
INFRASTRUCTURE PLANNING

SEE, SHAPE AND SECURE THE FUTURE: FORWARD VISION
FOR WATER DISTRIBUTION AND WASTEWATER COLLECTION.



BLACK & VEATCH
Building a world of difference.®



BI-COUNTY WATER TUNNEL

Montgomery County, Maryland

Black & Veatch used multi-criteria decision modeling to bring stakeholder consensus and world-renowned tunneling experts to facilitate technical decision making for a water tunnel designed to last at least 100 years.

FORWARD VISION FOR WATER DISTRIBUTION AND WASTEWATER COLLECTION.

To balance the interwoven factors of funding, growth, development and aging infrastructure within an increasingly stringent regulatory environment, you need forward vision powered by experience.

To optimize the use of today's complex and powerful hydraulic models and to implement sustainable and green solutions, look to Black & Veatch for the planning expertise that drives strong, sustainable, distribution and collection systems over the long-term.

EXPERTS AROUND THE WORLD—AND NEAR YOU

At Black & Veatch, infrastructure planning is a full-time job. You have access to a dedicated, strategically integrated team of planning engineers and GIS analysts located around the world—and near you. Our infrastructure planning specialists are located in every region of the U.S. as well as extended international locations. Beginning with your immediate Black & Veatch project team, you can tap into our Integrated Global Workforce to deploy extensive technical support exactly when and where you need it.

BUILD A SOLID FUTURE WITH THE RIGHT TOOLS

We're ready to help you move forward confidently with the advanced methods and means to manage your assets actively and intelligently. Using a wide range of innovative tools, techniques and processes combined with unsurpassed expertise with hydraulic modeling software packages, we can guide you through your most complex challenges to identify and prioritize planning decisions and optimize outcomes—in a proactive, controlled and cost-effective manner.

FOCUSED APPLICATIONS WITH BIG PICTURE THINKING

Black & Veatch knows water. We understand the complete water cycle as well as the inter-relationships in the cycle directly related to the customer. Our projects have covered potable water, reclaimed water, wastewater, combined sewer and GIS solutions. Our distribution and collection system specialists understand the challenges of water distribution and wastewater conveyance, and we offer solutions that address the specific issues related to supply, treatment and disposal. We're committed to helping you find realistic, farsighted water solutions that are right for you.

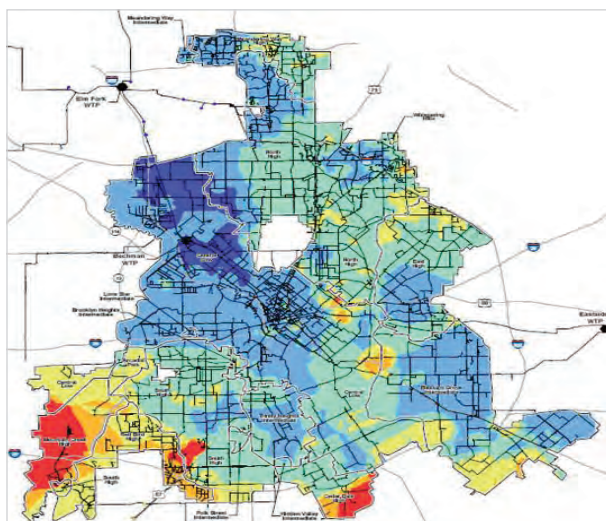
PLANNING FOR GROWTH AND AGING INFRASTRUCTURE

Dallas Water Utilities, Texas

Holistic strategies drove DWU's Water Capital Infrastructure Assessment and Hydraulic Model project. Black & Veatch developed a capital improvement plan that integrated the results of the infrastructure assessment with the master plan to determine the funding needed to maintain the aging infrastructure while accommodating future growth.

This project included infrastructure assessments, distribution system master planning, system water quality and vulnerability evaluations and system asset valuations. GIS improvements captured and added critical data, and detailed plans were developed to document attribution rules, QA/QC procedures and data exchange between the client and Black & Veatch. So the client could accurately screen and prioritize pipeline renewal projects, Black & Veatch developed an effective Water Distribution Management System program.

A detailed model of the distribution system was developed to evaluate capacity needs, simulate water age in the distribution system over extended time periods, evaluate treatment source relationships to colored water issues, and analyze system vulnerability under emergency conditions.



WATER CAPITAL INFRASTRUCTURE ASSESSMENT AND HYDRAULIC MODEL PROJECT
Dallas, Texas



**INTEGRATED RESOURCE
MANAGEMENT MASTER PLAN**
Goodyear, Arizona

SUSTAINABLE SOLUTIONS WITH INTEGRATED WATER RESOURCES PLANNING

City of Goodyear, Arizona

Careful resource management is critical in the arid Southwest, and Arizona's surface water resources are very limited. To support a potential tenfold increase in population, the city of Goodyear is building an integrated resource management master plan encompassing water resources and infrastructure.

The integrated master plan tracks the available resources full circle, from aquifer to potable supply to wastewater reclamation to recharge back into the aquifer. Careful accounting provides the city's water resources staff with assurances that the available resources have been maximized and the need for imported water minimized. The capital improvements plan is a vital road map to key infrastructure required for each stage of the integrated water cycle.

Black & Veatch planning expertise enabled the city to maximize water resources with local brackish groundwater supplies, which normally would have been excluded from the city's water portfolio. The insightful master plan is a key component in the city's quest to ensure citizens sufficient water resources in its challenging, arid climate.

BUILDING A WORLD OF DIFFERENCE®

Black & Veatch is an employee-owned, global leader in building critical human infrastructure in Energy, Water, Telecommunications and Government Services. Since 1915, we have helped our clients improve the lives of people in over 100 countries through consulting, engineering, construction, operations and program management. Our revenues in 2015 were US \$3 billion. Follow us on www.bv.com and in social media.

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