CITY OF HOLLYWOOD

RFQ - 041-23-JJ | FEBRUARY 28, 2023

QUALIFICATIONS FOR

WATER TREATMENT PLANT AND WASTEWATER TREATMENT PLANT PROJECTS

BLACK & VEATCH

TABLE OF CONTENTS

COVER LETTER X-1

EXECUTIVE SUMMARY 1

Brief Background 1
Key Individuals Directly Involved in Work & Location 1
Project Team's Location 2
Location Map 2
Key Elements of Statement of Qualifications 3

FIRM QUALIFICATIONS & EXPERIENCE 4

Firm Background 4
Florida Experience 5
Firm Qualifications 7
Wastewater Treatment 8
The City's Wastewater Treatment Process Infrastructure 13
Water Supply and Treatment 14
The City's Water Treatment Process Infrastructure 18
The City's Hydrogeological Services 20
Infrastructure 21
QA/QC, Value Engineering & Utility Optimization 26
The City's AMI Needs 28
The City's Asset Management and Grant Application Needs 32
Volume of Work with the City in the Past Five Years 35
Project Experience 35

ORGANIZATIONAL PROFILE AND PROJECT TEAM QUALIFICATIONS 57
Project Team 57
Team Organization 58
Team Member Firms 59
Organizational Chart 60
Project Management Team 61
Key Professional Engineering Services Leads 62
Key Professional Brief Resumes 63
Specialized Project Support 74
Project Team Availability 76

APPROACH TO SCOPE OF WORK 77
Understanding of the City's Needs 77
Project Management Plan 79
Quality Assurance/Quality Control Management Plan 83
Ability to Perform Expeditiously 85
Technological Capabilities to Improve Design Outcomes 86
Schedule and Budget Control 88
Scalability to Support Various Projects 90

KNOWLEDGE OF THE SITE AND LOCAL CONDITIONS 91
Knowledge of Local Permitting Agencies, Procedures and Testing Protocols 91

REFERENCES 93

SUB CONSULTANTS INFORMATION 98
Coordination with Subconsultants 98

FINANCIAL RESOURCES 99

LEGAL PROCEEDINGS AND PERFORMANCE 100

FORMS A-1
Firm License A-1
Firm Certificate of Status A-2
Certificate of Officer A-3
Statement of Qualification Certification A-4
Proposal Form A-5
Sworn Statement on Public Entity Crimes A-9
Certificate of Insurance A-11
Firm W-9 ..... A-12

BLACK & VEATCH CORPORATION
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February 28, 2023

Jean Joinville
Senior Purchasing Agent
Procurement Services
2600 Hollywood Boulevard
Hollywood, FL 33020

RE: Request for Qualification RFQ-041-23-JJ: Water Treatment Plant and Wastewater Treatment Plant Projects *(submitted electronically via OpenGov)*

Dear Mr. Joinville and Members of the Selection Committee:

The City of Hollywood Department of Public Utilities (City) leadership has established a culture of continuous improvement and increased efficiencies to ensure the delivery of reliable and cost-effective water, wastewater, and stormwater services to all its customers. In support of this progressive culture, Black & Veatch will continue to evaluate opportunities for the City to benefit from optimized operations, automated treatment systems, and reduced energy consumption and chemicals usage at its facilities.

During the past 10 years, Black & Veatch has had the honor to serve the City in multiple assignments. This opportunity has allowed us to work closely with City staff to implement energy efficiency, SCADA programming/automation, and asset management improvements at the City's Water Treatment Plant (WTP) and Southern Regional Wastewater Treatment Plant (SRWWTP). We are ready to leverage our water and wastewater systems optimization expertise under this contract in support of the City's goal to achieve cost-effective operations.

Black & Veatch provides the City with a local, highly-qualified team that will deliver optimized solutions through our proven automation experience and asset management expertise. The Black & Veatch team is comprised of local, small-business partners with experience delivering projects for the City and utilities in South Florida, including Keith & Associates Inc. (site/civil, surveying, SUE), WIRX Engineering LLC (geotechnical), and Hillers Electrical Engineering (electrical).

We will support the City by providing the full range of water and wastewater services required under this contract delivered through an energy efficiency-focused, technical approach that will consider the following:

- **Asset Management.** We will apply our existing knowledge of the City's systems for continued operations and maintenance to maximize the operational life and reliability of City's assets.
- **Process Treatment Rehabilitation.** We will apply our local expertise in the design of water and wastewater treatment improvements for existing facilities while maintaining reliability of operations during construction/startup implementation.
- **Electrical Improvements.** We will apply our recent experience with the rehabilitation of major electrical systems for both Miami-Dade and Broward County at their regional wastewater facilities as well as our knowledge of Florida Power and Light (FPL) requirements.

- **Construction Management.** We will provide proper supervision and oversight of construction activities to facilitate high quality projects and efficient construction.
- **Operations Optimization.** We will leverage our global expertise in the optimization of water and wastewater treatment operations.
- **Automation.** We will provide continued automation of the City's management, risk-based condition assessments and the implementation of an enterprise asset management system.

The City will receive the following benefits from our proposed technical approach:

- The foundation and execution of an **Asset Management Program** that provides the City with long term success. Cost savings from life-cycle asset management and risk-based condition assessments that will identify renewal and replacement (R&R) improvements to best manage the likelihood and consequence of failure of the City's infrastructure, reducing risk and allowing for proactive, reliability-centered maintenance.
- Projects that address **Process Treatment Rehabilitation** specific needs, with the right solutions that are cost-effective and provide energy-efficient operations and maintenance.
- **Electrical Improvements** that are closely coordinated with FPL with innovated solutions that aligned with cutting edge, as well as safe and reliable electrical equipment.
- Control of project safety, cost, schedule, and quality by tapping into our **Construction Management** global resources and expertise.
- Cost and time savings from continued **Automation** of water and wastewater treatment systems by increasing work-execution efficiency and reducing manual effort from operations.

Our successful experience working with the City for the past ten years and expertise in operations optimization, automation, energy efficiency, and life-cycle asset management will provide the City with great value in maintaining and improving its current levels of utility services to existing and future customers at the lowest possible cost.

We welcome the opportunity to discuss the details of our qualifications and invite you to contact Isabel Botero with any questions at (954) 319-9861. Thank you for your consideration, we look forward to partnering with the City of Hollywood on this important contract.

Very truly yours,

Black & Veatch Corporation

Isabel Botero, PE
Project Manager

Rafael Frias, III, PE
Project Director

SECTION B

Executive Summary

The City will have access to one-stop service capabilities and will receive cost-effective and efficient designs for all projects from a local well-rounded, full-service firm.

LEGAL NAME
Black & Veatch Corporation

BUSINESS ENTITY
Corporation

BROWARD COUNTY OFFICE
3111 North University Drive
Suite 700
Coral Springs, FL 33065

POINT OF CONTACT

Isabel Botero, PE
(954) 319-9861
BoteroI@bv.com
Fax: (754) 229-3045

BLACK & VEATCH HEADQUARTERS
11401 Lamar Avenue
Overland Park, KS 66211

BRIEF BACKGROUND

Black & Veatch Corporation (Black & Veatch) has been providing continuous service to Florida clients since 1957. We are a leading global engineering, construction, and consulting company specializing in infrastructure.

The City will benefit from our unique pedigree of highly-respected water business professionals that work across all water sectors. Our strength lies in the fact that **we offer world-class project delivery on all phases of a project's lifecycle** – planning, design, bidding services, construction phase services, construction observation services, and post construction services, such as commissioning and operations support.

KEY INDIVIDUALS DIRECTLY INVOLVED IN WORK & LOCATION

With a reputation for providing innovative solutions and turning obstacles into opportunities, we offer a highly-skilled team of professionals to work with City staff on this important continuous civil engineering services contract. **Our project leadership, leading from our local Broward County office, will ensure successful delivery of projects.**

Rafael Frias, PE
Project Director
Coral Springs, FL

Isabel Botero, PE
Project Manager
Coral Springs, FL

Lucas Botero, PE, ENV SP
Wastewater Treatment Plant Projects Lead
Coral Springs, FL

Jaime Abreu, PE
Water Supply & Treatment Projects Lead
Coral Springs, FL

Jon Dinges, PE
Infrastructure Projects Lead
Tampa, FL

Mark Seastead
QA/QC, Value Engineering & Utility Optimization Lead
Charlotte, NC

PROJECT TEAM'S LOCATION

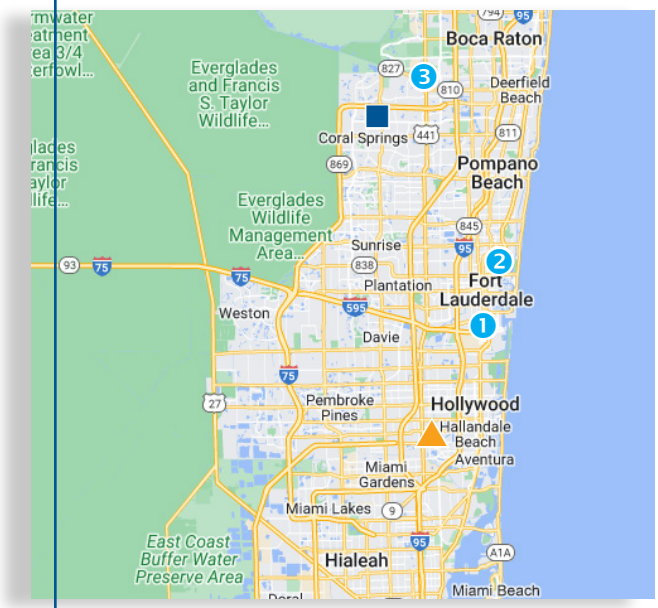
The Black & Veatch team is locally based within the region. Our local team has the ability to rapidly respond to any need that may arise, and to efficiently execute the work within the established schedule and budget. Our team is comprised of firms and individuals who have worked with local governments and agencies for many years and possess an in-depth understanding of local conditions and procedures. The ability to leverage this knowledge quickly and efficiently from local offices will result in high-quality projects that meet your goals.

We are committed to providing responsive service by offering a local project manager and core project team members that will be fully accessible to your staff. We will lead this contract out of the local Black & Veatch Coral Springs office and assign resources and subcontractors that work and live in the community.

Black & Veatch has more than 100 professional engineers registered in the State of Florida. These engineers are backed by more than 400 additional engineers, scientists, technicians and support staff, as well as Black & Veatch's 100 years of experience providing services in a wide range of disciplines.

Additional nearby expertise and support will be provided from our additional Florida offices as required. We will provide specific technical expertise from other offices of our firm, as needed, to bring the best and latest technology to satisfy the contract's requirements. The combination of Black & Veatch's local and national experts available to our stakeholders and our global technical resources will provide a "value added" relationship that will meet and exceed the requirements and expectations of any project assigned under this contract.

LOCATION MAP



▲ THE CITY OF HOLLYWOOD

■ **BLACK & VEATCH OFFICE**
3111 N. University Drive, Suite 700, Coral Springs, FL
24 Miles from the City

1 **KEITH**
2312 S. Andrews Avenue, Fort Lauderdale, FL
8 Miles from the City

2 **WIRX**
515 E. Las Olas Boulevard, Suite 120, Fort Lauderdale, FL
20 Miles from the City

3 **HILLERS ELECTRICAL ENGINEERING**
23257 State Road 7, Suite 100, Boca Raton, FL
29 Miles from the City

Black & Veatch's office location, which will provide primary project management, and our local subconsultants are in close proximity to the City, ensuring immediate, responsive service to the City and staff, as well as its stakeholders.

KEY ELEMENTS OF STATEMENT OF QUALIFICATIONS

Black & Veatch stands ready to provide the following benefits to the City of Hollywood to make all projects under this continuous service agreement a long-term success.

KEY ELEMENTS	TEAM FEATURES	BENEFIT TO CITY
Team Qualifications and Experience	■ Long-term South Florida presence ■ Resilience and climate change expertise ■ Proven experience with treatment technologies and energy efficiency improvements in the City of Hollywood ■ Master Plan and CIP improvements expertise ■ Brackish wellfield management, WUP, and UIC experience	■ Resilient and reliable infrastructure for the City's utilities ■ Continuity of high-performance delivery ■ Implementation of projects that reduce cost of operations by reducing energy consumption and chemical use ■ Net positive cash project portfolios ■ Sustainable water supply and deep injection disposal
Qualifications of the Project Team	■ Full complement of disciplines ■ Deep bench of local and Florida professionals ■ Excellent communication skills ■ Established relations with regulatory agencies	■ Efficient project delivery ■ Close collaboration and communication ■ Seamless process with regulatory agencies ■ Continuous focus on City's success
Approach to Scope of Work	■ Deep understanding of existing systems and facilities ■ Integration of community resilience into alternatives and designs ■ Identification of vulnerable areas and technologies ■ Full construction phase services	■ Quick start on the projects ■ Improve long-term community quality of life ■ Ensuring continuous control of water quality ■ Facilitate smooth construction
Past Performance Project References	■ Successful projects ■ Relevant experience ■ Past performance	■ Assurance of team's ability to deliver and successfully perform all projects under this contract ■ Technical solutions that are proven for similar treatment facilities and are relevant to the City

SECTION C

Firm Qualifications & Experience

The City will have access to a dedicated team of highly-qualified, local professionals with proven experience designing, permitting, and providing services for all of the projects listed in the RFQ.

FIRM BACKGROUND

Black & Veatch is a leading global engineering, construction, and consulting company specializing in infrastructure development in the fields of water, energy, and telecommunications. Our mission of Building a World of Difference© through innovation in sustainable infrastructure makes us one of the largest and most diversified engineering firms in the world. Founded in 1915, our employee-owned company has over 10,000 professionals working in more than 120 offices worldwide with projects in 70 countries on six continents.

A Florida licensed professional engineering, hydrogeology, and architecture company, Black & Veatch has been serving clients in Florida for over 60 years and in South Florida for more than 30 years. We provide a full range of engineering services from our offices in Coral Springs, Lake Worth, Coral Gables, Fort Myers, Tampa, Orlando, and Jacksonville. With more than 400 professionals in Florida, including more than 100 registered professional engineers, we are staffed to support projects of any size and complexity. Our engineers are backed by our global resources and experts who can be engaged on assignments, as needed.

BUSINESS STRUCTURE
Corporation

BROWARD COUNTY OFFICE
3111 North University Drive, Suite 700
Coral Springs, FL 33065
Phone: (954) 465-6872
Fax: (754) 229-3045

FIRM YEARS OF EXPERIENCE 107

FLORIDA LICENSES
BV Business Certificate F98000006965
BV Engineering License 8123
BV General Contractor's License F96000006223

WEBSITE bv.com

POINT OF CONTACT
Rafael Frias, III, PE
P: (954) 465-6872 | E: FriasRE@bv.com
** Located in our Broward County office.*

Black & Veatch provides the local attention, responsiveness, and collaboration of a small firm with the resources of a global corporation.

BLACK & VEATCH

FOUNDED IN 1915

120+ OFFICES

10K+ GLOBAL WORKFORCE

7,000+ ACTIVE PROJECTS WORLD-WIDE

2021 3.3B REVENUE

ENR RANKINGS

#	CATEGORY
16	Top 500 Design Firms
8	Top 20 in Water
11	Top 50 in Sewer and Waste
9	Top 50 in Water Treatment, Desalination Plants
9	Top 25 in Wastewater Treatment Plants

FLORIDA EXPERIENCE

Florida-Specific Solutions Built on Decades of Service

Black & Veatch has worked in Florida since the 1950s. Our services have included peer review, studies, preliminary and final design, construction-phase services, and/or design-build on a wide variety of projects undertaken in one of the most famous coastal areas in the world. Our wide range of disciplines include: civil, structural, water, wastewater, reclaimed water, geotechnical, environmental, electrical, and mechanical engineering, as well as permitting, bidding assistance, construction contract administration, resident engineering, startup and commissioning, operations, science, planning, asset management, project/program management, and finance.

The City of Hollywood will have access to a dedicated team of highly-qualified, local professionals with proven experience designing, permitting, and providing construction support services for water, wastewater, and reuse infrastructure.

Our experience in Florida includes serving more than 300 different agencies under continuing services contracts in which we have completed more than 1,000 individual task orders. Our relevant experience includes master planning; wastewater system engineering reports; public participation programs; infiltration/inflow analyses; sewer system evaluation surveys; environmental assessments; permitting and regulatory support; assistance in preparing federal and state grant applications; design of facilities for collection, treatment, reuse, and disposal; biosolids management studies; siting studies; and utility rate, financial, management, and operations studies. Our team offers unique depth and breadth of experience, successfully delivering water, wastewater, reuse, and power projects throughout Florida.

Black & Veatch has in-depth experience designing and managing the construction of water and wastewater facilities. Our design experience includes major components such as headworks design (screening, grit removal, odor control), activated sludge, clarification, filtration, disinfection, sludge thickening/dewatering, and electrical, instrumentation and controls systems. In addition, our team's experience includes demolition of existing structures as well as renovation, rehabilitation and expansion of existing facilities and systems.

The City of Hollywood will benefit from our experience, lessons learned, and tailored solutions that will provide water supply, water quality, environmental, life-cycle cost savings, and operational flexibility while protecting assets.

FLORIDA OVERVIEW

400+

PROFESSIONALS IN FLORIDA

7

OFFICES IN FLORIDA

CORAL SPRINGS
CORAL GABLES
LAKE WORTH
FORT MYERS
ORLANDO
TAMPA
JACKSONVILLE

FLORIDA PROFESSIONAL ENGINEER NO.

8132

A copy of our Firm's license can be found in the forms section.

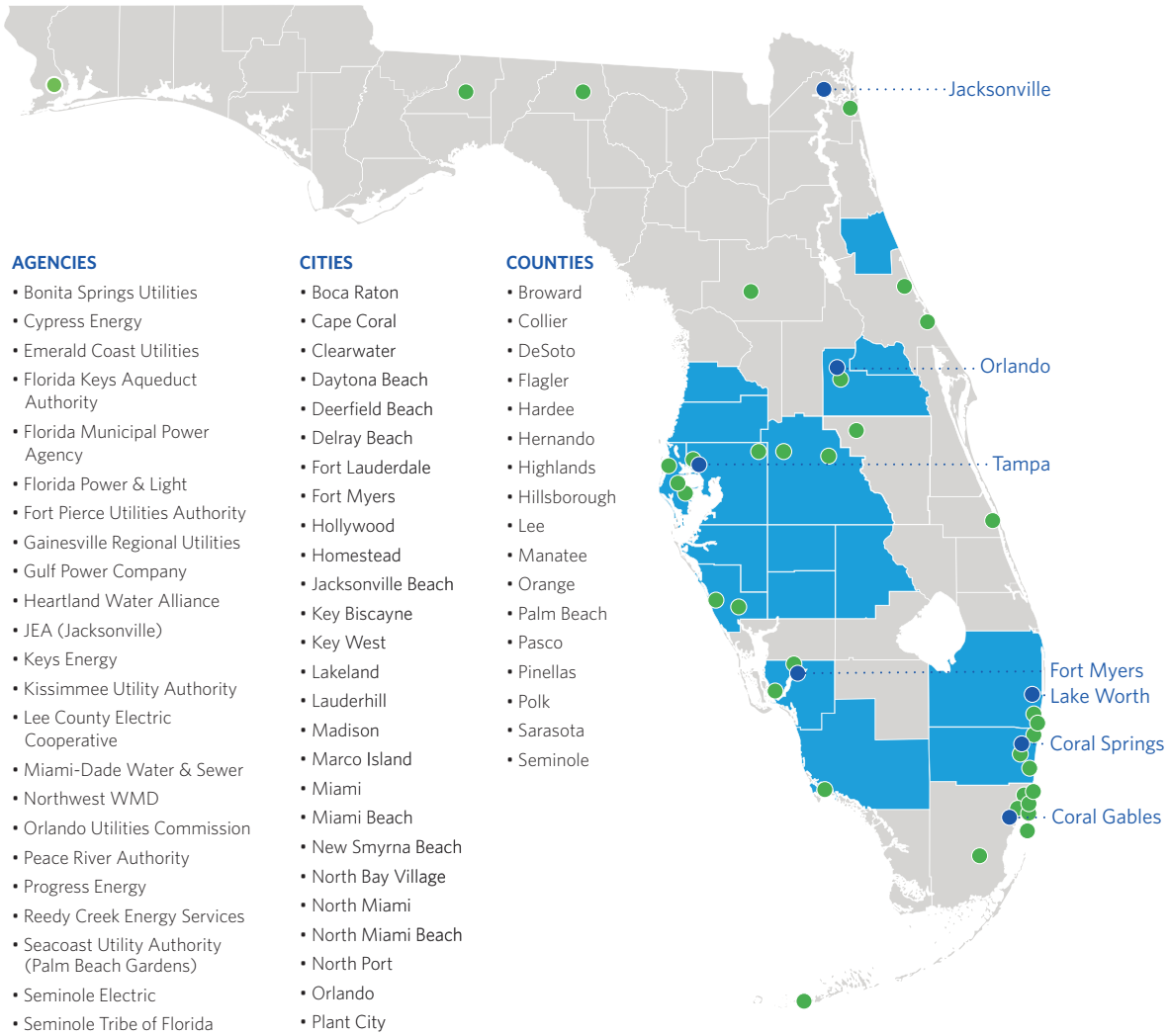
Although Black & Veatch is a large company with worldwide resources and unmatched engineering expertise, we take a local approach to serving clients. This contract will be served from our local Coral Springs office.

Our clients receive cost-saving solutions that optimize facilities and operations. We are also a Florida-licensed contractor and leverage our construction experience and local market knowledge to minimize risk and ultimately, provide high-quality constructed facilities to our clients.

EXPERIENCE IN FLORIDA

Our experience in Florida includes serving more than 300 different agencies under continuing services contracts in which we have completed thousands of task orders.

The City of Hollywood will benefit from effectively-managed projects from our team's long history working with Florida stakeholders and detailed understanding of local, regional, state, and federal policies and regulations.



AGENCIES

- Bonita Springs Utilities
- Cypress Energy
- Emerald Coast Utilities
- Florida Keys Aqueduct Authority
- Florida Municipal Power Agency
- Florida Power & Light
- Fort Pierce Utilities Authority
- Gainesville Regional Utilities
- Gulf Power Company
- Heartland Water Alliance
- JEA (Jacksonville)
- Keys Energy
- Kissimmee Utility Authority
- Lee County Electric Cooperative
- Miami-Dade Water & Sewer
- Northwest WMD
- Orlando Utilities Commission
- Peace River Authority
- Progress Energy
- Reedy Creek Energy Services
- Seacoast Utility Authority (Palm Beach Gardens)
- Seminole Electric
- Seminole Tribe of Florida
- South Florida WMD
- Southwest Florida WMD
- St. Johns River WMD
- Suwannee River WMD
- Suntory Water Group
- Tampa Bay Water
- Tampa Electric Company

CITIES

- Boca Raton
- Cape Coral
- Clearwater
- Daytona Beach
- Deerfield Beach
- Delray Beach
- Fort Lauderdale
- Fort Myers
- Hollywood
- Homestead
- Jacksonville Beach
- Key Biscayne
- Key West
- Lakeland
- Lauderhill
- Madison
- Marco Island
- Miami
- Miami Beach
- New Smyrna Beach
- North Bay Village
- North Miami
- North Miami Beach
- North Port
- Orlando
- Plant City
- Ocala
- St. Cloud
- St. Petersburg
- Tallahassee
- Tampa
- Venice
- Vero Beach
- Winter Haven

COUNTIES

- Broward
- Collier
- DeSoto
- Flagler
- Hardee
- Hernando
- Highlands
- Hillsborough
- Lee
- Manatee
- Orange
- Palm Beach
- Pasco
- Pinellas
- Polk
- Sarasota
- Seminole

OUR CLIENTS RECEIVE PROVEN, FLORIDA-SPECIFIC SOLUTIONS BUILT ON DECADES OF SERVICE.

