoring data throughout the facility. Processes evaluated included the facility’s High Efficiency Reverse Osmosis (HERO) and clarification process, effects on returning excess cooling tower blowdown back to the process, and analyzing the use of UF product water for backwashing the UF and HERO systems. The results of the analysis provided recommendations for improving balance between service water production and service water consumption through process and equipment modifications.

Effective Water Management... Your Success Depends on it.

Water is critical to energy production, yet it is one of the most challenging resources to secure and manage. Supplies are limited and pressure is high to reduce consumption, protect water quality, and provide responsible water management. At Carollo, we work with power plant managers to solve complex water challenges through innovative solutions that drive productivity, facility and system reliability, and overall profitability. As your engineering partner, we will focus on your water so you can focus on producing and delivering power.
Our goal is to be an integral partner in cost-effectively managing your water and wastewater. Doing so allows us to develop long-term strategies to help you address your triple bottom line, avoid expensive solutions, and ensure efficiency and compliance.

For more than 85 years, we have dedicated ourselves to advancing the application of water science and technology. With more than 25,000 water and wastewater projects to our name, our engineers and scientists offer integrated, proven solutions to meet your financial and operational objectives.

- **Water supply planning, water use assessments, and facility master plans** to optimize water resources, achieve maximum water value, and reduce risks that could lead to facility outages/shutdowns and cost impacts.
- **Best value solutions** end-to-end through holistic design, planning, and construction management offerings.
- **Advanced treatment technologies** that meet your specifications for process, wastewater pretreatment, reuse, and cooling water treatment.
- **Creative public-private partnerships** for joint water management opportunities.
- **Cost-effective initiatives** for water recycling and gray water use to minimize your impact on fresh water supplies, reduce your operational costs, and maximize opportunities for growth.
- **Best management practices and strategies** for reducing water footprints, waste, and discharge.
- **Full compliance** with regulatory and safety requirements.
- **Blue Plan-It® Decision Support System**, providing a fully customizable simulation and optimization modeling tool to help you cost-effectively evaluate, optimize, expand, and/or modify your water and wastewater systems.
Focused Services for Power Generators
THE RIGHT WATER AND THE RIGHT USE

Water Supply Planning and Management
- Water Balance Assessments
- Pilot and Bench-Scale Testing
- Reuse and Optimization Studies
- Computational Fluid Dynamics
- Quality Evaluations and Treatability Studies
- Permit Planning and Regulatory Compliance
- Watershed and Stormwater Management
- Wet Weather Management Services

Water Intake
- Water Quality and Treatability Evaluations
- Intake Screening Systems
- Pumping Systems

Pretreatment Systems
- High-Rate Clarification
- Membrane and Media Filtration
- Softening Systems
- Ammonia Removal
- Desalination

Cooling Water
- Reclamation
- Water Treatment
- Filtration and Screening
- Clarification and Softening
- Membrane Filtration
- Zero Liquid Discharge

Boiler Feed Water
- Reverse Osmosis/Electrodialysis Reversal
- Ion Exchange Systems
- Electrodeionization
- Degasification Vacuum and Membrane Systems
- Water Treatment Chemicals
As a full-service water consulting firm, Carollo is equipped to address the varying and multi-faceted aspects of your water supply, treatment, recovery and disposal needs. We integrate experts from our specialized practice groups into each project to deliver total water resource management solutions.

**Wastewater Treatment**
- Evaporation and Crystallization Process Solutions
- Clarification
- Screening
- Biological Treatment
- Ultrafiltration
- Metals Removal Systems
- Sludge Thickening, Dewatering, and Drying Systems
- Discharge Compliance

**Water Reuse and Recycling**
- Strategic Planning and Design
- Permitting and Compliance
- Condensate Polishing

**Sustainability**
- Water Use Optimization
- Project Development
- Organizational Development
- Cogeneration Technologies
- Solar/Photovoltaic Systems

**Business Solutions and Program Management**
- Financial Planning
- Asset Management
- Information Management and Integration
- Electronic Operations and Maintenance Manuals
- Risk Evaluation and Management
- Construction Procurement and Management
- Public-Private Partnership Development
- Decision Support
- Optimization Modeling

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**WASTEWATER TREATMENT AND REUSE**

**DISCHARGE COMPLIANCE**
Trusted Water Experts for Reliable Solutions

Water is our focus, our business, and our passion. Since all of our work focuses on water, we lead the way in offering technically sound, reliable planning, design, and construction related services that maximize value for all of your water related challenges. Carollo provides an experienced and skilled planning, design, construction support, start-up, and commissioning team. In addition, we can provide turnkey design-build-operate-finance solutions for any size project. As your trusted partner, we will manage your water so you can manage your core business.

UNPARALLELED EXPERTISE

Projects with complex water challenges require experts who know water. While other engineering firms cater to multiple markets, water is all we do. This singular focus means you will collaborate with the best and brightest water professionals who share your goals for optimizing your water and wastewater systems, while minimizing your capital and operational costs. Our staff includes civil, structural, electrical, mechanical, and I&C engineers along with planners, architects, CAD designers, programmers, and construction managers. With our technical expertise and institutional knowledge, we put our clients ahead of the curve.

INNOVATIVE, VALUABLE SOLUTIONS

At Carollo, we combine creativity, applied research, and technology with sound engineering to deliver cost-effective and valuable solutions. Carollo’s Research Group supports projects with cutting-edge treatment technologies, improved operations practices, and insights on major trends in the water and wastewater industry. Our in-house research capabilities and team of industry-leading engineers allow us to evaluate your unique water requirements and provide answers that maximize productivity, minimize your water footprint, and help avoid costly issues. Our Sustainability Group rounds out our services with strategies that integrate sustainable principles into all that we do.

SUPERIOR SERVICE AND PERFORMANCE

Engineering News Record consistently ranks Carollo among the nation’s top design firms for water and wastewater engineering design services. We achieve this status through our consistent commitment to quality service and our track-record of delivering tailored, high-performing water management systems. We take tremendous pride in helping some of the top municipal, high tech and industrial clients in the world solve their most important water challenges.
Carollo Engineers is an environmental engineering and management consulting firm that provides planning, design, and construction management services for sustainable water and wastewater solutions.

Our staff includes civil, structural, electrical, chemical, mechanical, environmental, and instrumentation and control engineers, as well as planners, financial analysts, architects, and CAD designers, and construction managers – all experts dedicated to water.

Carollo’s Research Group supports projects with cutting-edge treatment technologies, improved operations practices, and insights on major trends in the water and wastewater industry. Our Sustainability Group rounds out our services with strategies that integrate sustainable principles into all that we do.

Most of our 45 offices throughout the United States are located in areas with heavy power generation activity, allowing us to provide local, dedicated teams to meet your water project needs.

One Firm for All Your Water Management Needs