Our clients receive holistic projects that meet their complex system needs while optimizing capital and operating investments.

FIRM QUALIFICATIONS

Our team's proven water, wastewater, transmission and distribution, reuse, stormwater quality assurance, quality control and value engineering services expertise, coupled with a strong, committed local engineering team, will ensure the City receives reliable and resilient projects during the duration of this contract. **The Black & Veatch team, which includes our highly capable, local subconsultants, has the comprehensive capabilities to deliver all of the functional areas of interest required by this RFQ.** In addition to the summary below, we have provided expanded qualifications for several key areas of the contract in this section along with detailed past project examples provided to agencies similar in size to the City of Hollywood.

WASTEWATER TREATMENT

- Involved in development of 6,600 MGD of wastewater treatment capacity in the United States
- At the forefront of EBPR and other advanced nutrient removal technologies
- Reuse planning and development
- Deep injection wells

WATER TREATMENT

- At the forefront of UV disinfection, ozone treatments, and alternative disinfection technologies
- Facilities ranging in size from 1 MGD to greater than 850 MGD
- Treatment expertise for emerging contaminants like PFAS

WATER SUPPLY

- "One Water" concepts incorporating storm, ecological, reuse, reclaimed, waste, water supply, and groundwater related resources
- Currently rehabilitating the Miami Springs Wellfield for WASD, which includes 20 wells

PIPELINES

- Involved in approximately 9,300 miles of pipelines in the United States
- Designed more than 43.7 million linear feet of raw/treated water and seven million linear feet of wastewater/stormwater pipelines

PUMP/LIFT STATIONS

- Experience in virtually every type of pumping condition, equipment, pipe size, and rehabilitation
- Experience with horizontal centrifugal, vertical turbine, and submersible pumps

QA/QC AND VALUE ENGINEERING

- Hundreds of asset management and master planning projects across the U.S.
- Pioneered the development and use of dynamic and interactive planning tools
- Conducted 1,000+ financial and management studies and services
- Assisted our clients applying for grants and loans to fund CIP projects

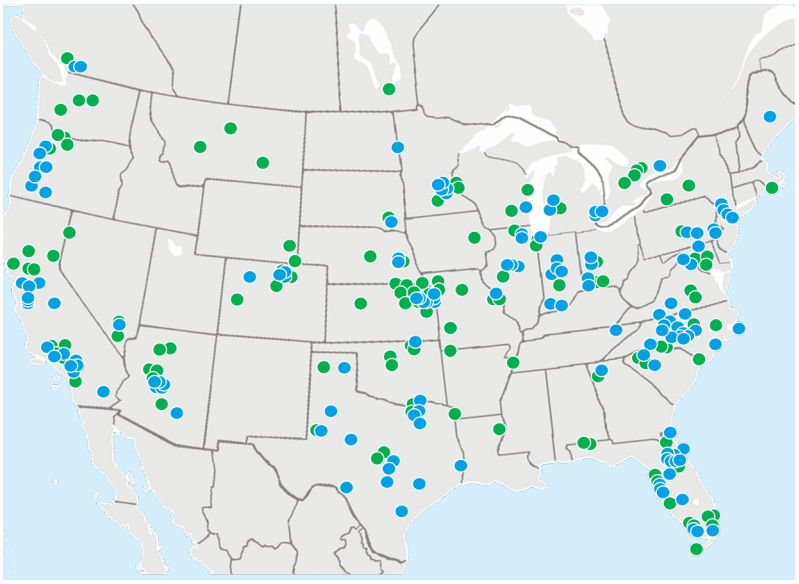
WASTEWATER TREATMENT

Wastewater Treatment Qualifications

Black & Veatch has designed thousands of wastewater treatment facilities or plant expansions that range from 0.2 MGD up to 1,000 MGD. Our success is attributed to the expertise that our staff offers including services in design, permitting, and construction management. Our company is an industry leader in engineering consulting wastewater treatment facilities. Black & Veatch provides services such as master planning, process evaluations, permitting and regulatory assistance, preliminary and detailed design, bidding services, construction phase services and inspection, startup and commissioning, operational assistance and training, and a host of related services. We can deliver cutting edge treatment technology solutions while also executing more routine projects with the highest level of efficiency. In South Florida alone, we have performed treatment plant-related projects for Broward, Miami-Dade, and Palm Beach Counties.

Black & Veatch's leadership in wastewater engineering is based on sound designs that enable our clients to satisfy regulatory requirements; meet specific needs and concerns; and result in cost-effective and energy-efficient operations and maintenance.

ACCESS TO OUR LOCAL AND NATIONAL WATER AND WASTEWATER TREATMENT EXPERTISE



● Water Projects ● Wastewater Projects

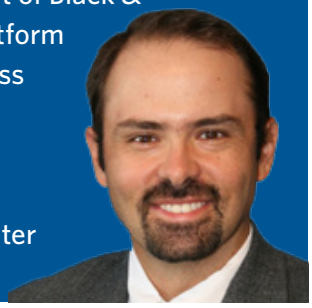
ACCESS TO OUR LOCAL WASTEWATER TREATMENT EXPERTISE

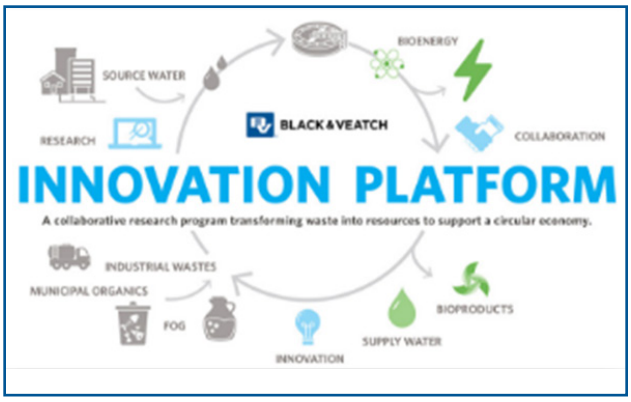
LUCAS BOTERO, PE, ENV SP

Black & Veatch has a long legacy of research and innovation through pilot trials for our clients and for vendors, collaboration with the Water Research Foundation, universities and other entities, and more recently through our Innovation Platform.

Black & Veatch's Innovation Platform is our collaborative, applied research program focused on assessing the value proposition of technologies and solutions to develop the resource recovery factory of the future. Through targeted collaborations with utility partners and academics - Black & Veatch has committed investment to this endeavor.

Lucas Botero, our local wastewater treatment expert, is part of Black & Veatch's Innovation Platform and leverages his process experience to provide treatment optimization solutions for our clients' wastewater treatment facilities.





Biosolids

Black & Veatch has been performing biosolids management projects, including long-range planning and facility designs for more than 80 years. We are one of the largest providers of biosolids planning, design, and construction services in the nation and have performed biosolids evaluations and designs for facilities ranging in size from 0.2 MGD to over 1,000 MGD.

Black & Veatch has a full-time staff of residuals management specialists – many with "world-class" credentials. These specialists work with regional design teams and client staffs at the early, formative stages to develop creative, cost-effective solutions tailored to specific project needs. We know what works and why through extensive research, global project experience, and an extensive international network.

Our team offers our clients biosolids expertise in the following areas that are relevant to the City:

DIGESTER PRE-TREATMENT	Pre-treatment can increase volatile solids reduction (VSR) and gas production and decrease solids production.
DIGESTERS DESIGN	Conventional, mesophilic digestion, egg-shaped digestion.
DIGESTER CLEANING	Establish digester cleaning intervals to mitigate and prevent poor digester performance including low volatile solids destruction, high volatile acids-to-alkalinity ratios, excessive foaming, and significant reduction in digester gas production.
HEAT DRYING	Rotary drum, fluidized bed, rotary chamber, direct contact paddle dryers, and pressure filter/dryer systems.
COGENERATION	Digester gas utilization, including cogeneration facilities, gas cleaning, air permitting, and energy generation.

FLORIDA WWTP REHABILITATION EXPERIENCE

Clarifier A3 Rehabilitation

Broward County, FL

Black & Veatch has been providing continuing engineering services for Broward County Water and Wastewater Services (BCWWS) since December 2013. The Clarifier A3 Rehabilitation - Design and Construction Management Services Project included technical support and construction phase services for the replacement of the existing clarifier A-3 equipment that was supplied by EIMCO PMD in 1973. The team performed an engineering technical review of the proposal for replacement/installation options from Ovivo USA, LLC (Ovivo). Black & Veatch will perform construction management services of the clarifier A-3 rehabilitation work performed by Ovivo.

Upcoming Biosolids Regulations

In 2018, the Florida Department of Environmental Protection (FDEP) created a Biosolids Technical Advisory Committee (TAC) to evaluate current management practices and explore opportunities to better protect Florida's water resources. The following actions were recommended by the TAC:

- Permit biosolids in a manner that minimizes migration of nutrients to prevent impairment to waterbodies
- Increase the inspection rate of land application
- Develop site specific groundwater and/or surface water monitoring protocols to detect nutrient migration
- Develop and conduct biosolid and nutrient management research on nutrient run-off through surface and groundwater flow
- Promote innovative technology pilot projects for biosolids processing that could provide a wider range of beneficial end products

As a result, a biosolids rule amendment has been proposed. With increased focus on land disposal sites being a potential source of nutrient pollution for Florida's waterbodies, municipalities may be required to evaluate the future of their biosolids disposal strategy.

Black & Veatch helps our clients navigate through this rule amendment similarly to the regulatory evaluation work performed for the Pinellas County Biosolids Master Plan or the work we are currently supporting Broward County Water and Wastewater Services (WWS), which includes the development of a white paper of biosolids treatment and management technologies available in support of FDEP's biosolids disposal requirements.

Our **Wastewater Treatment Plant Projects Task Manager, Lucas Botero** and **Black & Veatch's Dr. James Barnard** recently commissioned for FKAA the Cudjoe Key AWRF, **designed to meet AWT standards per FDEP.**

FLORIDA BIOSOLIDS EXPERIENCE

Biosolids Treatment and Management Technologies

Broward County, FL

FDEP is proposing amendments to Ch. 62-640 (Biosolids), F.A.C., to promote proper management of biosolids and protect the waters of the state from nutrient pollution. The goal of the rule change is to update biosolids regulations to minimize the migration of nutrients, specifically phosphorus, to prevent impairment to waterbodies.

Black & Veatch's biosolids experts are currently assisting Broward County in developing biosolids treatment and management and available technologies to support the upcoming FDEP regulations that will require utilities in South Florida and across the state to provide a higher level of treatment to biosolids before disposal.

The Black & Veatch team has completed more than 50 injection wells in Florida for the disposal of treated domestic effluent, reverse osmosis concentrate, industrial process water, and landfill leachate.

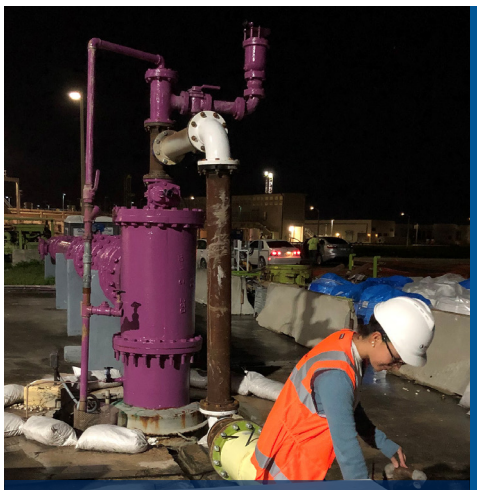
Deep Injection Wells

The Black & Veatch team has extensive and unparalleled experience with implementing municipal and industrial wastewater injection well projects under Florida UIC rules and regulations. Our Florida staff is available to the City of Hollywood to assist with any potential injection well needs such as design, permitting, specialized hydrogeologic oversite during construction, mechanical integrity tests (MITs), and rehabilitation/repair.

The vast knowledge that the Black & Veatch team members bring to the City of Hollywood can be leveraged to address your stakeholders' needs. Our team brings a direct benefit to the City of Hollywood, as our staff understands southeast Florida hydrogeologic conditions, and the drilling, testing, and rehabilitation techniques required for project success.

The City will benefit directly through the Black & Veatch team's relevant experience in:

- Performing every stage of design, permitting, and construction oversight of new injection systems and expansion of existing systems.
- Completing numerous injection well tubing replacement projects to upgrade older injection well systems to current regulations, resulting in extended operational life and minimized capital investment.
- Injection well rehabilitation and modification to aging systems.
- Monthly performance review for injection well systems to quickly manage inconsistencies in the data and or needed repairs to the monitoring equipment, etc. which also minimizes effort to meet all FDEP UIC regulatory requirements.
- Supporting mechanical integrity testing for existing injection well systems.
- Training personnel in operating, monitoring, testing and data collection/reporting of the injection systems



Black & Veatch staff monitoring construction and testing of a deep injection well at the SDWWTP.

LOCAL EXPERIENCE

South District Wastewater Treatment Plant

The disposal of High Level Disinfection (HLD)-treated effluent at the South District Wastewater Treatment Plant (SDWWTP) is done via 17 injection wells. To ensure compliance with the Ocean Outfall Legislation (OOL), Miami-Dade Water and Sewer Department (WASD) is increasing injection well disposal capacity to 329 MGD, after equalization. To meet this increased capacity, WASD obtained the FDEP UIC construction permit (Permit No: 061787-043-045-UC/1M) on October 10, 2018, to construct three new 19.9 MGD capacity municipal injection wells scheduled to be operational by September 13, 2023. WASD is in the process of completing the construction of the municipal injection wells at SDWWTP with an anticipated completion by the end of 2020 that will include final radioactive tracer survey and injection testing.

Water Reuse/Reclamation

Black & Veatch has long been at the forefront of water reuse, including some of the world's most advanced water reuse projects including water purification facilities for the Singapore New Water Program and Orange County's (CA) Groundwater Replenishment system. **Today in Florida, we are looking at ways to maximize the benefits of expanding reuse programs using a One Water approach.** For Tampa Bay Water, evaluating opportunities to integrate reuse in water supply planning is a key component of the Long-Term Water Supply Plan being developed in partnership with Black & Veatch. For JEA we are working on the design and permitting of one of the state's first Indirect Potable Reuse (IPR) projects. We are also working with WASD on identifying reuse opportunities for compliance with OOL, including the FP&L reuse program, industrial reuse at the North District WWTP that will be one of the largest reuse programs in the state and Zoo Miami.

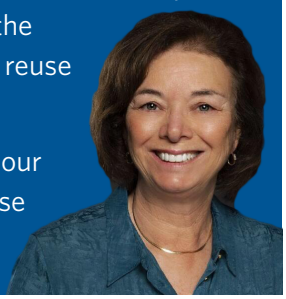
Black & Veatch offers maximum value to clients with single-source depth and expertise in the full spectrum of water reuse. Our understanding of reuse regulations and the regulatory framework enables us to assist our clients with permitting innovative and some of the most challenging reuse projects.

ACCESS TO OUR FLORIDA-BASED REUSE EXPERTISE

Jo Ann Jackson, PE

Jo Ann has nearly 40 years of experience primarily focused on innovative water and reuse projects. She is recognized for her leadership in the water reuse practice. Jo Ann was actively involved with the Potable Reuse Commission (PRC), a Florida consortium of utilities, regulators and stakeholders that developed a framework for IPR/DPR regulations for the State.

Jo Ann has worked as a consultant on the planning, permitting, design, and/or implementation of nearly every type of reclaimed water project from traditional irrigation reuse systems to potable reuse. She has worked on projects nationwide, including planning for the San Diego Pure IPR program. Locally, she worked on the master plan for the City of Sunrise reuse system and developed one of the first reuse feasibility studies for WASD. She is currently assisting the Black & Veatch team with the WASD North District WWTP industrial reuse and Zoo Miami reuse programs.



She leverages this experience to ensure our clients maximize their benefits from reuse into the future.

Black & Veatch takes a **"One Water"** approach to water reuse planning with a sound understanding of the hydrologic cycle. More than that, we take into account environmental and public interest concerns. A One Water approach requires vision and, at the same time, calls for prudence, as economic realities can't be ignored.

THE CITY'S WASTEWATER TREATMENT PROCESS INFRASTRUCTURE

- It is important to ensure proper construction oversight for the bar screens bypass project, critical to handle peak flows to the plant.
- The clarification and oxygenation systems will be rehabilitated to continue to provide proper solids removal and biological treatment at the plant.
- Rehabilitation of electrical systems is essential to maintaining the reliability of all treatment systems at the plant.

OPPORTUNITIES

- **Operations Optimization |** Operation cost savings can be reached by selecting more energy efficient technologies that reach the same treatment goals. Coordination of design with operations to ensure effective and efficient designs that are safe and maintainable.
- **Aging Infrastructure |** Need to rehabilitate important process elements such us the oxygenation system and the clarifiers. Oxygenation trains have reached the end of their useful life and the selection of technology such as VSA Oxygenation can bring multiple benefits to the plant.

IMPORTANT PROJECTS

- SRWWTP South Electrical Service Center Rehabilitation
- SRWWTP Bar Screen Bypass - Construction Management
- SRWWTP Oxygenation Trains Rehabilitation (Up to five trains in one project or multiple projects)
- SRWWTP Clarifiers Rehabilitation (Up to six clarifiers in one project or multiple projects)

LOCAL EXPERIENCE

Cudjoe Key Advanced Water Reclamation Facility | Cudjoe Key, FL

The design of this new advanced water reclamation facility addressed some unique challenges.

- Wastewater in the Keys is warmer than elsewhere in the United States
- Advanced water treatment plant limits cBOD5-TSS-TN-TP 5-5-3-1
- Low BOD to nutrient ratios during startup conditions

WATER SUPPLY AND TREATMENT

The City will benefit from our team's strong experience in planning and designing treatment process projects from professionals who are local to the City and have provided proven responsiveness and successes at the water treatment plant.

Water Treatment Plant Qualifications

The majority of Black & Veatch's work at water treatment plants includes modifications or expansions of existing water treatment facilities. Our approach in these types of projects is a collaborative effort in both the planning and implementation phases. This involves working closely with both engineering and operations staff to ensure that treatment and operational goals are met, while still staying within defined project schedule and budgets.

One of the first components of treatment modification projects, particularly if it includes new facilities, is to **review the long-term plan for the facility to ensure that any modifications made today are compatible with future modifications.** This ensures that wise capital expenditures are made so they serve the plants both now and into the future. Another key consideration in the implementation phase is **maintaining plant operations during construction** to ensure that capacity and quality needs are met throughout the construction period.

Treatment Processes that are Relevant to the City

The City will benefit from our expertise with both conventional water treatment processes, as well as innovative/advanced technologies to meet all current and potential drinking water regulations, standards, and guidelines. Our experience covers all aspects of water treatment, including advanced water treatment techniques. Representative experience includes:

- Lime softening
- Mixing, flocculation, sedimentation, filtration, disinfection
- Chemical feed systems
- Microfiltration/ultrafiltration (MF/UF)
- Nanofiltration (NF)
- Reverse osmosis (RO)
- Thermal and chemical brine concentrate reduction
- Ion exchange (conventional and magnetized - MIEX)
- Granular activated carbon (GAC)
- Membrane filtration
- Ozonation
- Air stripping
- Ultraviolet (UV) disinfection
- Advanced oxidation technologies

Arturo Burbano, PhD, PE, BCEE

Our Florida Water Treatment Technology Leader, Dr. Arturo Burbano, PE, PMP has managed water projects nationwide for nearly 32 years, with capacities ranging from 0.5 to 750 MGD. Dr. Burbano is a process expert with substantial experience in technologies, such as enhanced coagulation, rapid clarification, GAC adsorption, ion exchange, lime softening, disinfection, and low- and high-pressure membrane applications.

The City will benefit from implementation of effective measures to meet current regulatory standards and consider upcoming regulations. Black & Veatch does this by providing our clients access to a local team of professionals with proven experience meeting local and state regulatory requirements, as well as water technology experts with strong knowledge of current and future U.S. EPA regulations.

Renewal & Replacement of Water Facilities

After decades of uninterrupted operation meeting all required water treatment performance goals, it is normal for many facilities to start experiencing operational and structural issues that may affect their performance in the mid- or long-term, if left unaddressed. Black & Veatch understands these issues, and has served as a trusted advisor to Florida utilities looking at prioritizing their rehabilitation work. Our work usually starts from a condition assessment of these facilities, which highlights the most important needs, followed by the preparation of construction documents to guide contractors to complete the required modifications in the most cost-effective manner. For example, our recent experience with softening facilities in South Florida includes the successful rehabilitation of the Accelator softening facilities at Deerfield Beach's East Water Treatment Plant.

Our team is also well-versed on the retrofits of media filters to address typical deterioration or performance issues. Besides the required assessments of the structural and hydraulic elements of media filters, **Black & Veatch has a clear understanding of the approach to replace critical elements such as underdrains, troughs, and control instruments, or finding the appropriate combination of media that ensures proper cleaning of the beds during backwashing.**

Water Regulations and Emerging Contaminants

Black & Veatch has extensive experience supporting utilities in Florida and nationwide to satisfy existing water regulations, as well as planning viable scenarios to meet upcoming regulations. For example, Black & Veatch is supporting Tampa Bay Water on an investigation of innovative process alternatives to decrease the content of total organic carbon (TOC) in the water, which would decrease Disinfection Byproduct (DBP) formation potential and give the member agencies more leeway to meet the Stage 2 DBP Rule. Additionally, our experts are very familiar with recent regulatory guidelines (such as UCMR5, which includes several compounds of the PFAS family), which mandate periodical monitoring of a number of emerging contaminants in preparation for the eventual promulgation of their regulations and corresponding MCLs.

Furthermore, in the case of PFAS for example, **Black & Veatch has extensive experience designing many types of granular activated carbon (GAC) and ion exchange (IX) systems, reportedly the most promising technologies to address PFAS in a cost-effective manner.**

Lime Softening

Our team is extremely familiar with the intricacies of the lime softening process. We have ample experience designing and constructing facilities that address specific water softening needs not only in Florida but nationwide. We have completed more than 50 full-scale designs of softening facilities as large as 240 MGD.

FLORIDA LIME-SOFTENING REHABILITATION EXPERIENCE

EAST WATER TREATMENT PLANT

DEERFIELD BEACH, FLORIDA

Black & Veatch provided support to the City with engineering services to identify major components of the existing lime softening Accelator requiring rehabilitation, and preparing the necessary engineering documents to specify such improvements. Black & Veatch worked closely with the City, Broward County regulators, the equipment vendor, and coating vendors to develop a complete bid package.

The rehabilitation of the Accelator lime softening was performed in a manner that allowed the WTP to continue operating during the entire time the repairs were implemented, with no interruption of water service to its customers. Once the City awarded the construction contract, Black & Veatch provided inspection services for the rehabilitation work by the contractor.

Nanofiltration (NF) and Membrane Technologies

Our team can leverage Black & Veatch's resume of 100+ membrane and filtration projects to provide cost-effective, easy-to-operate solutions to improve operations or reducing O&M costs. With input of our expert personnel, we can provide a fresh perspective and design concepts that provide the best value for our clients to secure the supply of water with the highest quality.

Pretreatment

Pretreatment processes are critical to prevent fouling of the NF membranes. Black & Veatch has extensive experience implementing robust media filtration or pressurized membrane filtration pretreatment approaches, which ensure a supply of high-quality water to the NF system, which extend its run time and reduce fouling.

Media Filtration

Black & Veatch has completed substantial pilot testing and implemented media filtration ahead of NF and RO membranes at several facilities nationwide, including Dunedin in Florida. Through this pilot and full-scale experience, key staff have established proven performance benchmarks for specific water quality constituents in the feed water, which minimize fouling potential. These limits are lower than the secondary maximum contaminant level and require careful consideration for media size and depth selection, oxidant dose, and loading rate.

Concentrate Discharge

Concentrate from the NF/RO facilities may be subject to supersaturation of salts such as calcium carbonate and silica, which raise their potential for scale formation. Some of the scale can be removed through periodic use of a pigging system, however, other types of scales are often hard to remove and may gradually clog the concentrate pipeline.

Post-treatment to Ensure Distribution System Compatibility

Any modifications to a softening system will need to be accompanied by a detailed analysis of the post-treatment needs to ensure the water quality leaving the plant is fully compatible with the distribution system, and does not disrupt the scale deposition that has taken place over the years. This includes avoiding any lead and copper corrosion at customer taps. The USEPA finalized the Lead and Copper Rule in December 2020 and Black & Veatch has professionals well-versed in the standards set forth in these regulations.

REDUCING HARDNESS AFFECTS CORROSION CONTROL

Black & Veatch professionals are well-versed in the standards set forth in the new U.S. EPA Lead and Copper Rule

- Change in treatment will require FDEP approval:
  - Anywhere from desktop to pipe loop study
  - A pipe loop study would be on critical path
- Examine harvested pipes/scale to avoid destabilization
- Keep FDEP involved to ensure that the post-treatment meets all required regulations and will not prolong the critical path of these projects

This experience encompasses both award-winning research and practical "real world" applications and includes UV disinfection, ozone treatments and hybrid/ alternative disinfection technologies.

We are leading the industry in process designs that minimize disinfection byproducts, reduce reliance on chemical treatments, improve the aesthetic quality of the water, and enhance the performance of disinfection in the distribution system.

We have extensive experience with technologies to prepare for upcoming regulations such as the modifications to the **Lead and Copper Rule** and **PFAS** monitoring and treatment **regulations.**

		PLANT TYPE		SCOPE OF SERVICES			DELIVERY TYPE			TREATMENT PROCESS											
PROJECT; LOCATION	Size (MGD)	New Plant	Upgrade/Expansion	Study	Pilot Testing	Design	Design-Bid-Build	Design-Build	Construction Management	Reservoir	Solids Contact Clarifiers	Lime Softening	Solids Separation: Convention	Filtration: Granular Media	Filtration: Membrane	Nanofilitration/Reverse Osmosis	Disinfection	Ozone	Air Stripping	Distribution Water Quality	Biological Filters
Florida Water Treatment Plants Projects																					
Preston WTP; Hialeah, FL	165		●	●		●	●					●	●						●	●	
Tampa Bay Water SWTP; Tampa, FL	72					●															●
Hialeah WTP; Hialeah, FL	60		●	●		●	●					●	●						●	●	
Southwest WTP; Orlando, FL	40		●			●	●										●	●			●
City of Hollywood WTP; Hollywood, FL	36			●								●					●				
Southern Regional Water Supply Facility; Orange County, FL	30		●		●	●	●			●							●	●			
J. Robert Dean WTP; Florida City, FL	30		●	●		●	●					●				●					
Pine Hills WTP; Orlando , FL	25		●			●	●			●							●				●
Tampa Bay Water Seawater Desal Facility; Gibsonton, FL	29		●	●	●	●										●					
Deerfield Beach WTP; Deerfield Beach, FL	24		●	●		●	●				●	●				●					
Consumers WTP; Sanford, FL	22	●				●	●			●							●				●
Western Regional WTP; Orlando, FL	20	●		●		●	●			●							●				●
Main St. WTP Reservoir; Jacksonville, FL	16			●		●		●													
Sky Lake WTP; Orlando, FL	10	●		●		●	●							●							●
Peace River WTP; Punta Gorda, FL	10		●											●							
Glencoe WTP; New Smyrna Beach, FL	9			●		●	●							●							●
C. Wayne Combee WTP; Lakeland, FL	8	●		●		●	●							●			●				●
City of Dunedin WTP; Dunedin, FL	7		●		●		●							●	●	●					
Stock Island WTP; Key West, FL	2		●	●												●					

THE CITY'S WATER TREATMENT PROCESS INFRASTRUCTURE

- The City's water treatment plant includes membrane softening of its surficial water supply to provide a significant portion of the finished water that is delivered to the City's customers.
- The facility is one of the earlier installations in Florida consisting of seven three-stage membrane trains that utilize constant speed feed water pumps.
- The City has an effective and unique lime softening process that has recently been rehabilitated with significant metal replacements of its Spiractors. The valveless filters are next in line for rehabilitation necessary to continue operating this lime treatment process.

OPPORTUNITIES

- **Operations Optimization |** Coordination of changes with operations to the water treatment plant to ensure effective and efficient energy designs that are safe and maintainable and focus on simplified operations.
- **Aging Infrastructure |** The technology at the City's facility is surpassed by improvements in membranes that will provide significant savings to the City through the reduction of energy and chemicals necessary for this water treatment plant process. There is an opportunity to replace these membrane trains where they two stage process that utilizes variable speed feed water pumps.
- **Conceptual Engineering and Pilot Testing |** There is an opportunity to select membranes that will eliminate the need for sulfuric acid feed system that is typical of the system.

IMPORTANT PROJECTS

- Water treatment plant membrane softening trains replacement.
- Replacement of up to seven trains, in one project or multiple projects, with the combination of membrane replacement as needed.
- Final selection of new membranes may require bench scale testing and/or piloting.

ACCESS TO A PUMP STATION DESIGN LEAD WITH UNIQUE KNOWLEDGE OF EXISTING SYSTEMS

Chris Barlow, PE served as the engineer record for the City's water treatment plant from 2015 to 2020. During that time he was the project manager and design engineer for the replacement of the City's high service pumps. The experience that Chris brings to the City is unique and will benefit the city through his understanding and knowledge of the existing systems at the water treatment plant.

The City will benefit from Black & Veatch's hydrogeological professional team by having immediate access to a variety of professional hydrogeologists that specialize in surficial and Floridan water supply wells, groundwater modeling, as well as the professional services related to deep injection wells.

Hydrogeology

Our clients have access to our vast amount of Florida-wide and local hydrogeological experience and professionals who possesses expertise in water resources engineering and hydrogeologic services. Our professionals have planned and implemented projects, including groundwater supply development from surficial and Floridan aquifers, surface water treatment and supply systems, reservoirs, aquifer storage and recovery, and concentrate and effluent injection wells, including the deepest wells constructed in Florida. Our team has participated in numerous well-siting, wellfield design, and resource planning projects and has significant experience in providing water resource evaluations and sustainability planning to manage groundwater resources.

Our hydrogeologists lead in innovation with the Smart Wellfield tool, which is a wellfield that is capable of integrating SCADA with a geographic information system (GIS), local hydrogeology, groundwater quality, energy consumption, and wellfield hydraulics information to perform analytics that will result in the optimization wellfield operations. The optimized operations increase the useful life of the wells and ancillary infrastructure and provide cost savings from increased energy efficiency and treatment of a consistent groundwater quality.

Black & Veatch has the most combined aquifer recharge/ASR experience in the state and is comprised of nationally recognized aquifer recharge /ASR experts in permitting, design, construction, and subsurface geochemical processes that cause metals mobilization. Our team has well design, regulatory, geochemistry, and operational approaches for aquifer recharge and ASR systems permitted in Florida. Our team members are well-versed in regulatory changes that are making aquifer recharge/ASR and aquifer recharge standard tools for utilities to maximize use of their water resources.

Black & Veatch's expertise has been utilized to conduct negotiations and resolutions with the U.S. Environmental Protection Agency, along with state and local regulatory compliance issues. **This experience, coupled with our professionals' technical resources and unparalleled understanding of the local geology, makes it possible for them to support clients on a wide range of alternatives for their hydrogeology projects.**

ACCESS TO OUR LOCAL HYDROGEOLOGY EXPERTISE

Ed Rectenwald, PG, PMP

Ed has a MS/MSc in geology and specializes in hydrologic, geologic, and environmental investigations and serves as a Lead Hydrogeologist for Black & Veatch. He has been employed with Black & Veatch since 2018 and has over 25 years of experience.

Some of his relevant experience includes serving as Project Technical Lead on the Miami-Dade Water and Sewer Department Hydrogeological and Engineering Services project. Ed secures all WUP renewals/ modifications and supports our clients with maximizing the benefits from their wellfields.

THE CITY'S HYDROGEOLOGICAL SERVICES

- Reliance on the state's hydrogeological resources that provides the foundation for the City's water supply and effluent disposal needs.
- Reliance on Floridan aquifers for its water supply and deep injection wells to dispose of the wastewater treatment plants effluent.
- Hydrogeological resources are heavily regulated by the state and the City is very responsible in its permitting and compliance with the state.

OPPORTUNITIES

- **Water Use Permit Renewal |** The City's water use permit will need to be renewed providing a unique opportunity to reallocate groundwater supply.
- **Regulatory Constraints |** Deep injection wells that the City relies on have their own regulatory constraints and obligations to the state.
- **Operation & Maintenance |** Training personnel in operating, monitoring, testing and collecting data/reporting of the injection systems.

IMPORTANT PROJECTS

- Rehabilitation and repair of existing water supply wells.
- Updates to water use permitting and groundwater modeling.
- Mechanical integrity tests (MITs).
- Specialized hydrogeologic oversight during construction of new water supply wells or deep injection wells.

BISCAYNE AQUIFER EXPERIENCE

Exploratory Water Use Permit Modification Application

North Miami Beach, FL

Black & Veatch is currently supporting North Miami Beach with the rehabilitation and replacement of aging Biscayne aquifer and Upper Floridan aquifer production wells. This includes the planning for design, construction oversite, and operational testing for the wellfields to increase capacity and have rotational capacity for wellfield sustainability.

INFRASTRUCTURE

Black & Veatch has extensive experience providing comprehensive water and wastewater system infrastructure design and construction, including conveyance systems (in plant and out of plant), effluent outfalls and well development, design and construction administration. Within the past three decades, Black & Veatch has designed more than 20 million feet of pipelines and 180 thousand feet of tunnels across the United States.

Pipelines

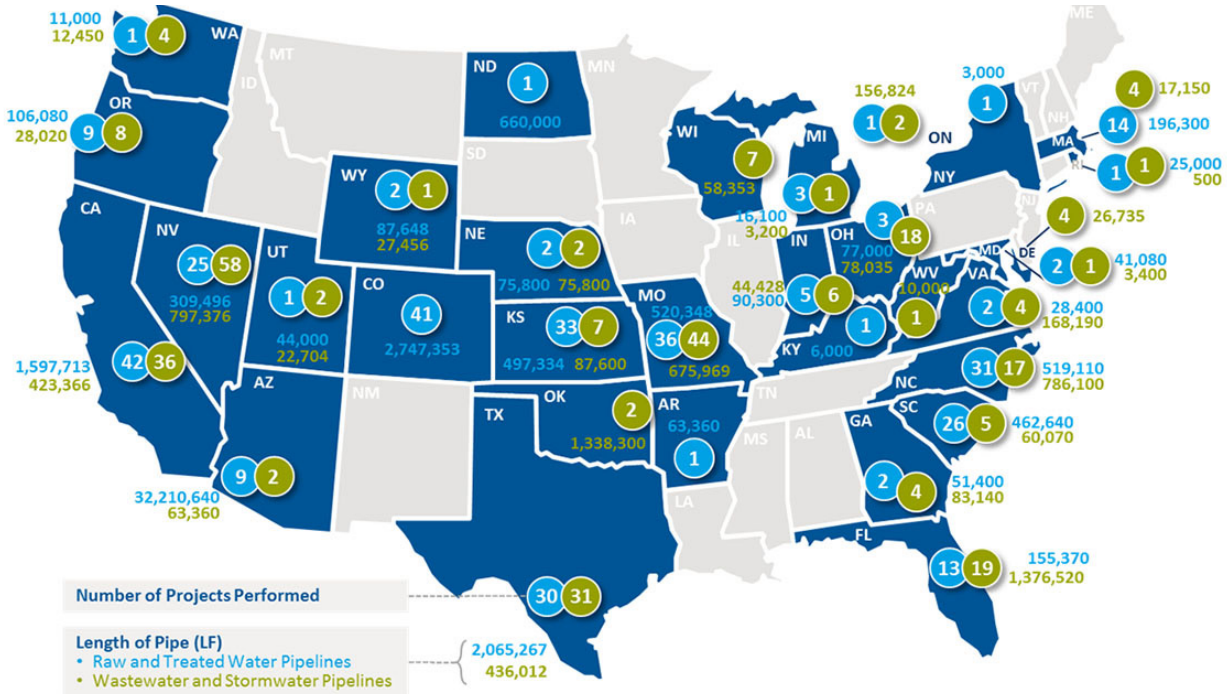
Our linear infrastructure experience includes pipelines that range in diameter from 6 inches to 144 inches using virtually every pipe material, including ductile iron, gray iron, pre-stressed concrete cylinder, PVC, steel cement-lined and coated pipe, and HDPE. Many of our projects have been built in a wide range of soil and groundwater conditions and have required the use of procedures such as dewatering, piling, air pressurizing, and weighting to protect against flotation. We have extensive experience implementing special corrosion measures for highly corrosive soils.

Lift Stations

Black & Veatch brings experience and expertise in virtually every type of pumping condition, pumping equipment, piping size and material, control scheme, and power source. Additionally, **our team possesses in-depth experience with the design of wastewater lift stations that manage grit and solids in the system and provide odor control technologies to minimize impact on the neighborhoods.**

Rehabilitation Experience

Black & Veatch offers a wealth of distribution, conveyance, and collection system rehabilitation experience. Our company has been investigating system conditions and designing the rehabilitation of damaged water and wastewater lines for more than 50 years. We offer expertise in investigation, repair, and detailed design of distribution and conveyance systems. Black & Veatch rehabilitation designs have included all types of materials including vitrified clay, concrete, brick, fiber glass, cast iron, steel and polyvinyl chloride.



Black & Veatch pipeline experience across the United States.

Pump Station Design

Black & Veatch brings experience and expertise in virtually every type of pumping condition, pumping equipment, piping size and material, control scheme, and power source. Additionally, we have successfully conducted surge analyses for many of these systems, including models to simulate surge conditions; field tests to calibrate the model; and surge control devices including surge anticipator valves, air/vacuum valves, control valves, tanks, flywheels, control systems, and other similar equipment.

Black & Veatch has designed all types of pumping stations as stand-alone projects and as integral components of treatment facilities. Our experience includes pump stations with different types of pumping equipment, including horizontal centrifugal, vertical turbine, axial flow, and submersible pumps; constant speed or variable speed capability. Black & Veatch pump stations designs provide maximum flexibility to allow for pumping over a wide range of capabilities. In addition, our designs include pump stations that resemble and are compatible with local aesthetics, each tailored to the particular capacity and head conditions of the project.

Black & Veatch experience includes new pumping stations, as well as upgrades to existing facilities. In addition, the designs can include pump stations that resemble and are compatible with local aesthetics at sensitive historic and cultural sites, each tailored to the particular capacity and head conditions of the project.

FLORIDA PUMP STATION CONDITION ASSESSMENT EXPERIENCE

Pump Stations 452, 458 and 460 - Wetwell Refurbish Project

Broward County, FL

The project included improvements to the existing wetwells for the three pump stations to facilitate access and improve safety when accessing the discharge piping.

Specific improvements included, new wall openings for access; demolition concrete fillets; drainage improvements; removal of existing roof at pump station 462; concrete spalling and crack repairs; and the addition of railings.

Black & Veatch performed engineering design services, bidding support, and services during construction.

Black & Veatch works with utilities to develop tools to help operators reduce energy use at new and existing pumping stations. The dashboard illustrated above helps operators understand real time conditions and see on the same display on/off peak rate schedules, and alarms of energy spikes to minimize demand charges.

EXAMPLES | PUMP STATION DESIGN EXPERIENCE

PUMP STATION DESIGN EXPERIENCE	KEY DESIGN ELEMENTS
Effluent Pump Station Evaluation; Miami-Dade Water and Sewer Department, FL	Evaluation of eight existing pumps (rated at 500 HP each) and whether they should be rehabilitated or replaced
Key West Dennis Street Stormwater Improvements; City of Key West, FL	New stormwater pump station; new multistage centrifugal blowers; replacement for their existing sludge conveyor belt; and a new deep well injection pump
Dr. Phillips Master Pump Station PS 3151; Orange County Utilities, FL	New station; six submersible pumps at 1,000 gpm each; electrical building, VFD, generator, odor control
International Drive Pump Station PS 3370; Orange County Utilities, FL	New triplex station; 1,000 gpm pumps; new electrical, generator, fuel storage
Huggins Pump Station PS 3006; Orange County Utilities, FL	New triplex station; 1,000 gpm pumps; new electrical, VFDs, generator and fuel storage
Southwest Pump Station PS 3597; Orange County Utilities, FL	Design only; five submersible pumps 1,125 gpm each; rehab/expanded wetwell; new electrical building, VFDs, generator, and odor control
OUC South Water Reclamation Facility; Orange County Utilities, FL	Plant expansion to 56 MGD; multiple pumping systems; new electrical, VFDs, SCADA; generators
Hamlin Groves Trail; Orange County Utilities, FL	Design complete; New station; four submersible pumps@3,000 gpm each; electrical building, VFD, generator, odor control
Avalon Road Master Pump Station; Orange County Utilities, FL	Design ongoing; New station; six submersible pumps at 1,000 gpm each; electrical building, VFD, generator, odor control

EFFLUENT PUMP STATION EVALUATION
Miami-Dade Water and Sewer Department, FL

Black & Veatch evaluated the effluent pump station at WASD's 160 MGD Central District Wastewater Treatment Plant (CDWWTP) to determine its ability to accommodate the expected increase in peak flows and reduction of overall average flows resulting from Ocean Outfall Legislation requirements.

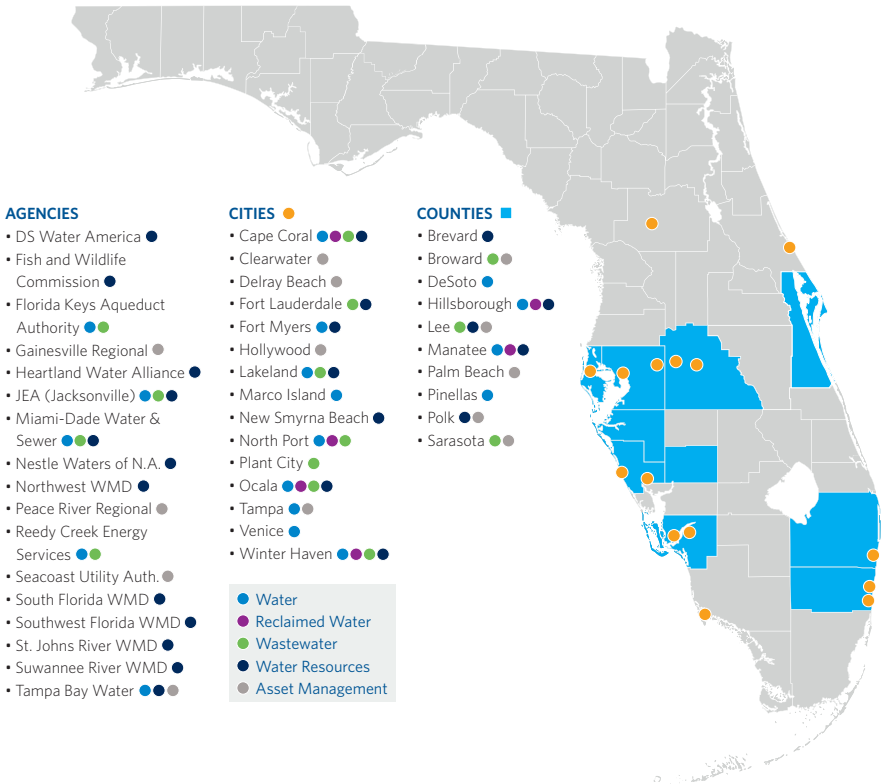
Hydraulic and Transient Modeling

Infrastructure modeling and planning are core competencies at Black & Veatch, and have been for decades. We are industry leaders when it comes to the best practices of analyzing distribution systems throughout the country and are involved with authoring many of the manuals and guidelines used in the water industry. We understand distribution system hydraulics and provide world class services and solutions to clients.

Black & Veatch has completed hundreds of water system models and master plans throughout the country, Florida, and South Florida, including Broward and Miami-Dade County.

Hydraulic modeling in Florida and other coastal communities in the Southeast has its nuances. Elevations are typically flat requiring numerous pump stations and force mains manifolded together and pumping against each other. There is increased inflow & infiltration (I/I), seasonal groundwater infiltration (GWI) contributions, and large/lengthy storm events which can make flow characterization more complex. The Black & Veatch team for this project has a long history of hydraulic modeling in Florida, as illustrated in the map below, and a comprehensive understanding of these nuances.

Florida Modeling Experience



ACCESS TO OUR FLORIDA-BASED HYDRAULIC MODELING EXPERTISE

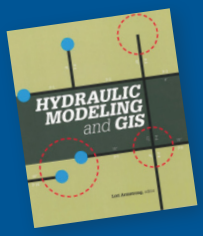
AMANDA SCHWERMAN, PE

Amanda Schwerman is a Florida-based hydraulic modeler. She provides our clients with surge modeling and condition assessment experience to develop comprehensive capital improvement recommendations that balance capacity and risk/condition needs. She is the technical lead for the implementation of the master plan and update to the hydraulic model for Broward County's regional transmission system.

Amanda is extremely knowledgeable of the nuances of Florida water distribution systems, wastewater collection systems, and reclaimed water distribution systems. She uses all of the standard software such as InfoWater, WaterGEMS, and InfoSWMM to analyze capacity, energy optimization, water quality and I&I concerns for utilities.

WE WROTE THE BOOK

Black & Veatch professionals were the primary authors of the Esri publication Hydraulic Modeling and GIS.

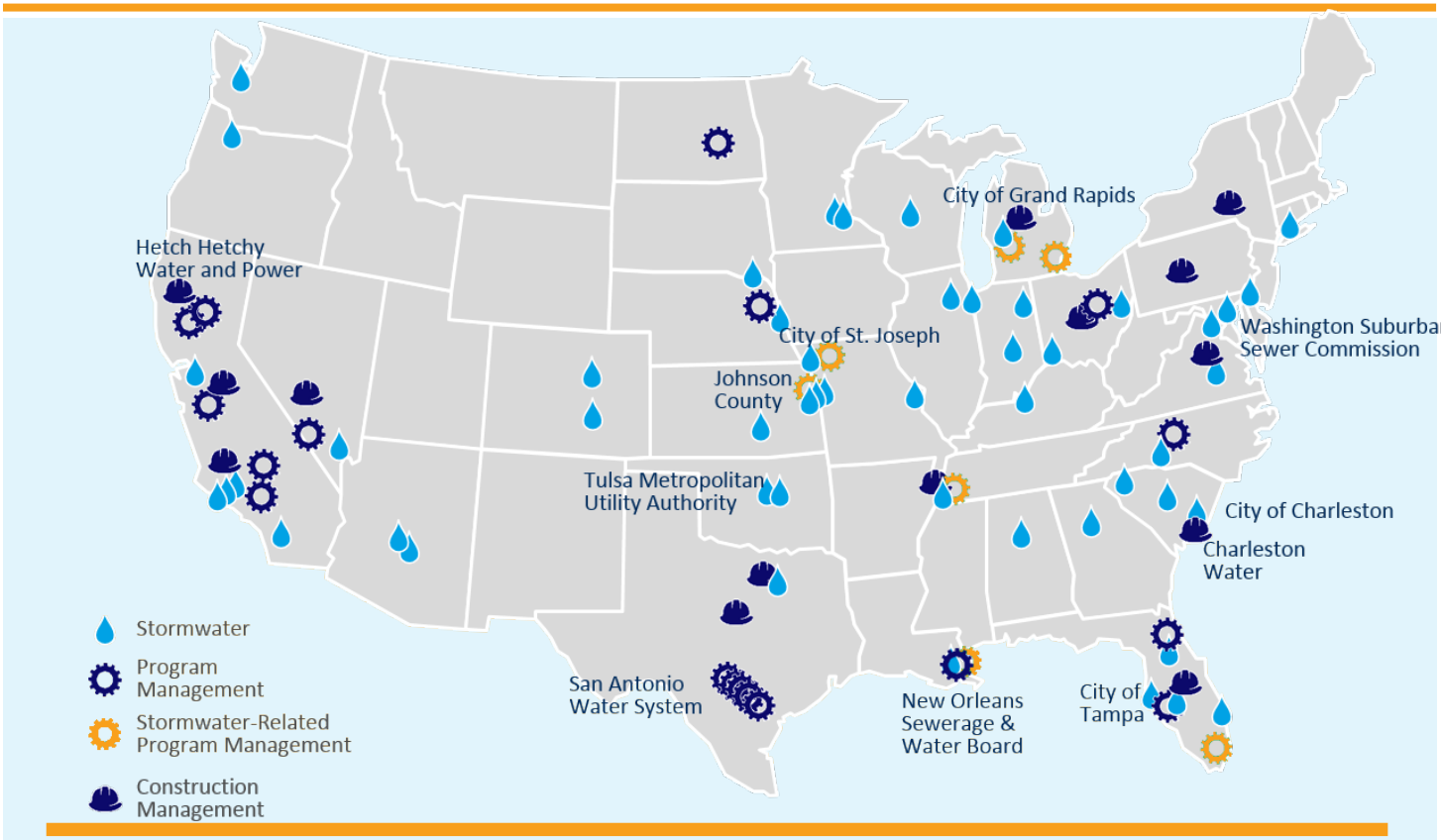


Stormwater

Excess stormwater can force utilities to deal with damaged waterways and watersheds, strained sanitary sewer infrastructure, and regulatory non-compliance. With dedicated wet weather discharge experts located locally and across the country, Black & Veatch helps our clients avert issues, mitigate risks, and respond to events in an appropriate, cost-effective manner.

We offer local expertise backed by our company's wide-range of stormwater management and control services and a global perspective on current trends and innovative approaches. We use the most recent and effective software and technology available, including modeling systems, GIS systems, condition assessment techniques, and rehabilitation technologies. **Our integrated stormwater solutions go farther than traditional stormwater management to efficiently handle what is typically considered a nuisance and to capitalize on the potential to create multiple benefits from improved long-term sustainability and augmented resilience of infrastructure systems.**

Our background in stormwater management is extensive and diverse. The completion of hundreds of stormwater-related studies, as well as numerous comprehensive planning efforts for state and local governments nationwide, enables us to draw upon a wealth of experience. Effective solutions typically involve green infrastructure designs, detention structures, conveyance and open channel systems, underground drainage systems, or combinations of these.



Black & Veatch has delivered stormwater program management, design, and construction management services to solve some of the most complex and technically challenging issues for municipal water clients across the United States. As part of our diverse experience, we have provided program management services to support over $850 Million in stormwater and drain infrastructure improvements just in the last five years.

QA/QC, VALUE ENGINEERING & UTILITY OPTIMIZATION

Operations, Maintenance Consulting, and Training

Black & Veatch has a dedicated Operations Technology Group that is ready to support our clients' staff after projects are constructed or to assist current operation practices. Our team supports O&M staff to efficiently and effectively start up, commission and operate the constructed projects. Example activities, depending on the specific projects, include:

- Pre-commissioning, commissioning and start up procedures
- Execution of full start up and commissioning scope procedures, turnover packages and startup schedule development
- Start up and commissioning execution program
- Outage planning, scheduling, and coordination
- Performance testing, including compliance testing and stress testing
- Operator training
- Hands-on operator training, on the job and classroom, including CEU credit approval
- Operations and maintenance startup procedures
- O&M manual
- Preparation of facility specific operations and maintenance manuals
- Authoring Standard Operating Procedures (SOPs)
- Operations optimization
- Process control optimization and troubleshooting
- On-site technical support for the completion of facility startup and commissioning
- Troubleshooting of water and wastewater processes
- SCADA programming

The City of Hollywood will benefit by having access to seasoned operations professionals and Florida-certified operators that serve as an extension of their staff, in case the additional support is needed, or to provide troubleshooting and training support.

Our Operations professionals are the interface between our engineering/design team and our clients' Operations staff, providing tangible solutions to facilities facing operational difficulties, equipment failure, process upsets, staffing issues, or noncompliance concerns.

The City will realize cost savings and continued beneficial use of the investments that have been made into its Advanced Meter Infrastructure system.

Water System Optimization – AMI

Maximizing the efficiency of operation and optimizing the performance of new and existing treatment facilities is key for a sustainable and successful program. **Benefits of optimization include:**

- Reduced energy consumption and chemicals usage
- Increased control and automation of processes
- Increased life expectancy of equipment
- Increase reliability of systems
- Integration of technologies for Smart Integrated Infrastructure (SII)

Our SII team instills system intelligence by connecting infrastructure assets through a mesh network of smart meters, sensors, edge computing, hardware and software that provides data visualization, real-time analytics and monitoring and diagnostic (M&D) interfaces. Our team assists utilities in understanding actual and projected water use, flow accuracy, and water quality across your systems, which allows our clients to identify and fix water losses, reduce energy costs, and keenly manage resources to prolong equipment life.

Benefits of SII solutions implementation include:

- Detailed real-time analysis towards actionable intelligence and sustainable water resource management
- More intimate customer knowledge and better designed rate plans
- AMI to increase water distribution operational efficiencies, reliability and safety

Black & Veatch's nationally respected water loss experts provide top-level assessment, analysis, and program design to assist utilities in reducing non-revenue water. Our team has worked on all sizes of water loss projects from large, multi-million dollar water loss reduction and infrastructure rehabilitation projects through to small system water audits, leakage detection training, meter testing and all facets of water loss control.

Black & Veatch's Smart Integrated Infrastructure Business offers our clients increased reliability, efficiency, and security.

SMART | Leveraging data from sensors, networks, etc. to improve system performance

INTEGRATED | Systems working together to produce value that could not be achieved independently

INFRASTRUCTURE | Physical assets or systems that play a central role in the "smart community"

Utility Systems Optimization

Black & Veatch executed an overall water-loss reduction strategy project for the Florida Keys Aqueduct Authority, which included an analysis of a combined AMI/AMR system. In addition, we assisted the Miami-Dade Water and Sewer Department with review and audit of meter installations and maintenance, meter reading and billing practices.

THE CITY'S AMI NEEDS

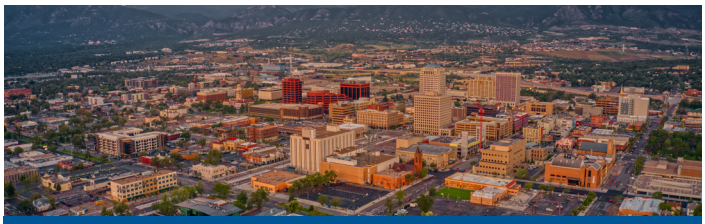
- Existing AMI system has had its difficulties since inception and is an issue for the utility departments operations.
- The system is near the end of its useful life and has had several recent upgrades provided by its vendor Aclara.
- The City has been experiencing challenges due to the supply chain causing long lead times for delivery of materials and inflated costs of electronic systems.

OPPORTUNITIES

- **AMI System Evaluation |** AMI system is at the end of the useful life and the condition will need to be evaluated so the City can make a more informed decision on the value of the existing assets and the most prudent approach to utilizing the AMI infrastructure.
- **Aging Infrastructure |** Need to replace AMI system if existing system can not be upgraded. Black & Veatch supported the City by developing the solicitation for the replacement of their system once the City decides to implement the project.

IMPORTANT PROJECTS

- Modernization of AMI.
- Support in contract modifications with existing AMI supplier to improve maintenance service contract.
- Field support and coordination for installation of new meters.



AMR TO AMI UPGRADE

Colorado Springs Utilities (CSU)

Black & Veatch assisted CSU with this project which encompassed a replacement strategy of AMR to AMI that included new use cases for water pressure, water temperature, leak detection, hydrant monitoring, gas-specific gravity and heating values, remote disconnect/reconnect, street light automation, voltage conservation, home energy management, smart inverters, smart chargers, pressure management, and various other needs of the city and utility that could be scalable.

WATER AMI FEASIBILITY

Colorado Springs Utilities (CSU)

Black & Veatch performed an assessment for the City that involved that strategy and AMI feasibility and business case analysis. Black & Veatch reviewed the City's current situation and requirements, evaluated the results and effectiveness of various AMI architectures, accessed relevant market-leading solutions, evaluated available options and scenarios, identified pilot designs, and recommend the appropriate actions for the City to pursue.

SCADA

SCADA is used to monitor and manage the real-time operations of water treatment/distribution. The system gathers operational parameters and enables operators to control the facilities.

Often data from the SCADA database is used to calibrate and verify the system modeling (hydraulic, power, etc.), as well as to analyze system performance under a variety of conditions. By linking the GIS and SCADA systems, current and/or historic operational data can be analyzed geographically; leading to a better understanding of the network conditions.

The Black & Veatch team provides Florida utilities with a variety of control systems and SCADA engineering services, including planning, design, system integration, testing, startup and commissioning, training, and documentation. For the past 30 years, we have focused on developing our technical capabilities in process control, SCADA system application development, and system integration. Today, we have an excellent team of experienced developers who are involved in implementing best-in-class solutions based on industry standards and best practices, specifically for water and wastewater utilities.

Our instrumentation and control engineers, as well as our programmers, are knowledgeable of multiple platforms and control systems.

Black & Veatch conducts cost-of-service based rates studies in a systematic manner that provides utilities with a reasonable and defensible mechanism to recover system costs.

AUTOMATION AND SCADA IMPROVEMENTS

Southern Regional Wastewater Treatment Plant | Hollywood, FL

The SCADA system was modified to improve automation. Black & Veatch provided the facility's operators with a step-by-step guide on the HMI and the ability to monitor the automatic or semi-automatic startup and shutdown sequences for multiple processes at the wastewater plant.

The programmable logic controllers (PLCs) for the lime stabilization and dewatering system were updated based on the control descriptions and programming standards developed to improve operations.

Laurie Kusmaul is very good. She really stepped up and resolved an issue that was impacting our transition from Auxiliary Power back to FPL Power by rerouting and programming a network connection that had been plaguing the plant for many years. Now, the system is working flawlessly.

- KEITH HAAS
SEACOAST UTILITY AUTHORITY

The City will rapidly rebuild momentum with its strategic asset management program with Black & Veatch leading integrated Cityworks process improvements and strategic asset management program development.

Asset Management

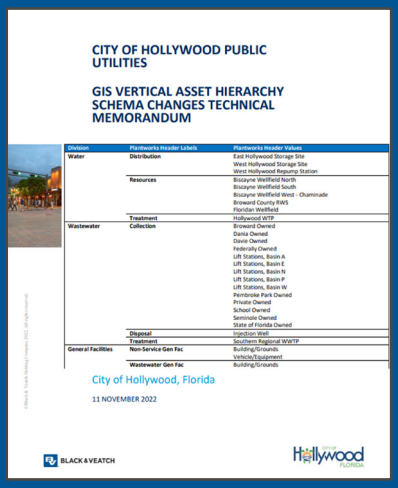
The City has begun to implement a strategic asset management program and has migrated away from a legacy CMMS (Accela) to Cityworks. Black & Veatch's goal is to guide the development of the City's strategic asset management program to minimize operational risk while optimizing asset life and planning asset maintenance and ultimate replacement in a pro-active risk-based approach. We helped the City define standardized asset condition assessment criteria so that both the water system and sewer system master plans utilized a standardized condition assessment methodology that is building the foundation of a risk-based approach to asset optimization.

Developing a strategic maintenance strategy will also allow the City utilize a standard framework to prioritize O&M resources and increase asset availability and performance while reducing risk. The maintenance strategy can be executed and managed through the City's enterprise asset management system, Cityworks, to more effectively monitor and maintain critical assets while feeding real-time updates to enterprise performance dashboards measuring Key Performance Indicators (KPI) based on Level of Service that Black & Veatch and City staff have already defined. This ultimately leads to the ability to develop and implement a dynamic maintenance plan based asset management principles and measured with existing systems that Black & Veatch has helped the City to implement.

WORK ORDER COMPLETION & CLOSE-OUT *(last 12 months)*

City of Hollywood draft KPI dashboard built by Black & Veatch based on City and Black & Veatch defined Levels of Service KPIs.

Black & Veatch will help the City fulfill it's enterprise asset management program in a strategic manner that allows asset management principles to be applied to new engineering projects efficiently and consistently to allow the City a balanced and measurable means to minimize risk and optimize asset life while using a data-driven approach to decision-making.


CITY OF HOLLYWOOD PUBLIC UTILITIES

GIS VERTICAL ASSET HIERARCHY SCHEMA CHANGES TECHNICAL MEMORANDUM

City of Hollywood, Florida

11 NOVEMBER 2022

BLACK & VEATCH

Hollywood FLORIDA

LOCAL EXPERIENCE

Asset Management Program | City of Hollywood, FL

Black & Veatch is providing initial asset management program development through several task orders. Tasks supporting this program development include:

- Condition assessment program support for both water system and sewer system master plans
- Vertical asset registry development
- Levels of Service (LoS) definition
- Implementation of Cityworks AMS
- Cityworks administration and support
- COH-Public Works Department Cityworks deployment and support

Black & Veatch has dedicated resources that are experienced in identifying and securing grant funds for municipal clients. These funds will offset the City's financial burden necessary to meet its goals that will be identified in the water, wastewater, and stormwater master plans.

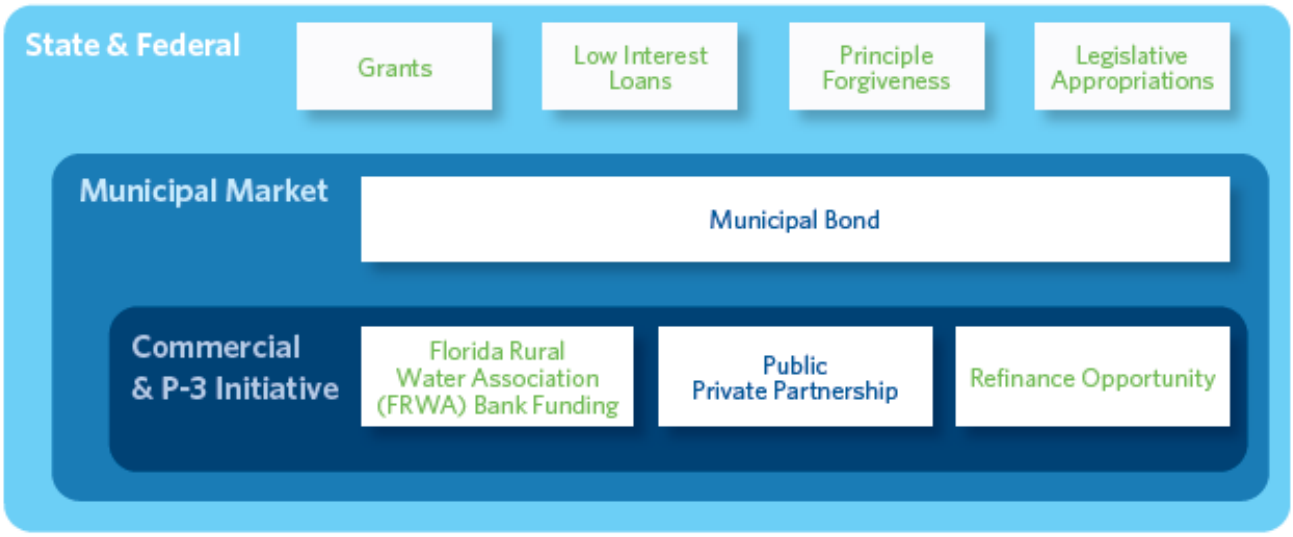
Alternative Funding

Black & Veatch's experienced Alternative Funding Evaluation and Sourcing (AFS) specialists identify and evaluate funding and financing sources, explore alternative delivery models to identify additional funding sources and cost savings, tie in energy brokerage opportunities, and generate revenue to maximize overall project value.

Black & Veatch's funding exploration includes Water Infrastructure Finance and Innovation Act (WIFIA), Department of Transportation (DOT), State Revolving Fund (SRF), Federal Emergency Management Agency (FEMA), Community Development Block Grant (CDBG), U.S. Department of Agriculture (USDA), Department of Energy (DOE), federal and state grant and loan programs, bridge financing, private financing, and the recent multi-layered federal infrastructure funding plan that includes the American Rescue Plan Act (ARPA), the Infrastructure Investment and Jobs Act (IIJA), Earmark funding, and ongoing and annual appropriations funding. In 2020 and 2021 alone, Black & Veatch developed funding evaluations for over $10 billion in projects and helped secure over $5 billion in project funding, including five WIFIA Letters of Interest, all successful, totaling $275 million.

Black & Veatch identifies funding opportunities by matching specific project elements with program goals, objectives, and eligibility requirements to maximize funding program ranking scores. In planning funding pursuits and eventual application, we strategically leverage state and federal programs and matching funds to optimize funding opportunities and decrease the burden on ratepayers.

In 2021, Black & Veatch developed FEMA benefit-cost analyses (BCAs) demonstrating cost-effectiveness for over $1 billion in projects, including a major City of Houston wastewater treatment plant consolidation project. Power loss at wastewater facilities may cause loss of wastewater service, which FEMA BCA guidance values at $58 per day per capita, or $34.8 million per day. Black & Veatch uses historical event information and plant operational information, to quantify avoided damages and develop a benefit-cost ratio that supports a competitive FEMA funding application.



Black & Veatch identifies funding opportunities by matching specific project elements with program goals, objectives, and eligibility requirements to maximize funding program ranking scores.

THE CITY'S ASSET MANAGEMENT AND GRANT APPLICATION NEEDS

- Funding the City's pending master plan CIP projects will likely exceed the City's financial capacity.
- The City is beginning to develop the foundation for an asset management program.
- The City has multiple strategic asset management efforts ongoing through their existing master plan.

OPPORTUNITIES

- **Identify and Secure Grants |** The City will need to identify and secure grants to fund the pending master plan. Black & Veatch has dedicated resources highly experienced in identifying and securing low-interest loans and grants.
- **Utility System Management |** Established asset management programs are key components to grant applications and efficient management of a municipal water resources system. Black & Veatch will continue to support the City in developing the foundations for an asset management program while helping establish a framework for long-term success.
- **Project Management System |** As part of the City's AMP and master plan projects CIPs, there will be numerous projects identified that the City would need to implement in the near term and long-term future. This pending new wave of projects needs to have they plan and tools that will be used to manage the projects from conception to completion allowing the City to efficiently and effectively organize its CIP's to know each project's schedule and budget.

IMPORTANT PROJECTS

- Grant application and grant management for CIP projects.
- Asset management program utilizing the pending master plans.
- Develop a Project Management Information System (PMIS).
- Full implementation of Cityworks.
- Strategic GIS Support.

FLORIDA EXPERIENCE

Winter Garden SRF | Winter Garden, FL

Black & Veatch is the funding lead for this project, in a collaborative effort with City Staff, Atkins, Raftelis, and Funding Agency Staff to develop multiple funding sources on a single project. SRF is the primary funding program, with Black & Veatch securing planning and design activities of more than $6.1 million. The overall SRF request will be $60 million over three years. Tasks include full funding coordination and support of a request for inclusion (RFI) applications during each project phase.

Construction Services

Our clients benefit from our proven Florida experience and ability to manage projects from concept to completion, as well as our ability to seamlessly integrate our team as an extension of their staff.

Our construction services include the following:

Construction Cost Estimating

As a leading contractor in the water and wastewater industry, over half of our company's project volume comes from design-build projects. The resulting expertise and available estimating tools and resources enable us to develop accurate construction cost estimates to support the budgeting process.

Bidding Phase Services

Black & Veatch routinely administers the advertising of construction contracts and will help receive competitive bids from qualified contractors and timely award of the contract. Through identifying prospective contractors and suppliers, conducting a pre-bid conference, responding to questions from bidders, preparing addenda, and evaluating bids and qualifications, we will help maximize the competition on projects, and recommend the bid providing the best value for our clients.

Construction Phase Services

A full array of field and office related construction services can be provided to ensure that the construction work is being carried out in accordance with the contract. Black & Veatch has qualified individuals experienced in observing the construction work. Following construction, we will prepare record drawings to document changes that occurred during construction.

Construction Management

Our team offers a combination of proven construction management experience and technical excellence to drive its projects through construction to successful startup and operation. Black & Veatch manages projects in a manner that provides our clients with control of project safety, cost, schedule, and quality using Black & Veatch's integrated construction management system and experienced engineers and construction personnel. We manage construction projects as though they were our own, with the same project management philosophy and systems Black & Veatch uses for our own "at risk" construction projects.

LOCAL EXPERIENCE

WO-4 GG4 Weir CPS Construction Phase Services

Golden Gate, FL

Black & Veatch, as part of the OMRR&R general engineering services contract with SFWMD, developed ready-to-advertise bid documents to construct a replacement structure for the Golden Gate No. 4 Weir Structure (GG4).

The structure included a weir, large sluice gates, canal stabilization, and a new control building. Black & Veatch also provided Engineering During Construction (EDC) services throughout the duration of the construction.

Black & Veatch performed regular audits to ensure compliance with quality procedures. The same project professionals remained throughout the duration of the design and during the EDC services for consistency.

Black & Veatch professionals also adapted quickly to E-Builder Contract manager, and provided on-site engineering assistance during construction, when required.

Construction Cost Estimates

Accurate construction estimates are a key element that helps our clients properly budget and control project costs as the designs progress. In addition to being a design firm, Black & Veatch is also leading contractor in the water and wastewater industry. The resulting expertise and available estimating tools and resources enables us to develop accurate construction cost estimates to support the budgeting process.

EXAMPLES | CONSTRUCTION COST ESTIMATES ACCURACY

Project/Location	Engineer's Estimate	Actual Low Bid	% Difference
Williams WTP Process Control System Replacement, Lakeland, FL	$2,000,000	$1,904,000	-5
Nature's Way Pump Station Upgrade, Hillsborough County, FL	$2,541,000	$2,535,488	-0.2
Oberly and Washington Terrace PS Improvements, St. Petersburg, FL	$7,939,313	$7,770,000	-2
T-Bar Well Field Development, Midland TX	$156,800,742	$157,900,742	1

The table above provides a few examples of our recent performance on construction cost estimates.

Black & Veatch is Committed to Providing Cost-Effective Design Solutions and Accurate Construction Cost Estimates

We will do this by:

- Leveraging our Florida-based construction estimators to develop estimates that can be used to balance beneficial project features with our clients' construction budgets
- Using our experience as a construction company to engage our professionals in constructibility reviews to ensure the proposed design solutions are practical and can be built, minimizing the potential for change orders
- Utilizing our Florida-based Operations team to deliver cost-effective designs that promote safety and ease of operations and maintenance
- Following Black & Veatch's established design and quality assurance and quality control procedures
- Providing independent project quality reviews and verification of the project deliverables
- Performing regular project quality audits to ensure compliance with all quality procedures

Our clients receive construction cost estimates that properly represent local market conditions from our Florida-based construction estimators.

VOLUME OF WORK WITH THE CITY IN THE PAST FIVE YEARS

Project Name Total	Invoiced to Date $2,067,833	Work Order Amount $2,788,826
Cityworks Phase I-B	$144,354	$426,346
Phase I Asset Management Consulting Services	$82,157	$324,973
Public Works - Cityworks Implementation	$220,048	$379,930
AMI Procurement - Phase 1	$112,479	$141,356
AMI Analysis Planning & Support	$49,325	$49,326
Utility Wide Sec. Assessment & CCTV Install - Phase 1	$84,589	$84,589
Cityworks Implementation Final	$387,057	$388,852
Automation and SCADA Evaluation	$693,994	$693,994
SRWWTP SCADA Improvements Phase II	$293,830	$299,460

PROJECT EXPERIENCE

Our clients benefit from our team's extensive knowledge acquired through working on previous contracts throughout Florida for water, wastewater, infrastructure, and value engineering projects and studies. Our proven project management approach will allow the City to meet their needs and achieve success in meeting schedule, budget, and quality goals.

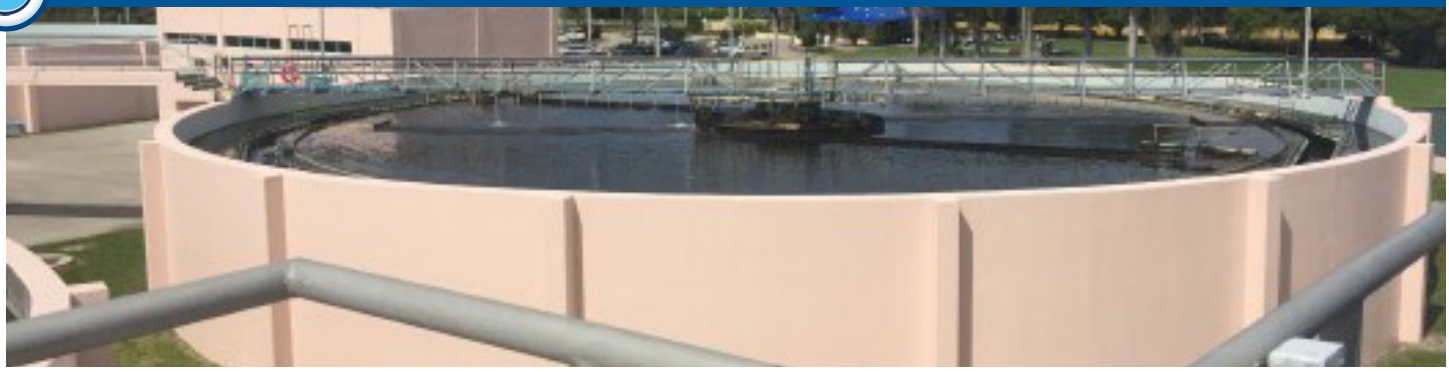
We have performed continuing services contracts for more than 300 Florida agencies and utilities and have completed more than 1,000 individual tasks orders of engineering assignments under these contracts. Our long and successful history of serving Florida clients through continuing engineering services contracts has allowed us to have a thorough understanding of similar utility systems, and this knowledge is unparalleled. The benefit to the City of Hollywood is that there is no learning curve with our team, which results in a quick project start-up and expedited project schedule.

The following pages include project experience descriptions that are of similar size and scope and demonstrate Black & Veatch's ability to provide high-quality design deliverables that met initial schedule and budget estimates.

Black & Veatch is committed to providing high-quality deliverables, including design documents and cost estimates. Our team will complete the City of Hollywood's projects on-time and on-budget, while being responsive to stakeholder needs.

Along with highlighting our proven success on similar projects on the following pages, **Tab G, References, highlights references from previous clients on projects of similar scope and size.**

SERVICE AREA: **WASTEWATER TREATMENT**



General Engineering Services

CITY OF HOLLYWOOD UTILITIES | HOLLYWOOD, FL

Black & Veatch has been providing continuing engineering services for the City of Hollywood for water and wastewater infrastructure projects. The following tasks have been performed to support the City's asset management strategy.

Southern Regional WWTP - SCADA System Improvements. Provided the facility's operators with a step-by-step guide on the HMI and the ability to monitor the automatic or semi-automatic startup and shutdown sequences for multiple processes at the wastewater plant. Black & Veatch developed process control strategies and I/O lists, which served as the basis for the PLC and HMI programming. We also programmed a total of 20 PLCs at the wastewater treatment plant.

Cityworks Implementation. Provided an initial assessment of data in the existing Accela database, GIS, and the systems integration requirements with Tyler Technologies MUNIS system. The Accela system was replaced by Cityworks. The Phase I implementation was done for the public utilities department (water treatment plant and distribution, wastewater treatment plant, lift stations and collection systems).

Phase I Asset Management Services. Developed an Asset Management Roadmap detailing the tasks required to develop and implement an Asset Management Program. Through collaboration with the City's stakeholders, management and staff during workshops and reoccurring meeting are defining the asset hierarchy and key performance indicators necessary to collect operations and capital improvement data from Cityworks and Oracle to have a transparent and defendable system of actual and projected costs for the utility.

AMI. The need to evaluate possibly upgrading and replacing the aging AMI system was initiated by providing the City with an overview of current AMI technology options that includes a five-year roadmap and providing a basic high-level cost analysis regarding. These workshops resulted in a general overall description of the existing system and established the City goals for the replacement of the AMI system that was incorporated into a solicitation for these improvements for the replacement of the AMI system.

RELEVANCE TO THE CITY

- SCADA and programming
- Pumping systems
- Asset management
- CMMS implementation
- Wastewater, reuse treatment systems

YEAR COMPLETED

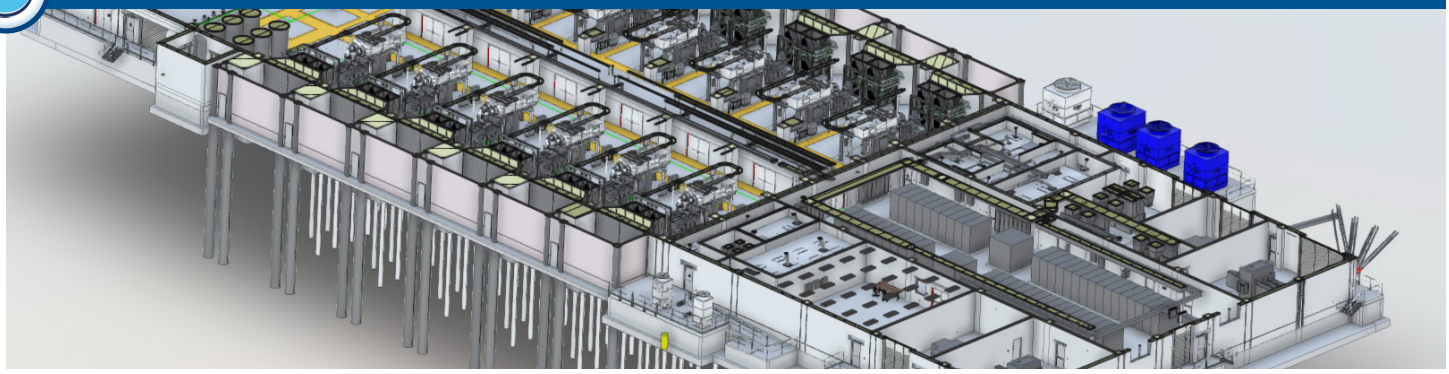
Ongoing

KEY TEAM MEMBERS

Isabel Botero, Chris Barlow, Laurie Kusmaul, Carlos Ortega, Melissa Velez, Mark Seastead, Matt Morey

Through the development of the energy efficiency study, the team defined projects that will provide the City with 15% in energy savings. Multiple projects recommended under the study has been executed, bringing cost savings to the City. The analysis included the wastewater and disposal systems.

SERVICE AREA: **WASTEWATER TREATMENT**



Ocean Outfall Legislation Professional Services Agreement

MIAMI-DADE WASD | MIAMI, FL

In 2008, the Florida Legislature approved and the governor signed a law requiring all wastewater utilizing ocean outfalls, the Ocean Outfall Legislation (OOL), for disposal of treated wastewater to reduce nutrient discharges by implementing advanced wastewater treatment by 2018 or equivalent; cease using the outfalls by 2025; and reuse 60% of the wastewater flows by 2025. WASD contracted with Black & Veatch to provide services for its facilities in response to OOL.

SDWWTP Project ST-2D Electrical Distribution Building 3. Black & Veatch was contracted by the WASD to provide engineering services for the design, permitting, and bid phase of a new Electrical Distribution Building 3 (EDB3) at the South District Wastewater Treatment Plant. The SDWWTP is a 112.5 MGD average secondary wastewater treatment plant that serves industrial as well as residential users. The SDWWTP utilizes an activated sludge treatment process with high purity oxygen for liquid treatment and an anaerobic digestion system for handling the sludge produced from the liquid treatment process.

As the prime consultant, Black & Veatch's services included upfront engineering assessments and technical studies, 100% detailed design, and permitting services. Design work at EDB 3 includes all related disciplines including: Civil/Sitework/Architectural/Building Mechanical (HVAC) Building Mechanical (Plumbing)/Building Mechanical (Fire Protection)/ Instrumentation and Controls/Process Mechanical and the air permitting for new generators at EDB 3 and EDB 2.

Moreover, Black & Veatch's electrical design work included close coordination with Florida Power and Light (FPL) and the development of detailed designs and specifications for the Electrical Distribution Equipment, Standby Engine-Generators, Building Services, Primary Selective Feeders and the Duct Bank System.

RELEVANCE TO THE CITY

- Electrical improvements
- Backup power generation
- Wastewater treatment plant systems

YEAR COMPLETED

Ongoing

KEY TEAM MEMBERS

Isabel Botero, Lucas Botero, Tammy Martin, Irene Testa, David Garcia, Pablo Gala-Serra Melody Gonzalez, Arturo Burbano, Danny Chadwick
Mike Mackenzie

Black & Veatch serves as Ocean Outfall Legislation wastewater consultant to Miami-Dade WASD. By applying our leading water-energy industry knowledge, Black & Veatch identified a scenario for the SDWWTP Electrical Distribution Building 3 Project that offered $250M cost savings by moving from the "status quo" diesel-only generators to a hybrid diesel and/or natural gas solution.

SERVICE AREA: **WASTEWATER TREATMENT**

General Engineering Services - Clarifier Rehabilitation - Multiple Phases

BROWARD COUNTY WATER AND WASTEWATER SERVICES | POMPANO BEACH, FL

As part of the Continuing Engineering Services provided to Broward County since December 2013, Black & Veatch provided technical support and services during construction for the rehabilitation of multiple Clarifiers located at the North Regional Wastewater Treatment Plant (NRWWTP). Clarifier Rehabilitation phases include the following:

Clarifier B-1 and B-3 Rehabilitation – Technical Review and Engineering Services. Components of existing clarifier basins B-1 and B-3 required replacement of the equipment in each basin. Black & Veatch performed a technical review of the Ovivo proposal for technical completeness and fairness of price, site visits to review current clarifier condition, and performed an engineering technical review of shop drawing submittals.

Clarifier B-1 and B-3 Rehabilitation –Construction Management Services. The construction phase of the Clarifier B-1 and B-3 Rehabilitation is currently in progress. The team is providing construction management services including a RPR, and specialty inspections performed by discipline specific inspectors for the work being performed by Ovivo.

Clarifier C-3 and C-4 Rehabilitation – Technical Review and Engineering Services. Black & Veatch performed an engineering technical review of the Ovivo proposal for the demolition and installation of new mechanisms, as well as a complete replacement access walkway system, conducted site visits to review current clarifier condition, and performed an engineering technical review of shop drawing submittals submitted by Ovivo.

Clarifier C-3 and C-4 Rehabilitation – Construction Management Services. Black & Veatch will provide construction management services for the rehabilitation work to be performed by Ovivo. The construction management services will include a RPR to observe Ovivo's work, as well as specialty inspections performed by discipline specific inspectors.

RELEVANCE TO THE CITY

- Wastewater treatment rehabilitation
- Clarifier rehabilitation
- Technical review

YEAR COMPLETED

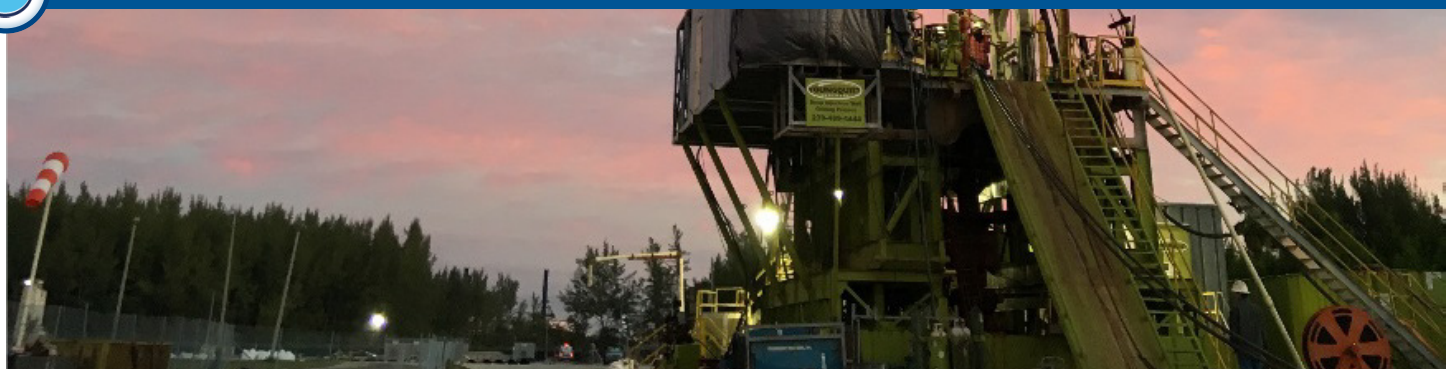
Ongoing

KEY TEAM MEMBERS

Rafael Frias, Isabel Botero, Tammy Martin, Kevin Cevallos, Brad Vanlandingham

On-time delivery of necessary clarifier improvements while maintaining the wastewater treatment operational during the construction process. Close coordination with operations staff allowed for multiple construction projects to happen seamlessly at the NRWWTP.

SERVICE AREA: **WASTEWATER TREATMENT**



Hydrogeologic Services for Design and FDEP UIC Permitting of Injection Wells and OOL Program CMS

MIAMI-DADE WASD | MIAMI, FL

Black & Veatch was contracted as a subconsultant for WASD to provide specialized hydrogeologic consultant services for the planning, design, permitting, procurement and construction of injection wells at WASD wastewater treatment plants. WASD is implementing a comprehensive multi-year capital improvement program to upgrade current infrastructure, so it can continue to provide high level service to its residents while also addressing future growth demands and the requirements of the Ocean Outfall Legislation. Scope elements of Black & Veatch's subcontract include:

Engineering Design and FDEP UIC Permitting of Injection Wells at the North District, Central District, South District, and planned West District Wastewater Treatment Plants. Black & Veatch is providing technical review for FDEP UIC permitting, design, and procurement of contractor assistance of Class I municipal/industrial injections wells and associated dual-zone monitor wells at three treatment plants. Black & Veatch is also providing technical, permitting and pre-construction support for a Class V, Group 9 Exploratory Well at the planned West District Wastewater Treatment Plant (WDWWTP).

OOL Program Injection Well Services During Construction: SDWWTP and CDWWTP. Black & Veatch will conduct technical reviews in support of prime contractor Services During Construction (SDC) for the drilling and testing of the three new injection wells at SDWWTP (SE-2), seven new injection wells and four dual-zone monitoring wells at CDWWTP (CE-2) designed to meet the conditions expected for the design year of 2035. During construction, Black & Veatch will support site work, mobilization, drilling, testing, and reporting. Black & Veatch will also perform a review of the operational testing request, the associated operations and maintenance manual, and operation permit application for the industrial injection well system at the CDWWTP.

RELEVANCE TO THE CITY

- Class I municipal injection wells
- Dual-zone monitoring wells injection
- Well design/siting injection well
- Construction inspections

YEAR COMPLETED

Ongoing

KEY TEAM MEMBERS

Rafael Frias, Isabel Botero, Olena Lytvyn, Ed Rectenwald, Anamaria Sarmiento

The technical support required to obtain the permits for multiple deep injection wells will support compliance with the Ocean Outfall Legislation requirements. The Black & Veatch teams provide 24-hours field observation during the drilling operations for quality assurance.

SERVICE AREA: **WASTEWATER TREATMENT**

General Engineering Services

CITY OF KEY WEST | KEY WEST, FL

Black & Veatch has been providing continuing engineering services for the City of Key West since 2012. Projects executed include wastewater treatment, wastewater collection system and the stormwater system. Under the current agreement (2017-2022), Black & Veatch has executed design, bid phase services, and construction phase services for the following components of the wastewater treatment plant.

Blower and Switchgear Design, Bid Phase and Construction Phase Services. These upgrades to the aeration system and supporting electrical system included the addition of four new blowers to increase redundancy for the aeration basins. The electrical switchgear for the Richard Heyman Environmental Protection Facility (RAHEPF) was at the end of its useful life and it is also being replaced due a planned transformer upgrade by Keys Energy Services.

Deep Injection Well Pump Design, Bid Phase and Construction Phase Services. These improvements included the addition of a new 500-hp deep injection well at the (RAHEPF) to provide additional redundancy to the disposal system. Also, HVAC improvements to the existing electrical room were included to ensure proper operation of the new VFD included with the additional pump. Bid and construction observation services were also provided.

RAS/WAS Pumps Replacement. Replacement of four RAS and two WAS pumps, motors and VFDs including above grade piping, pipe support, valves and another appurtenance. This task will include the replacement in kind of the existing RAS and WAS pumps as well as the replacement in kind of the existing glass lined Ductile Iron pipe.

RELEVANCE TO THE CITY

- Wastewater treatment
- Aeration systems
- Aging electrical infrastructure
- Deep injection wells
- Pumping systems

YEAR COMPLETED

Ongoing

KEY TEAM MEMBERS

Isabel Botero, Tammy Martin, David Garcia, Melisa Velez, Lucas Botero, Pablo Gala-Serra, Irene Testa, Melody Gonzalez, Olena Lytvyn

The new blower technology selected and control strategy developed will reduce energy consumption and operational costs of the aeration system. The new electrical switchgear will be able to handle current and anticipated loads with additional reliability for the plant.

SERVICE AREA: **WATER SUPPLY AND TREATMENT**

High Service Pump Station Improvements at Preston Water Treatment Plant

MIAMI-DADE WASD | MIAMI, FL

Black & Veatch is currently executing multiple tasks authorizations under a general engineering services agreement for renewal and replacement projects related to the John E. Preston Water Treatment Plant, as well as the raw water wells and the treated water distribution system, including treated water storage tanks, pump stations and potable water distribution piping.

This project includes the design of a new electrical room to house new AFDs and RVSS for the existing high service pumps and a new enclosure with a new switchgear to replace the existing switchgear located in the existing pump room. The electrical upgrades include a new electrical room on the existing Generator Building #2 mezzanine including three adjustable frequency devices (AFD) and one reduced voltage soft starter (RVSS) for the three existing 45-MGD pumps and the one existing 30-MGD pump. This will allow to improve reliability and flow and pressure control in the distribution system.

The design will also include a new switchgear with its enclosure located next to the existing Generator Building #2. The existing synchronous pump motors, four 1,500 HP and three 700-HP will be replaced with new induction motors. Two of the existing 15-MGD pumps will be dismantled to allow for additional future pump capacity expandability.

RELEVANCE TO THE CITY

- Facility inspection
- System assessment
- Capital improvement program

YEAR COMPLETED

Ongoing

KEY TEAM MEMBERS

Isabel Botero, Tammy Martin, Kevin Cevallos, Rafael Frias, Melissa Velez, Olena Lytvyn, Ed Rectenwald, Melody Gonzalez, Irene Testa, Arturo Burbano, Danny Chadwick Mike Mackenzie

An evaluation of current and future flows was performed as part of the design. Per the results of the evaluation, some pumps were recommended to have new AFDs to ensure a more accurate flow control and energy savings.

SERVICE AREA: **WATER SUPPLY AND TREATMENT**

Renewal and Replacement General Engineering Services

MIAMI-DADE WASD | MIAMI, FL

Black & Veatch is currently executing multiple tasks authorizations under a general engineering services agreement for renewal and replacement projects related to the Hialeah and John E. Preston Water Treatment Plants, as well as the raw water wells and the treated water distribution system, including treated water storage tanks, pump stations and potable water distribution piping.

Task Authorization No. 3: Drinking Water Storage Tank Inspection & Certification. Black & Veatch provided Miami Dade Water and Sewer Department with the structural inspection for some of their Drinking Water Ground Storage Tanks (GST).

Black & Veatch will provide a Structural Engineer (Inspector) with experience inspecting steel and pre-stresses concrete drinking water GST. The Inspector will come to the site with all necessary personnel protection equipment (PPE). The Inspector will perform the structural assessment for the interior lining, floor, tank cover and exterior walls.

Task Authorization No. 11 - Hialeah WTP – Elevated Backwash Tank.

Black & Veatch is providing design, permitting, bid, and construction phase services for the addition of a new elevated backwash tank at the Hialeah WTP. The project includes installing a new backwash elevated tank along with new interconnected tank fill/ filter wash line and executing the tie-in to the existing filter backwash inlet pipeline. The new backwash elevated tank will be equipped with access ladders, overflow line and fill/drain line. The new pipeline will be connected to the existing 12-inch emergency tank fill line and to the existing 16-inch was water tank fill line through two existing manholes. Tank level telemetry transmitters will be included to control the existing backwash pump.

RELEVANCE TO THE CITY

- Facility inspection
- System assessment
- Capital improvement program

YEAR COMPLETED

Ongoing

KEY TEAM MEMBERS

Isabel Botero, Tammy Martin, Rafael Frias, Melissa Velez, Olena Lytvyn, Melody Gonzalez, Irene Testa, Emeliz Torres, David Garcia, Pablo Gala-Serra, Arturo Burbano, Danny Chadwick, Mike Mackenzie

Innovative technologies also allow for the inspections of the tanks even when the tanks cannot be dewatered. For these instances, Black & Veatch analyzes the video report produced by a diver.

SERVICE AREA: **WATER SUPPLY AND TREATMENT**

General Engineering Services for Water Treatment Plant

CITY OF DEERFIELD BEACH | DEERFIELD BEACH, FL

Black & Veatch assisted the City with several different projects, including engineering services for the development and implementation of an AMI strategy, engineering services for the East Water Treatment Plant Site Improvements, engineering services for the Accelator Rehabilitation, and engineering services during construction for the Accelator Rehabilitation.

AMI Strategy Development. Black & Veatch worked with the City to develop their AMI vision and strategy, provide an evaluation of relevant technology options and scenarios, develop a Request for Qualifications (RFQ)/Proposals (RFP), and evaluate the RFQ/RFP for vendor selection.

Accelator Rehabilitation. Black & Veatch provided the City with engineering services to assist with identifying which major components of the existing lime softening accelator required rehabilitation and then prepare the necessary engineering documents to specify such improvements.

Black & Veatch worked closely with the City, the equipment vendor, and coating vendors to develop a bid package, consisting of technical specifications such as Summary of Work, Submittals, Construction Progress Schedule, Environmental Controls, Accelator Equipment Rehabilitation, and a drawing package, for the City to use in the procurement process.

East Water Treatment Plant. Black & Veatch developed construction documents to support the demolition and removal of the abandoned assets and facilities and restoration of the existing site at the City's East Water Treatment Plant (EWTP), which was decommissioned in 2012. Throughout the entire project Black & Veatch ensured that the EWTP continued to function as a booster pump station.

RELEVANCE TO THE CITY

- AMI strategy development
- East water treatment plant site improvements
- Lime softening
- Accelator equipment rehabilitation

YEAR COMPLETED

Ongoing

KEY TEAM MEMBERS

Isabel Botero, Olena Lytvyn, Larry Brouillette, Chris Barlow, Amanda Schwerman, Melissa Velez

Black & Veatch collaborated closely with the City's operators to identify the requirements for scheduled shut-downs so the water plant could continue to operate during the rehabilitation. Our team analyzed potential alternative scenarios in case the rehabilitation was not completed as scheduled.

SERVICE AREA: **WATER SUPPLY AND TREATMENT**

Sodium Hypochlorite Preston Water Treatment Plant

MIAMI-DADE WASD | MIAMI, FL

Black & Veatch is currently implementing the design, bid and construction phase services of a new sodium hypochlorite chemical feed system to be located at the existing Preston WTP. The original disinfection system was designed to utilize chlorine gas. The chlorine gas was stored in railroad tank cars, which were identified as a potential hazard for the facility. WASD has been utilizing a temporary sodium hypochlorite storage area at each WTP. The Hialeah WTP has been converted over to utilizing only sodium hypochlorite. The chlorine gas feed system has been decommissioned and partially removed at the Hialeah WTP. The Preston WTP still utilizes the existing chlorine gas system to supply approximately 50% of the chlorine demand at the plant.

The objective of this project is to implement a permanent sodium hypochlorite chemical feed facility located at the Preston WTP. The system will supply this chemical, in a safe and reliable manner, to both Preston and Hialeah WTPs.

The project includes the following components:

- Pre-fabricated fiberglass reinforced plastic (FRP) storage tanks. Chemical unloading station, chemical feed transfer pumps, piping, valves, and appurtenances associated to the permanent sodium hypochlorite chemical feed. Associated electrical and instrumentation and controls.
- Lined concrete containment area to house the FRP storage tanks, chemical transfer pumps, emergency eyewash/shower.
- Retrofit of the exiting liquid chlorine railcar receiving station, to be able to receive sodium hypochlorite.
- Replacement of existing piping to transfer the sodium hypochlorite chemical from the Preston WTP to the Hialeah WTP.
- Screening wall to conceal from view the new chemical storage tanks.

RELEVANCE TO THE CITY

- Chemical feed systems
- Mechanical
- Electrical
- Civil

YEAR COMPLETED

Ongoing

KEY TEAM MEMBERS

Isabel Botero, Pablo Gala-Serra, Emeliz Torres, Larry Brouillette, David Garcia, Arturo Burbano, Danny Chadwick, Mike Mackenzie

The elimination of the existing chlorine gas system will make the operations at the water treatment plant safer. The non-reliance on a rental sodium hypochlorite system will improve the reliability of the treatment.

SERVICE AREA: **WATER SUPPLY AND TREATMENT**

General Engineering Services

CITY OF SUNRISE | SUNRISE, FL

Black & Veatch has been providing continuing engineering services for the City of Sunrise for water, wastewater, wastewater reuse, and natural gas utilities projects. The Indian Trace Pump Station rehabilitation detailed below is one of the work orders Black & Veatch has executed.

Indian Trace Pump Station – Preliminary Design Services. The City of Sunrise owns and operates the Indian Trace Pump Station, a remote potable water storage and pumping station which receives water from the Sawgrass Water Treatment Plant. The Indian Trace Pump Station provides fire flows, water supply and pressure for the Weston, Davie and Southwest service areas. The Indian Trace facility consists of a 2 MGD potable water storage tank; a structure with a sodium hypochlorite system; a 10,000-gallon hydropneumatic surge tank; and a building that houses a restroom, water distribution system, booster pumps, an abandoned engine-generator, and electrical equipment. The building also houses six vertical turbine pumps, three 25-hp and three 100-hp pumps with constant speed motors.

Due to the critical function of the Indian Trace Pump Station assets and the age and condition of the building and equipment, City staff have requested a rehabilitation and replacement project for the facility. The anticipated project improvements will include demolition of the existing pump station building, including the restroom, pumps, existing engine-generator, and electrical equipment; and demolition of the sodium hypochlorite storage and feed system and hydropneumatic tank.

RELEVANCE TO THE CITY

- Water, wastewater, reuse treatment
- Treatment facilities security improvements
- Pumping Systems

YEAR COMPLETED

2022

KEY TEAM MEMBERS

Isabel Botero, Jaime Abreu, Irene Testa, Melissa Velez, David Garcia

The water distribution system pressures will be more stable with the improvements to the Indian Trace pump station. The new pumps improve the reliability of the distribution system.

SERVICE AREA: **INFRASTRUCTURE**

Dennis Street Stormwater Improvements Pump Station

CITY OF KEY WEST | KEY WEST, FL

Black & Veatch was asked by the City to provide design, bid, and construction phase services for a new 18.5 cubic feet per second (cfs) stormwater pump station including a diversion structure and vortex separator upstream of the pump station and backup power for the pumping units. It is anticipated that the new pump station will be located near the intersection of Dennis Street and Venetia Street.

The initial design concept included the addition of a new drainage well for subsurface discharge downstream of the pump station. However, during design development Black & Veatch was asked to evaluate using an existing outfall by the Key West High School as the discharge location in lieu of the new drainage well. Since the existing outfall is part of a stormwater gravity system discharging to salt ponds located to the south of the Key West High School, hydrologic modeling was added to the project to ensure there would be no negative impacts to the existing system.

Additional hydrologic modeling was added when the City asked Black & Veatch to evaluate smaller design storms with a higher frequency as the basis for potentially reducing the required pump station capacity. Previous computer modeling efforts using ICPR conducted for the City indicated that a pump station capacity of 18.5 cubic feet per second (cfs) would be able to handle the peak flow of the 100-year 72-hour storm with acceptable levels of flooding so Black & Veatch is evaluating the five-year, 24-hour storm, the 25-year, 24-hour storm and the 25-year, 72-hour storm.

RELEVANCE TO THE CITY

- Pumping systems, piping systems
- Stormwater control

YEAR COMPLETED

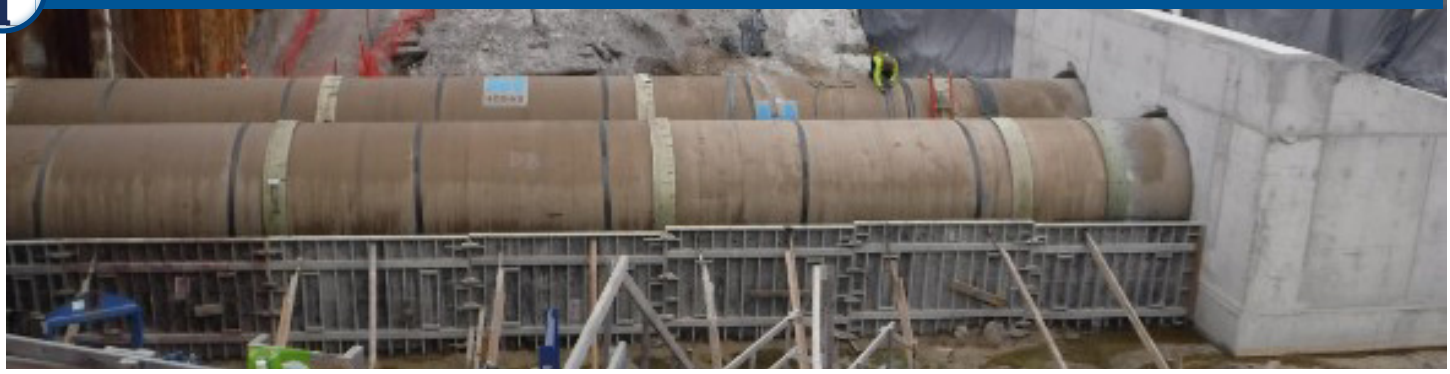
Ongoing

KEY TEAM MEMBERS

Isabel Botero, Jon Dinges, Tammy Martin, Irene Testa, Kevin Cevallos, Melody Gonzalez, David Garcia, Pablo Gala-Serra

The new Dennis Street Pump Station and discharge pipeline will alleviate flooding around the Key West High School.

SERVICE AREA: **INFRASTRUCTURE**



Flood Protection Level of Service

SOUTH FLORIDA WATER MANAGEMENT DISTRICT (SFWMD) | PALM BEACH COUNTY, FL

SFWMD is conducting a system-wide review of the water management infrastructure to determine the flood protection level of service (FPLOS) being provided by existing infrastructure under current and future conditions. The FPLOS describes the amount of protection provided by the water management facilities within a watershed considering sea level rise (SLR), future design storm events, future development, and known water management issues in each watershed. This information can then be used to identify areas where improvements to the design, construction and operation or upgrade of water management facilities are required. The major work products expected are:

- Model formulation and conceptualization. Model domain may need to extend beyond the study area to properly establish boundary conditions and simulate groundwater flows into and out of the study area.
- Calibrated and validated hydrologic and hydraulic models of the District's Palm Beach watersheds with accompanying documentation and data sets.
- Storm surge and tidal boundary conditions under current (2019) and future sea level conditions. Hourly stage hydrographs at the tidal structures in the study area will be developed by District staff. Flood modeling requires tidal boundary conditions for a range of design storms and of sea level conditions.
- Assessment of existing level of flood protection. This contract will produce assessment of the FPLOS for existing infrastructure and land use in the watersheds.
- Assessment of future level of flood protection assuming 2019 drainage infrastructure. Infrastructure changes approved or in design, construction, or testing-phase in the near future should be included in the future level of flood protection scenarios. This contract will produce an assessment of the FPLOS for three sea level rise scenarios in combining with future rainfall assuming the existing (2019) water management infrastructure and future changes in land use in the L-8, C-51 East, C-51 West, C-17, C-16, and C-15 watersheds.

RELEVANCE TO THE CITY

- Flood control
- Sea level rise
- H/H modeling

YEAR COMPLETED

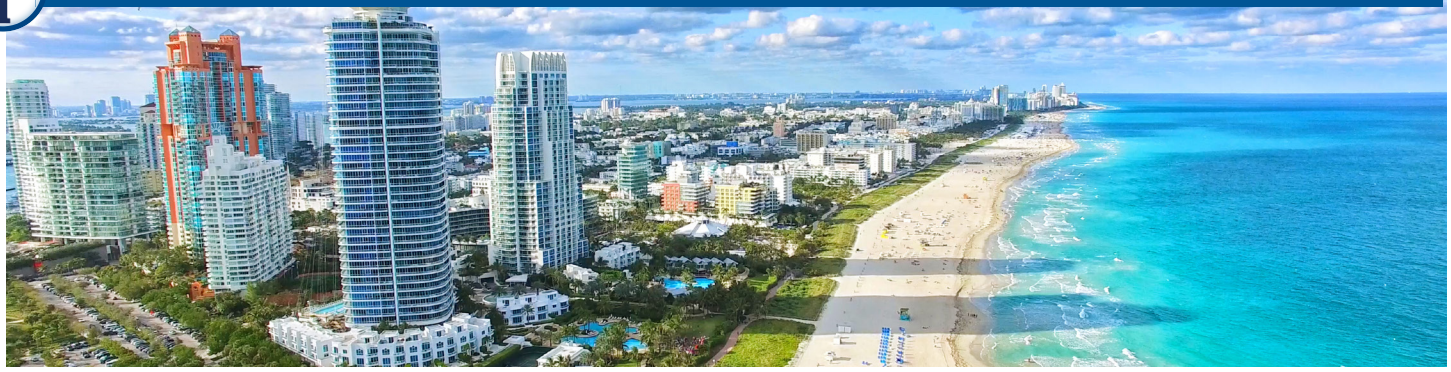
Ongoing

KEY TEAM MEMBERS

Isabel Botero, Jon Dinges

This project covers six District watersheds in Palm Beach County: L-8, C-51 East, C-51 West, C-17, C-16, and C-15 watersheds; and four (4) coastal structures: S44, S155, S41, and S40. W.P.B Watershed will also be included as part of the model(s) project areas. Portions of the C-18 Basin and Hillsboro Basin will be included in the model domain.

SERVICE AREA: **INFRASTRUCTURE**



Ocean Outfall Large Diameter Pipelines SL-2.1

MIAMI-DADE WASD | MIAMI, FL

Ocean Outfall Legislation (OOL) Project SL-2.1 consisted of design services for approximately 12,600 ft of 60-inch prestressed concrete cylinder transmission pipe and fittings for a force main.

The purpose of the project was to increase conveyance of wastewater to the South District Wastewater Treatment Plant to be able to cease use of ocean outfalls to meet requirements of the Ocean Outfall Legislation. A pipe material evaluation was conducted for materials that are available in 60-inch diameter. The design included utility relocations of 8- to 16-inch pressurized force main, water mains, and gravity sewer.

Maintenance of Traffic (MOT) plans for this project were developed in a manner that will minimize construction impacts to local residents, motorists, pedestrians, and bicyclists as well as conform to the latest edition of the Manual of Uniform Traffic Control Devices.

Special elements of this project include conventional open cut installation within a narrow road right-of-way along SW 137th Avenue, a trenchless crossings to cross Black Creek Canal (C-1W), a trenchless installation along 200th Street (SR 994), a FDOT road right-of-way, and a trenchless installation along SW 134th Avenue. These construction techniques are proposed to avoid and minimize impacts to heavily traveled road ways and waterways.

It was identified by the client in the 30% Design Workshop that the in-line valve and manhole spacing should be re-evaluated. Black & Veatch provided a technical memo to the OOL Project Manager detailing recommendations for spacing requirements for manholes and valves to comply with safety protocol. This led to the Owner's decision to set the valve spacing to 2,500 feet and manhole spacing to 1,200 feet.

RELEVANCE TO THE CITY

- Congested right-of-way and utility corridors
- Maintenance-of-traffic plans
- Construction method evaluation
- Pipeline material evaluation
- Easement acquisition support
- Local and state right-of-ways
- FDOT/FDEP/SFWMD/USACE
- Permitting

YEAR COMPLETED

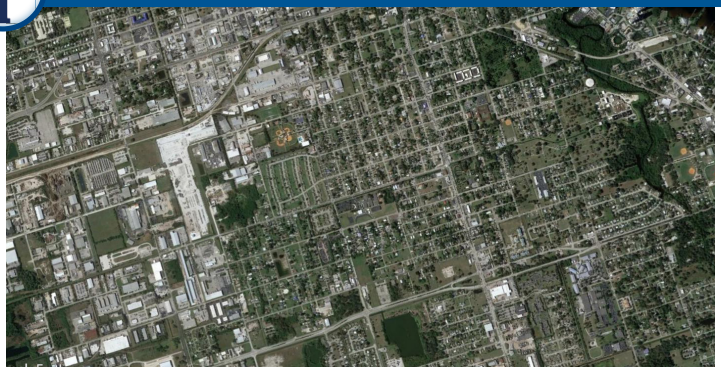
2019

KEY TEAM MEMBERS

Isabel Botero, Jon Dinges, Olena Lytvyn

Coordination with MDWASD's engineering and operations and maintenance personnel throughout design phases was done to ensure design expectations such as alignment and construction methods were realized.

SERVICE AREA: **INFRASTRUCTURE**



Central AWWTP Trunk Main Replacement and Raw Water Transmission Mains

CITY OF FORT MYERS | FORT MYERS, FL

Black & Veatch was hired to provide CEI Services under the final phases of CMAR construction of the $21 million sanitary sewer trunk main replacement project involving the construction of the following:

- Over 9,500 LF of upsized 42-in and 36-in PVC gravity sewer piping and many large manholes.
- One upsized master wastewater lift station with VFD's rated for over 3,300 gpm.
- Over 2,900 LF of 36-in PVC and HDPE wastewater force main piping.
- Over 9,400 LF small diameter potable and sewer pipelines.

The project also included two separate 36-in diameter wastewater force main directional bores under the Seminole Gulf Railroad along Palm Avenue and Market Street as well as over 900 linear feet of 24-in CIPP liner rehabilitation of a portion of the existing 24-in sanitary sewer main.

Additionally, for the City, Black & Veatch was the EOR responsible for all aspects of design through construction phase engineering services and CEI services for three separate raw water transmission main extensions that were constructed under three separate fast-track CMAR projects:

- Raw Water Transmission Main – Phase 5A: 7,250 LF/Diameters From 14-in to 24-in HDPE.
- Raw Water Transmission Main - Phase 5B: 5,500 LF/20-in HDPE/ Including FDOT HDD crossing.
- Raw Water Transmission Main – Phase 5C: 6,900 LF/Diameters from 12-in to 20-in HDPE.

RELEVANCE TO THE CITY

- Infrastructure renewal and replacement
- Pipeline design and construction phase services

YEAR COMPLETED

2019

KEY TEAM MEMBERS

Olena Lytvyn

Black & Veatch services included design, bid and construction phase support for the design and installation of multiple pipelines for gravity sewer services as well as force mains.

SERVICE AREA: **INFRASTRUCTURE**

96-inch Valve Replacement and Lime Residuals Lagoon Pipeline Replacement

MIAMI-DADE WASD | MIAMI, FL

Task Authorization No. 2: 96-in Valve Replacement. MDWASD owns and operates a 96-inch prestressed concrete cylinder pipe (PCCP) raw water transmission main. This is a critical pipeline because it is the only raw water feed to John E. Preston Water Treatment Plant from the Northwest Wellfield. As such, WASD had contracted with a 3rd party company to perform a pipeline assessment on the 96-inch raw water main. The assessment revealed that the raw water main had numerous distressed pipe sections, i.e. pipe sections with broken prestressing wires. WASD performed a pipe assessment and installed an acoustic fiber optic (AFO) system to monitor the real-time condition of individual pipe sections. Based on the results generated from the AFO system, WASD shut down the pipeline performing the necessary repairs to prevent potential failures. To help facilitate the ongoing inspections and repairs on the 96-inch raw water main, Black & Veatch provided the design, permitting and limited construction services for the installation of a new 96-inch butterfly valve.

Lime Residuals Disposal - FDEP Permitting and Groundwater Modeling Support. The project included services to obtain the Environmental Resources Permit (ERP) from FDEP to add a new 120-acre sludge lagoon to store lime residuals from the Hialeah and Preston water treatment plants. Groundwater modeling was performed on the effects of the lime disposal site and the Northwest wellfield. The design of the 16-in sludge pipe extension to transfer the sludge to the new lagoon and a new berm around the lagoon are also included in the project. Due to limited availability of lime disposal capacity, the pipeline project was accelerated. The design of the pipeline was expedited, and construction has already been completed. Black &Veatch worked with FDEP on a plan to allow operations of the new sludge lagoon while the new berm is still under construction to be able to take the old lime storage lagoons off-line as required by operational constraints.

RELEVANCE TO THE CITY

- Pipeline design
- Environmental permitting
- Lime residuals disposal from water treatment plant

YEAR COMPLETED

Ongoing

KEY TEAM MEMBERS

Isabel Botero, Olena Lytvyn, Ed Rectenwald, Jon Dinges, Pablo Gala Serra, Jaime Abreu

Black & Veatch was able to expedite pipeline design for the Lime Residuals Disposal Project, allowing for operations to continue while construction on the new berm was completed.

SERVICE AREA: **QUALITY ASSURANCE, QUALITY CONTROL AND VALUE ENGINEERING**

Energy Management and Backup Power

MIAMI-DADE WASD | MIAMI, FL

WASD turned to Black & Veatch to design the power backup and energy management systems for the South District Wastewater Treatment Plant (South Plant). Until recently, WASD had been using very robust power backup systems that relied on low-speed generators. Continuing with its theme of innovation, Black & Veatch evaluated and recommended the use of high-speed generators for the South Plant, which are more cost-effective, provide equal reliability as the low-speed units, and bring additional valuable benefits such as increased sustainability and procurement advantages. The innovative solution provides the County with significant capital and operational cost savings, as presented in the table below.

RELEVANCE TO THE CITY

- Value engineering
- Energy savings
- Capital costs savings
- Operation costs savings

YEAR COMPLETED

Ongoing

KEY TEAM MEMBERS

Lucas Botero, Arturo Burbano, Tammy Martin, Irene Testa, Melissa Velez, Pablo Gala-Serra, Larry Brouillette, David Garcia, Mike Mackenize, Danny Chadwick

BLACK & VEATCH RECOMMENDATION	WASD BENEFITS	SOUTH PLANT	CENTRAL PLANT	NORTH PLANT	TOTAL	CAPITAL SAVINGS
Use of High-Speed Generators	Capital Cost Savings ($1/5M/Unit)	12 Units $18M	20 Units $30M	16 Units $24M	48 Units $72M	$172M
Use of Larger Capacity Generators	Capital Cost Savings; Minimizes Area Required at Site	$22M	$37M	$29M	$88M	
Innovative Procurement	Capital Savings by Using the Buying Power of Thousands of Utilities	$3M	$5M	$4M	$12M	
Lower Air Emissions Design	Less Air Pollution for County Residents, Unrestricted Operation, and Significant Power Cost Savings	$1.0M/ year	$1.2M/ year	$0.9M/ year	$60M over 20 years	

Miami-Dade Water and Sewer Department has been able to reduce total project costs on the OOL Program for Energy Management and Backup Power in excess of $232M through the innovative, sustainable, and forward-thinking engineering approach from Black & Veatch.

SERVICE AREA: **QUALITY ASSURANCE, QUALITY CONTROL AND VALUE ENGINEERING**

Ocean Outfall Legislation (OOL) Treatment Plant Improvements

MIAMI-DADE WASD | MIAMI, FL

These are improvements to the existing treatment facilities at Miami-Dade Water and Sewer Department's plants, which are required to meet the new OOL regulations.

In 2018, Black & Veatch identified viable design alternatives through a pilot study to test innovative filtration technologies. Miami-Dade Water and Sewer Department invested approximately $1M in this pilot program, and the outcome demonstrated that a newer, less expensive filtration technology also met the requirements of the OOL regulations, while providing over $140M in savings at two of Miami-Dade Water and Sewer Department's wastewater treatment plants as summarized in the table below.

RELEVANCE TO THE CITY

- Wastewater treatment
- Value engineering evaluation

YEAR COMPLETED

2018

KEY TEAM MEMBERS

Lucas Botero, Arturo Burbano, Irene Testa, Melissa Velez, Tammy Martin

BENEFITS ITEM	NORTH PLANT	CENTRAL PLANT
Optimized Filtration Technology Selection	$26M	$45M
Construction Cost Savings (minimizing treatment facilities)	$18M	$37M
Engineering Services	$2M	$5M
Construction Management Services	$1M	$2M
WASD Overhead Savings	$2M	$5M
TOTAL SAVINGS	**$49M**	**$94M**

Miami-Dade Water and Sewer Department has been able to reduce total project costs on the OOL Program for Treatment Plant Improvements in excess of $140M through the innovative, sustainable, and forward-thinking engineering approach from Black & Veatch.

SERVICE AREA: **QUALITY ASSURANCE, QUALITY CONTROL AND VALUE ENGINEERING**

General Engineering Services

SEACOAST UTILITY AUTHORITY | PALM BEACH GARDENS, FL

Black & Veatch has been providing continuing engineering services for the Seacoast Utility Authority (SUA) for SCADA infrastructure upgrades. The upgrades include Cybersecurity, PLC programming of all CIP projects, evaluations, pre-design, design, improvements, upgrades, and maintenance of all existing and new SCADA infrastructure.

On Call – SCADA Integration Continuing Services. These services allow SUA to rely on Black & Veatch for the PLC Programming of CIP Projects, troubleshooting and fault resolution of the SCADA systems across the entire utility. This includes supporting SUA's IT and GIS management staff with network connectivity and management of backup files and programs if the system is threated by Cybersecurity adversaries.

Cybersecurity Network Evaluation and System Restoration Analysis. Black & Veatch was tasked to provide evaluation of the SUA's existing SCADA system documentation, a process to document changes to the SCADA system and readiness to recover the SCADA system in a causality situation. Black & Veatch established an effective response to for a widespread causality and documented the procedure to reset the hardware to factory default and restore from backup files of all the PLC programs.

SUA WWTP iFix to VTScada Conversion. The PGA WWTP is being converted from GE iFix software for its Human Machine Interface (HMI). Black & Veatch is migrating the GE iFix HMI software to Trihedral VTScada HMI software. These services provide HMI Configuration and Commissioning Services of the Process Control System (PCS) for the HMI Migration Project.

Cityworks at SUA. The implementation of a new CMMS system that began by implementing Lucity and this system was subsequently changed to Cityworks. This project supports SUA's asset management efforts. Involved the development of asset hierarchies, O&M key performance indicators, database development and connections, and training of users and trainers for this system.

RELEVANCE TO THE CITY

- PLC programming
- SCADA integrator (Owner's Rep on all CIP improvements
- SCADA assessment, planning, and design

YEAR COMPLETED

Ongoing

KEY TEAM MEMBERS

Isabel Botero, Chris Barlow, Laurie Kusmaul, Carlos Ortega, David Garcia Larry Brouillette, Mark Seastead Matt Morey, Nick Alexandrou

We have help Seacoast achieve quality SCADA Integration and PLC Programing of their CIP Projects by bringing this essential element of new and rehabilitation projects under the direct control of the utility, verses allowing the Contractors to provide these services that sometimes lack consistency with the plan for the SCADA System.

SERVICE AREA: **QUALITY ASSURANCE, QUALITY CONTROL AND VALUE ENGINEERING**

Pure Water Program Constructability Review

CITY OF SAN DIEGO PUBLIC UTILITIES DEPARTMENT | SAN DIEGO, CA

This is an ongoing program that will provide nearly half of San Diego's water supply by the end of 2035. This multi-phase program uses proven water purification technology to clean recycled water and deliver a reliable, sustainable supply of high-quality drinking water. Phase 1 of the program, with construction of the treatment facilities currently overseen by Black & Veatch's construction management team along with our joint venture partner, consists of multiple projects that will provide 30 MGD.

Black & Veatch performed a constructability review for the treatment facilities under this program. The objectives for the constructability review were to establish a well-defined set of contract documents; reduce RFIs, change orders, claims and risks; and create specification provisions to properly manage the work. The construction management team virtually engaged 20 discipline leads, construction manager's and engineers by implementing a Bluebeam Session to conduct constructability reviews for the facilities and meet the scheduled 25-day review period requested. Comments were extracted from Bluebeam into Excel and presented to the client for discussion. The constructability review yielded the below metrics for the NCPWF and the NCWRP which account for approximately 92% of the treatment facilities budgeted construction cost. Closed comments were either incorporated or the construction management concurred with designer response. The construction management team is managing open comments as potential risks during the construction phase

TREATMENT FACILITIES COMMENT RESOLUTION STATISTICS

NCPWF		NCWRP	
Reviewed 2,700 Drawings		**Reviewed 1,497 Drawings**	
Initial CM Comments	881	Initial CM Comments	532
Closed Comments	624	Closed Comments	465
Open Comments to Risk Register	257	Open Comments to Risk Register	67

RELEVANCE TO THE CITY

- Value engineering evaluation
- Constructability review
- Water treatment facilities

YEAR COMPLETED

Ongoing

KEY TEAM MEMBERS

Arturo Burbano

The overall program is the largest integrated infrastructure program ever taken on by the City of San Diego with a construction cost of $800 million dollars for the treatment facilities. Black & Veatch performed risk analysis, schedule review, and cost review as a part of the constructability review. Black & Veatch identified $25M in savings and/or cost avoidance and 75% of our constructability recommendations were incorporated.

SERVICE AREA: **QUALITY ASSURANCE, QUALITY CONTROL AND VALUE ENGINEERING**

Southern Regional Wastewater Treatment Plant SCADA System Improvements

CITY OF HOLLYWOOD UTILITIES | HOLLYWOOD, FL

Black & Veatch designed and implemented improvements to the Southern Regional Wastewater Treatment (SRWWTP) Plant's Supervisory Control and Data Acquisition (SCADA) system to meet Ocean Outfall requirements.

The SRWWTP is a 50 MGD average annual daily flow plant impacted by ocean outfall legislation requirements. The SCADA upgrades help the City continuously monitor the flow rates sent to the ocean outfall, regulate the use of the deep injection wells, and provide water to reuse clients.

Black & Veatch evaluated and implemented improvements to the GE Proficy iFix HMI graphics, including standardization of SCADA graphics, database design, and improvements to PLC logic design and PLC logic documentation. The project was executed in a phased approach to include all the PLC's at the SRWWTP by the end of Phase 3.

Black & Veatch developed control strategies and an updated I/O list, which served as the basis for the PLC and HMI programming and provided complete reprogramming for the following PLC's for the disposal system:

PLC 16 Controls the Deep Well Injection Pump Station. This pump station includes three pumps, one with VFD and two with soft starts, and directs the effluent to the deep injection wells.

PLC 6 Controls the Effluent Pumps. Two electric drive pumps (800HP each), two backup diesel pumps, and two gravity valves that regulate the flow discharged to the Ocean Outfall.

PLC 12 Controls the Reuse Water Pump Station. The pump station includes three reuse pumps, two storage tanks, and flow meters that deliver the reuse water to the City's retail customers.

RELEVANCE TO THE CITY

- Automation improvements
- SCADA programming
- Optimization of operations

YEAR COMPLETED

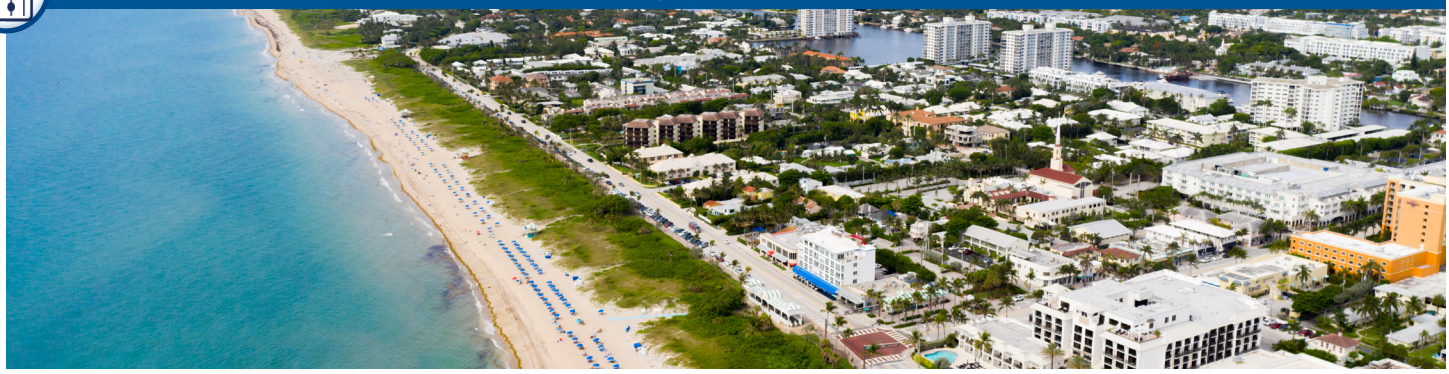
2021

KEY TEAM MEMBERS

Isabel Botero, Larry Brouillette, Laurie Kusmaul, Melissa Velez, Tammy Martin, Lucas Botero

Process controls at the SRWWTP have been improved with the SCADA programming. New graphics and logic improvements help the operators run the treatment systems. The project control descriptions were updated for each treatment process associated with each PLC at the wastewater plant to include improvements with the new programming of the PLCs.

SERVICE AREA: **QUALITY ASSURANCE, QUALITY CONTROL AND VALUE ENGINEERING**



Cityworks Implementation

DELRAY BEACH | DELRAY BEACH, FL

Black & Veatch was selected to detail and implement all tasks necessary to complete a migration from Cartegraph Navigator to Cityworks AMS in support of the City of Delray Beach Utilities Department in its asset management effort. The installation of Cityworks Server AMS and migration the identified legacy work history data from the current Cartegraph environment to Cityworks Server AMS allows the department to stay current and flexible while it updates its asset management infrastructure. Black & Veatch worked with the Department to discuss project requirements, review pertinent available data, review project staffing and organization, and develop a project schedule and milestones that include both Black & Veatch and anticipated Department resource requirements.

Using all the input gained, Black & Veatch planned the migration of Cartegraph to Cityworks by reviewing existing work management data and GIS environment, such as:

- Activity types - work orders, requests, inspections
- Configuration data to migrate - employees, materials, etc.
- Data quality
- Asset registry GIS system
- Geodatabase design
- Data quality
- System architecture

Linking to work history based in the information defined in the system migration plan, Black & Veatch technical staff then successfully fully configured the Cityworks system. System administrators were provided with training that allowed them to manage the Cityworks system after the deployment of the new system. End-user training were role-based to allow users to be trained only on specific Cityworks functionality that each user encounter daily.

RELEVANCE TO THE CITY

- Automation improvements
- SCADA programming
- Optimization of operations

YEAR COMPLETED

Ongoing

KEY TEAM MEMBERS

Mark Seastead, Matt Morey, Isabel Botero

Black & Veatch was approved to migrate the department's asset management system from Cartegraph Navigator to Cityworks AMS. In addition to the core installation, the two-phase, $525,000 project includes: optimization of business processes; integration with the city's finance system; citizen engagement platforms; inventory management; and CCTV programs. The deployment will include enabling mobile access to more than 70 users in Phase 1 using tablets.

SECTION D

Organizational Profile and Project Team Qualifications

PROJECT TEAM

The City will benefit from a team with a depth of local project resources and a focus on the City's success by receiving efficient project delivery of consistent, high technical quality.

Our diversity of expertise is ideal to provide the broad range of services needed to support the complex requirements under this contract and deliver cost-saving energy efficiency solutions.

Our exceptional firm experience and capabilities are evidenced by our consistent industry recognition. In 2022, Engineering News-Record (ENR) ranked Black & Veatch as a Top 16 Firm in Design; a Top 14 International Provider to the Water Market; Top 8 Firm in Water; and a Top 11 Firm in Sewer and Waste. Our clients benefit from our ability to leverage this expertise on your behalf and can be certain that our team has the capability to meet any challenge that arises.

Exceptional Professional Resources

Our team has been built to function efficiently as an extension of your staff. We understand that the needs under this contract will vary in size. As we have demonstrated consistently in the past, Black & Veatch will be there when you need us for both large and small projects alike, providing excellent and responsive engineering support on assignments of a few thousand dollars just as we would a large design project.

Our team includes a number of professionals whose expertise makes them uniquely qualified to provide value to this contract. They are supported by a diversely capable team with an exceptional level of experience in all of the service areas and engineering disciplines necessary to provide the scope of services under this contract.

Black & Veatch is proud to offer the City a highly-qualified team that understands the various issues associated with municipal facility planning, design, and construction.

The City expects the highest level of service from the engineering firm selected to perform their as-needed professional services contract.

With a reputation for providing innovative solutions and turning obstacles into opportunities, we offer a highly-skilled team of professionals to work with utility staff on their important projects.

This section of our proposal will demonstrate the quality of our professionals who are committed to supporting the City and their capacity to accomplish any task under this continuing contract.

TEAM ORGANIZATION

The City will receive continuous access to our highly-experienced and dedicated team of professionals who focus on better financial, operational, and sustainable benefits by delivering a tailored solution to meet your project needs. The City will benefit by having an attentive team who addresses potential issues early in a project, **reducing risks, offsetting delays, and maintaining efficient execution while ensuring your project meets its schedule, budget, community impact, and other sustainability goals effectively.**

This team was carefully selected to best support the City for this important contract. We have identified key personnel that will be our project champions with a high level of involvement and who will be responsible for driving this contract to successful completion. Each member of our team was chosen to provide the best value and optimum service to the City.

Our leadership team, including **Project Director Rafael Frias** and **Project Manager Isabel Botero,** are supported by a number of discipline-specific task leads, who are highly qualified in the areas they specialize. Each task lead will manage a team of technical resources specifically selected to provide the City with the services needed under their assigned discipline.

Our key staff are comprised of task managers with expertise on the key technical areas under this contract. Our task leads were carefully selected to provide the expertise required to meet the engineering, operations, and construction needs required under the City's as-needed professional services contract. They will provide the City with technical execution expertise and practical solutions and will work in tandem under the execution leadership of Rafael and Isabel.

TEAM STRUCTURE

PROJECT MANAGEMENT

Project Director Rafael Frias and Project Manager Isabel Botero will be responsible for the technical project execution. They will work closely with your project managers and will ensure full access to Black & Veatch team members.

TASK LEADS

Task leaders with expertise in the areas they specialize in have been identified for each key discipline required to successfully deliver the contract. They will coordinate their respective work with the applicable technical resources and communicate frequently with the contract manager to ensure effective collaboration in line with delivery targets.

TECHNICAL RESOURCES

Task leaders will draw from a vast pool of specialized discipline resources to deliver the technical quality required for a successful utility infrastructure project. The technical resources team is comprised of design-execution professionals experienced in the development of design and construction documents within their relevant specialty areas and delivery of professional engineering services during construction.

Our clients have access to a local team that will provide the increased level of attention of a "small firm," with the expertise and deep-bench of technical resources of a "big firm."

An experienced team that will deliver successful results.

The experienced specialists that comprise our team were selected because they have successfully delivered on similar as-needed professional utility services contracts in Florida. We guarantee that our team will consistently provide timely, high-quality work products and services during the duration of the contract. **The City will receive the following value from our team:**

Quality deliverables and lower construction costs through Black & Veatch's ISO-9001 compliant Quality Management System and access to local professionals who leverage our library of technical specifications, comprised of over 100 years of engineering knowledge and lessons learned from executed projects.

Efficient, reliable, and on-schedule design solutions through local water, wastewater treatment, and reuse expertise with the ability to identify treatment challenges and provide practical solutions.

Achievement of desired level of service to meet additional capacity, renew/replace aging infrastructure, perform asset management, comply with current and future regulations, and meet water quality and sustainability requirements.

Cost-effective and efficient designs through access to an engineering company with in-house, multi-disciplinary staff able to provide a variety of services.

Projects on schedule and of high technical quality will be developed by a local execution team ready to support you with development of designs that can be permitted and implemented.

TEAM MEMBER FIRMS

Our team is comprised of the firms listed below. More information on the qualifications of our subconsultants can be found in *Tab H: Sub Consultants Information.*

Prime Consultant	*Surveying & SUE*	*Electrical Engineering*	*Geotechnical Analysis/Design*
BLACK & VEATCH	KEITH Engineering Inspired Design.	HEE HILLERS ELECTRICAL ENGINEERING, INC.	WIRX ENGINEERING

ORGANIZATIONAL CHART

City of Hollywood

PROJECT MANAGER
Isabel Botero, PE

PRINCIPAL-IN-CHARGE
Rafael Frias, PE

KEY PROFESSIONAL ENGINEERING SERVICES

WASTEWATER TREATMENT PLANT PROJECTS
Lucas Botero, PE, BCEE, ENV SP

FACILITIES PLANNING
Natalia Garcia, PE

PROCESS EVALUATIONS/ CAPACITY ANALYSIS
Timur Deniz, PhD, PE, BCEE

RECLAIMED WATER
JoAnn Jackson, PE

BIOSOLIDS MANAGEMENT
Lee Kimbell, PhD

ADVANCED WASTEWATER TREATMENT FOR OCEAN OUTFALL LEGISLATION
Melissa Velez, PE, LEED AP

FACILITIES DESIGN
Irene Testa

DEEP INJECTION WELLS
Anamaria Sarmiento, PG
Felipe Franco, GIT

WATER SUPPLY & TREATMENT PROJECTS
Jaime Abreu, PE

FACILITIES PLANNING
Amanda Schwerman, PE

PROCESS EVALUATIONS/ CAPACITY ANALYSIS
Arturo Burbano, PhD, PE, BCEE

HYDROGEOLOGY/WELLS
Ed Rectenwald, PG, PMP
Amanda Monnette, GIT

RESIDUALS MANAGEMENT
Scott Carr, PE, BCEE

ELEVATED STORAGE TANKS
Brad Vanlandingham, PE

PUMP STATIONS
Chris Barlow, PE, CDT

FACILITIES DESIGN
Pablo Gala-Serra, PE
Tammy Martin, PE

INFRASTRUCTURE PROJECTS
Jon Dinges, PE

PIPELINE PLANNING & ROUTING STUDIES & DESIGN
Olena Lytvyn, PE

HYDRAULIC MODELING/ SURGE ANALYSES
Amanda Schwerman, PE
Renee Murch, PE

TRENCHLESS TECHNOLOGIES DESIGN & REHAB
Stephen O'Connell, PG

GENERAL CIVIL/PIPELINE DESIGN
Sergio Baltodano

SEA LEVEL RISE/GREEN INFRASTRUCTURE DESIGN
Carlos Ortega, PE

SUSTAINABILITY & RESILIENCY
Sam Miller, PE

QA/QC, VALUE ENGINEERING & UTILITY OPTIMIZATION
Mark Seastead

QA/QC & VALUE ENGINEERING
George Joyce, PE, PMP
Mike Mackenzie, DBIA

SCADA OPTIMIZATION
Julie Inman, PE, PMP

SCADA PROGRAMMING & AUTOMATION
Laurie Kusmaul

UTILITY OPTIMIZATION
Jorge Villalobos

OPERATIONS OPTIMIZATION
Ari Copeland

PILOT STUDIES
Nick Burns, PE

CAPITAL PRIORITIZATION & OPTIMIZATION
Robert Chambers, MBA

AMI
Tom Bohrer

SPECIALIZED PROJECT SUPPORT

REGULATORY REVIEW, PERMITTING & COMPLIANCE REPORTING
Steve King, PE

INSTRUMENTATION & CONTROL/SCADA CONTROL STRATEGIES
Larry Brouillette, PE
Rony Cruz

ELECTRICAL
David Garcia, PE
Mark Luther *(Hillers)*

STRUCTURAL
Brad Vanlandingham, PE

PROCESS MECHANICAL
Diego Barrios, PE

BUILDING MECHANICAL
Michele Roth, PE

GEOTECHNICAL/TESTING
Gregory Stelmack *(WIRX)*

ARCHITECTURAL
Phil Rishel, RA, LEED AP

SITE/CIVIL
Mark Castano, PE *(Keith)*
Jame Wills, PE, LEED AP *(Keith)*

SURVEYING/SUE
Timothy Gray, PSM, CFM *(Keith)*
Michael Mossey, PSM *(Keith)*
Mark Mitchell *(Keith)*

CONSTRUCTION ADMINISTRATION/ INSPECTIONS
Melody Gonzalez
Kevin Cevallos, PE

GIS/CAD DESIGN
Clayton Glatt
Matt Deeken

GEOTECHNICAL ANALYSIS/DESIGN
Mark Chomtid, PhD, PE

SCHEDULING
Robert Santiago, PE

REMEDIATION/ ENVIRONMENTAL ASSESSMENTS
Jena Mier, PMP

ASSET MANAGEMENT/CMMS
Mark Seastead
Matt Morey, GISP
Nick Alexandrou, GISP

WELLFIELDS ASSESSMENTS & DIW CONSTRUCTION INSPECTIONS
Jorge Villalobos
Marcus Duran
Jhonatan Delgado

STARTUP/COMMISSIONING
Ron Parker

COST ESTIMATING
Danny Chadwick, CPE, LEED AP BD+C

The City will have immediate, 24/7 access to a responsible team who will ensure successful delivery of all projects, as well as a responsive, local Project Manager who has experience delivering similar projects and a strong value of accountability.

PROJECT MANAGEMENT TEAM

The Black & Veatch management team combines a highly experienced local Project Manager, **Isabel Botero,** with an industry-leading Project Director, **Rafael Frias,** to provide the City with world-class water and wastewater treatment expertise. **They will lead an efficient and knowledgeable team who can execute the continuing services related to the City on time and on budget.**

Isabel Botero, PE
PROJECT MANAGER

For the last 23 years, she has been delivering general water/wastewater professional A/E services to mid- and large-sized utilities in Southeast Florida. With extensive experience in water and wastewater systems and a current presence leading projects for the City of Hollywood, **Isabel brings an in-depth knowledge of regional facilities and systems.** She has demonstrated the ability to deliver on-call task orders based on past success with the City and similar municipal clients. Isabel has directed general engineering services contracts for Broward County, Delray Beach, Boca Raton, Seacoast, Sunrise, Miami-Dade, and Key West.

Rafael Frias, PE
PROJECT DIRECTOR

The City will receive expedited project decision-making through our local Project Director, Rafael, who has approval authority to make immediate decisions on behalf of Black & Veatch. Rafael specializes in the management of water resource projects including stormwater planning and design, pump stations, hydrogeology, water supply, and water and wastewater treatment. Rafael is experienced in incorporating sustainability principles into project designs and in the development of sustainable water planning technologies for the operation and management of water and wastewater facilities, watersheds and ecosystems, water scarcity, and sea level rise conditions.

VALUE TO THE CITY

As Project Manager, Isabel will lead the specific tasks under this Continuous Services contract to help ensure timely and efficient completion so that City facilities consistently achieve regulatory goals with improved system operations and resiliency. Isabel will provide attentive and responsive service to the City and ensure successful delivery of all projects under this contract.

VALUE TO THE CITY

Rafael will ensure the City has access to Black & Veatch's comprehensive capabilities and technical resources across our infrastructure, utilities, and environmental teams. Rafael is also experienced in incorporating sustainability principles into project designs and in the development of sustainable water planning technologies.

KEY PROFESSIONAL ENGINEERING SERVICES LEADS

Lucas Botero, PE, BCEE, ENV SP | WASTEWATER TREATMENT PLANT LEAD

Lucas is a local wastewater process expert who has authored many technical publications on wastewater process engineering. He will leverage his wastewater modeling optimization experience to assist the City and staff with the development and implementation of wastewater improvements.

VALUE TO THE CITY: Lucas's strong understanding of local requirements will provide the City the benefit of capitalizing on treatment opportunities, mitigate project risks, and overcome future regulatory challenges.

Jaime Abreu, PE | WATER SUPPLY AND TREATMENT LEAD

With more than 25 years of experience in civil and environmental engineering, Jaime's expertise includes planning, design and bid preparation of various infrastructure projects; project management and administration; construction management and inspection; water sampling; design, construction.

VALUE TO THE CITY: Jaime will bring his knowledge of plant operations in southeast Florida and identify potential opportunities for improvement applicable to the City's facilities.

Jon Dinges, PE | INFRASTRUCTURE LEAD

Jon has more than 27 years of experience in civil and environmental engineering with a water resources focus. His extensive water resources experience includes more than 15 years of water management district experience. Jon's public-sector program and project experience includes storm water, floodplain restoration and management, water supply assessment and planning, water quality improvement, and hydrologic assessment and restoration.

VALUE TO THE CITY: As Black & Veatch's Regional Water Resources Leader, Jon will maintain access to our professionals for efficient and high-quality delivery.

Mark Seastead | QA/QC, VALUE ENGINEERING & UTILITY OPTIMIZATION LEAD

Mark has over 28 years of program management, consulting, and system implementation and integration experience on projects for private entities, municipal government and water, wastewater, and transportation focused clients. He specializes in work and asset management program development, CMMS solution selection, business process mapping, systems implementation and refinement, systems integration, and end user training and support.

VALUE TO THE CITY: Mark provides a unique experience in leading asset management and IT program development that focuses on practical usage measurable performance.

KEY PROFESSIONAL BRIEF RESUMES

ISABEL BOTERO, PE

PROJECT MANAGER

KEY PERSONNEL

OFFICE LOCATION
Coral Springs, FL

EDUCATION
- MS, Environmental Engineering
- BS, Civil Engineering

YEARS EXPERIENCE
Total: 23 | BV: 18

PROFESSIONAL REGISTRATION
- PE, 2007, FL, 67176
- PE, 2013, 25626
- PE, 2005, MO, 2005001044

Isabel has more than 23 years of experience as a civil/environmental engineer working on water and wastewater treatment facilities, as well as civil engineering projects. Isabel brings an in-depth knowledge of regional facilities and systems. She has demonstrated the ability to deliver on-call task orders based on past success on projects for Broward County and across South Florida that ranged from conceptual engineering design to construction. Isabel is leading projects under the general engineering services contract for the City of Hollywood since 2012 focusing on renewal and replacement and has led multiple projects for the City of Hollywood's WWTP to improve SCADA systems, asset management, and plant operational efficiencies.

City of Hollywood | Energy Efficiency Master Plan

Engineering Manager. Black & Veatch developed a comprehensive Energy Efficiency Master Plan for the City of Hollywood Department of Public Utilities Water and Wastewater Treatment Systems.

City of Hollywood | Cityworks Implementation

Project Manager. Led the team for the implementation of Cityworks for Utilities. Data was migrated from Accela to Cityworks in the initial Phase. Continued support in the following phases of the implementation to improve asset management.

City of Hollywood | SCADA System Improvements

Project Manager. Black & Veatch was retained to provide improvements to the existing SCADA systems at the South Regional WWTP. The project includes development on control descriptions and PLC programming for improved operations.

Broward County Water and Wastewater Services | General Engineering Services

Project Manager. Isabel participated on the design and construction phase services for multiple improvements projects at the North Regional WWTP including replacement of pump pads for the effluent pumps and improvements to the aeration basins, shorting contactors panels replacement at the outfall pump station and clarifiers rehabilitation.

MDWASD | Renewal and Replacement General Engineering Service for Hialeah and Preston WTPs, Raw Water and Distribution Systems

Project Manager. Isabel has been managing multiple task authorizations under this contract for renewal and rehabilitation of the Preston and Hialeah WTPs, wellfields, and distribution systems.

RAFAEL FRIAS, PE

PROJECT DIRECTOR

KEY PERSONNEL

OFFICE LOCATION
Coral Springs, FL

EDUCATION
- MS, Civil Engineering
- BS, Biological Engineering

YEARS EXPERIENCE
Total: 25 | BV: 23

PROFESSIONAL REGISTRATION
- PE, 2004, FL, 61912
- PE, 2011, PR, 24726
- PE, 2003, KS, 17469

PROFESSIONAL ASSOCIATIONS
- American Water Resources Association - Board Member
- Water Environmental Federation
- American Water Works Association
- WateReuse – Florida

Rafael serves as a Client and Project Director with the global water business of Black & Veatch Corporation and is responsible for the management of the Company's operations in the Southeast Region, including Florida and the Caribbean. Rafael specializes in the management of water resources projects, including water supply, water treatment, hydropower and stormwater planning and design. Rafael is also experienced in incorporating sustainability principles into project designs and in the development of sustainable water planning technologies for the management of watersheds and ecosystems, water scarcity and wet-weather conditions.

City of Hollywood | Energy Efficiency Master Plan

Project Director. Black & Veatch developed a comprehensive Energy Efficiency Master Plan for the City of Hollywood's Water and Wastewater systems and facilities. The master plan resulted in an implementation plan for 20 recommended energy cost savings projects and strategies with a net positive value of $4.4 million to the City over the life of the improvements.

Palm Beach County Water Utilities Department | Sustainability and Strategic Planning Services

Project Director. Currently, leading Black & Veatch's efforts for the development of a Strategic Sustainability Plan (SSP) for PBCWUD to shape the future state of the utility and support it in continuing to be a leader in the water and wastewater utility industry. As part of the SSP, Black & Veatch is using our Pathfinder strategic planning process, which was developed based on our proven experience working with clients within the water and energy industries. The Pathfinder methodology uses a collaborative approach to meld bottom-up initiatives with top-down strategic intent. The methodology combines sustainability, financial, and operational analytics with technical depth and insights for development of the PBCWUD SSP. Sustainability planning for PBCWUD's SSP considers the Institute of Sustainable Infrastructure's (ISI) Envision rating system, which covers all infrastructure aspects, including water and wastewater facilities.

City of Deerfield Beach | General Engineering Services for WTP

Project Director. Black & Veatch assisted the City with several different projects, including engineering services for the development and implementation of an AMI strategy, the East Water Treatment Plant Site Improvements, and engineering services for the Accelator Rehabilitation.

LUCAS BOTERO, PE, BCEE, ENV SP

WASTEWATER TREATMENT LEAD

KEY PERSONNEL

OFFICE LOCATION
Coral Springs, FL

EDUCATION
- MS, Civil Engineering
- BS, Civil Engineering

YEARS EXPERIENCE
Total: 25 | BV: 23

PROFESSIONAL REGISTRATION
- PE, 2007, FL, 67242
- PE, 2003, KS, 17687
- PE, 1996, Colombia 2520260893CND

PROFESSIONAL ASSOCIATIONS
- Water Environmental Federation
- International Water Association
- Member, Water Environment Federation, Municipal Wastewater Treatment Design Subcommittee
- Chair of WEF's Grit Characterization Task Force
- Board Certified Environmental Engineer (BCEE), American Academy of Environmental Engineers
- Envision® Sustainability Professional (ENV SP), Institute for Sustainable Infrastructure

Lucas has been involved in studies, design, construction, and resident phase engineering in several infrastructure, water, wastewater, and reuse projects. His involvement has included project development and contract preparation, project planning and budgets, preparation of construction documents and project schedules, and resident engineering services. Lucas has over 20 years of experience in environmental engineering. He has a broad-based knowledge of wastewater treatment process engineering with an emphasis on plant capacity evaluations, activated sludge design including biological and chemical nutrient removal, treatment plant modeling, industrial waste treatment, headworks design, effluent disinfection, and sludge processing. Lucas is the primary author of Chapter 11 of the WEF Manual of Practice No. 8 "Design of Municipal Wastewater Treatment Plants," as well as other manuals of practice.

MDWASD | Ocean Outfall Legislation Program: South District WWTP (SDWWTP) Engine Generation and Electrical Distribution Building No. 3

Project Manager. The project included evaluating the existing engine generation capabilities for the SDWWTP, performing an alternatives evaluation for different engine generators for the plant which included low speed diesel, high speed diesel, natural gas, hybrid alternatives (selected alternative). Energy efficiency evaluation including a probabilistic life cycle assessment was developed to select the recommended hybrid alternative for implementation. The project also included an electrical distribution building for 50 percent of the plant processes designed to meet ocean rise standards set by Miami Dade.

City of Key West | WWTP Blower Improvements

Process Specialist. The project included and evaluation of blower technologies that resulted in the selected on the "slow speed turbo blowers" for implementation to maximize efficiency at the plant. Improvement to the plant's solids cake conveyor and the plant effluent pump station were also included in the project.

MDWASD | Ocean Outfall Legislation Program: Central District WWTP (CDWWTP) Effluent Filtration Pilot Study and Pump Station Evaluation

Project Manager. Served as Project Manager and technical lead for the CDWWTP pilot study. The project included the design of a filtration system for testing three different technologies which included outside/in cloth disk filters, inside/out disk filters, and deep bed media filtration; and supervising the installation and operation of the pilot system. The project also included an evaluation of the effluent pump station for the plant including vibration, thermal, and performance testing of the existing pumps and their suitability for pumping to the newly proposed filtration system.

JAIME ABREU, PE

WATER SUPPLY AND TREATMENT LEAD

Abreu has more than 25 years of experience in civil and environmental engineering, Jaime's expertise includes planning, design and bid preparation of various infrastructure projects; project management and administration; construction management and inspection; water sampling; design, construction, and operation of wastewater pump stations, wastewater and water treatment plants; drinking water and wastewater infrastructure auditing; and solid waste infrastructure management and auditing.

MDWASD | Miami-Springs Wellfield Rehabilitation Design

Project Manager. Currently managing the design for improvements of 23 wells at the Miami Springs Wellfield system. Improvements include wellhouse rehabilitation and replacement, replacement of existing pumps and general site improvements, among others.

MDWASD | OOL Program - Large Diameter Pipeline Projects

Senior Project Manager. Managed the design of two pipeline crossings under a CSX Railroad right-of-way along a busy 4-lane divided highway in Miami, Florida. The relocated forcemains included a 60-inch pre-stressed concrete cylinder pipe (PCCP) and a 36-inch ductile iron pipe (DIP). Additional design included the relocation of pipeline crossings along busy streets.

MDWASD | Consent Decree Program - Pump Station No. 1

Senior Project Manager. Managed the design for improvements to the existing bar racks, odor control system and HVAC system in compliance with the scope of work defined under the Consent Decree. Coordinated with WASD Diver's Team for the inspection of the pump station's seawall to determine structural conditions and needs for improvement.

PRASA | Capital Improvements Program

Project Manager. Responsible for the execution of the planning, design and bid phases of more than 45 infrastructure projects per year while complying with strict metrics that were established by the client, federal agencies and by the governor's office. Managed more than 30 water and wastewater projects under the PRASA Capital Improvements Program. Among these projects has been the planning, design and design services during construction of a membrane filtration water treatment plant; planning and design oversight for the construction of sanitary pump stations, water distribution systems and water treatment plant upgrades; and the preparation of the planning, design and bid phase deliverables for various other water and wastewater projects.

KEY PERSONNEL

OFFICE LOCATION
Coral Springs, FL

EDUCATION
- MS, Environmental Engineering
- BSCE, Environmental Engineering

YEARS EXPERIENCE
Total: 25 | BV: 1

PROFESSIONAL REGISTRATION
- PE, 80848, FL
- PE, 16639, PR

PROFESSIONAL ASSOCIATIONS
- Florida Water Environment Association, South Florida Chapter Board Member
- Instituto de Ingenieros Ambientales (IIAM) of the Colegio de Ingenieros y Agrimensores de
- Puerto Rico (CIAPR), Founding Member
- Water Environment Federation, Member

JON DINGES, PE

INFRASTRUCTURE LEAD

KEY PERSONNEL

OFFICE LOCATION
Tampa, FL

EDUCATION
- BS, Environmental Engineering

YEARS EXPERIENCE
Total: 26 | BV: 3

PROFESSIONAL REGISTRATION
- PE, 1999, FL 54747

PROFESSIONAL ASSOCIATIONS
- Florida Engineering Society
- American Water Resources Association

Jon has more than 26 years of experience in civil and environmental engineering with a water resources focus. He has extensive experience with water management districts as he served for more than 15 years with Suwannee River Water Management District (SRWMD) where he served in roles of increasing responsibility, including Assistant Executive Director. While serving with SRWMD, Jon developed and maintained district strategic priorities and managed a diverse array of programs and projects. Jon's program and project experience includes stormwater, floodplain restoration and management, water supply assessment and planning, water quality improvement, hydrologic assessment and restoration, establishment of minimum flows and levels, modernization of water resource data collection and management systems, natural systems restoration, and resource management planning.

City of Winter Haven | One Water Plan

Project Manager. Black & Veatch is assisting Winter Haven with developing an integrated plan to manage the area's finite water resources for longterm resiliency, sustainability and reliability, meeting both community and ecosystem needs. The goal of the program will be to identify a sustainable future water supply, restore lakes to their historical levels, protect water quality and natural systems, create parks for the community and provide increased flood protection. Reuse opportunities include traditional nonpotable irrigation, wetlands and environmental enhancement, and future potable reuse opportunities.

City of Clearwater | WRF Master Plan Climate Vulnerability Assessment

Project Engineer. Black & Veatch was tasked to develop planning alternatives for the City of Clearwater's three water reclamation facilities. This effort included development of a Climate Vulnerability Assessment for flooding, sea level rise, and stormwater surge impacts for which Black & Veatch was responsible for quality assurance and quality control. The Vulnerability Assessment included sea level rise projections for 2040 and 2070. Two of the three water reclamation facilities required development of adaptation and mitigation strategies to address significant flood vulnerabilities.

South Florida Water Management District | Cutler Flow Way S-701 Pump Station CFD Modeling

Project Manager. Black & Veatch, as a subcontractor to Northstar, was tasked with performing computational fluid dynamics modeling for the proposed Cutler Flow Way Pump Station. The project involved configuring the model, establishing the model domain, developing model simulation scenarios, evaluating alternatives to improve flow patterns in the vicinity of the intakes for the five proposed pumps, and preparing modeling documentation.

MARK SEASTEAD

QA/QC, VALUE ENGINEERING AND UTILITY OPTIMIZATION LEAD

KEY PERSONNEL

OFFICE LOCATION
Charlotte, NC

EDUCATION
- BS, Resource Planning
- BS, Geology

YEARS EXPERIENCE
Total: 28 | BV: 6

PROFESSIONAL REGISTRATION
- PE, 1999, FL 54747

PROFESSIONAL ASSOCIATIONS
- Florida Engineering Society
- American Water Resources Association

Mark has over 28 years of program management, consulting, and system implementation and integration experience on projects for private entities, municipal government and water, wastewater, and transportation focused clients. He specializes in work and asset management program development, Computerized Maintenance Management System (CMMS) solution selection, business process mapping, systems implementation and refinement, systems integration, and end-user training and support. Having led both large enterprise and small departmental efforts to both private and public-sector clients, Mark provides a unique experience in leading asset management and IT program development that focuses on practical usage measurable performance.

City of Hollywood | EAMS Implementation - Phase 1

Project Manager. Led the migration of a legacy CMMS, off Accela and onto Cityworks AMS, for the City of Hollywood Utilities Department. This included developing an asset hierarchy, defining business processes associated with maintenance management, data migration of strategic work and asset history, EAMS system configuration, end user training, support and deployment of tablets to the field.

Delray Beach | EAMS Implementation - Phase 1

Project Manager. Led the migration of a legacy CMMS, off Cartegraph and onto Cityworks AMS, for the City of Delray Beach Utilities and Parks & Recreation Department. This included developing an asset hierarchy, inventorying assets, defining business processes associated with maintenance management, EAMS system configuration, end-user training, support, and deployment of more than 40 tablets to the field for the first time. This project also included migration of the City's geodatabase to the ESRI Local Government Information Model.

Sea Coast Utilities | Lucity EAMS Implementation;

Project Manager. Responsibilities included managing implementation of Lucity/ Central Squared EAMS system, migration of assets from legacy CMMS, and providing departmental staff with initial user training.

Lee County | Asset Management Assistance (Lucity Reports)

Project Manager. Responsibilities included reviewing Lucity reports in Crystal Reports and documentation of the issues with the reports and Lucity data and recommending solutions to resolve.

Natalia Garcia, PE

FACILITIES PLANNING

YEARS EXP.: TOTAL: 9 | BV: 1

Experience encompasses environmental compliance, treatment operations and project management for water and wastewater treatment systems including membranes softening, lime softening, activated sludge, wastewater reuse and disinfection.

- City of Clearwater | Master Plan | Project Engineer
- City of Deerfield Beach | West WTP 4-Log Alternatives Analysis and Permitting | Process Engineer

Timur Deniz, PhD, PE, BCEE

PROCESS EVAL./ CAPACITY ANALYSIS

YEARS EXP.: TOTAL: 18 | BV: 1

Experience with wastewater treatment plant design and construction. He specializes in biological nutrient removal processes, process and capacity evaluation, and optimization of existing BNR facilities for rerates, expansions, and upgrades.

- MDWASD | CDWWTP Headworks, Oxygenation Train, Secondary Clarifiers and Effluent Pump Station Improvements | Senior Project Engineer
- MDWASD | SDWWTP Clarifier, Effluent Filter, Chlorine Contact Chamber, Effluent Pump Station Improvements Design; | Senior Project Engineer

JoAnn Jackson, PE

RECLAIMED WATER

YEARS EXP.: TOTAL: 39 | BV: 3

Experience with planning, permitting, design, and/or implementation of nearly every type of water reuse program from traditional urban and agricultural irrigation reuse systems to innovative wetland environmental enhancement projects and potable reuse.

- City of Winter Haven | One Water Plan | Water Reuse Lead
- Tampa Bay Water | Integrated Master Water Plan | Reuse Technical Lead
- JEA | Water Purification Facility | Permitting Lead

Lee Kimbell, PhD

BIOSOLIDS MANAGEMENT

YEARS EXP.: TOTAL: 1 | BV: 1

Lee has a broad knowledge of water and wastewater treatment processes, disinfection processes, antibiotic resistance, and WWTP design. Lee is the primary author or co-author of nine peer-reviewed manuscripts in the environmental engineering field related to drinking water treatment, wastewater treatment, and biosolids management.

- MDWASD | Zoo Miami WWTP Alternative Analysis | Process Engineer
- Broward County | Reclaimed Water Main Chlorine Booster Station | Process Engineer

Melissa Velez, PE, LEED AP

AWWT FOR OCEAN OUTFALL LEG.

YEARS EXP.: TOTAL: 16 | BV: 5

Experience in the water and wastewater field in Florida including design, feasibility studies, hydraulic modeling, cost estimating, and construction oversights for water and wastewater treatment plants.

- MDWASD | Ocean Outfall Legislation Professional Services Agreement | Engineering Manager
- City of Hollywood | Automation and SCADA Improvements for Optimization of the SRWWTP's Influent Distribution, Oxygenation Trains, RAS, DEEP Injection Wells| Engineering Manager

Irene Testa

FACILITIES DESIGN

YEARS EXP.: TOTAL: 5 | BV: 4

Experience working as a project engineer in the water and wastewater engineering field. Experience facilitating overall site civil design, pump station mechanical process design, stormwater design, pilot studies, permitting, and construction management services.

- Broward County | Improvement Projects GES | Project Engineer
- MDWASD | SDWWTP Electrical Distribution Building 3 | Project Engineer

Anamaria Sarmiento, PG

DEEP INJECTION WELLS

YEARS EXP.: TOTAL: 10 | BV: 3

Hydrogeologic oversight experience includes permitting, design, construction, and testing oversight of Class V exploratory wells and Class I injection wells and rehabilitation of deteriorated wells. Experience also includes oversight of the drilling and installation of Biscayne Aquifer wells, as well as oversight of plugging and abandonment of Biscayne Aquifer Wells.

- MDWASD | Hydrogeological and Engineering | Project Support Lead
- MDWASD | Ocean Outfall Legislation Injection Well Program | Project Support Lead

Felipe Franco, GIT

DEEP INJECTION WELLS

YEARS EXP.: TOTAL: 4 | BV: 1

Involved in various hydrologic, geologic, environmental investigations, and feasibility studies. Experience includes, design, permitting, construction and testing of Public Water Supply Wells/Wellfields Class I injection wells, Class V ASR wells, Aquifer Recharge wells, industrial supply wells, irrigation wells, monitor wells, and rehabilitation of deteriorated wells.

- City of Cape Coral | Injection Wells Performance Review | Project Hydrogeologist
- City of Winter Haven | Upper Peace Creek Optimization Model | Project Hydrogeologist

Amanda Schwerman, PE

FACILITIES PLANNING

YEARS EXP.: TOTAL: 15 | BV: 7

Dedicated planning and asset management project manager who focuses solely on master planning, hydraulic modeling and asset management projects. She has served as the manager and lead modeler for numerous water, wastewater and reclaimed water planning and asset management projects across the Southeastern United States and the Country.

- Broward County | Regional Wastewater Master Planning | Planning Manager
- City of Fort Lauderdale | Comprehensive Plan Update | Engineering Manager

Arturo Burbano, PhD, PE, BCEE

PROCESS EVALS./ CAPACITY ANALYSIS

YEARS EXP.: TOTAL: 31 | BV: 3

Long history of successfully delivering infrastructure projects, including design and construction of treatment facilities ranging from 20 gpm to 750 MGD in capacity. Expertise include process selection, permitting support, bench and pilot studies, conceptual and detailed engineering design, QA/QC, engineering services during construction, commissioning, and decommissioning of treatment facilities.

- MDWASD | CD2.17 Chlorination Facilities Detailed Design | Project Manager
- MDWASD | CD2.22 Pump Station No. 2 Upgrade Modifications | Project Manager

Ed Rectenwald, PG, PMP

HYDROGEOLOGY/ WELLS

YEARS EXP.: TOTAL: 28 | BV: 5

Experience in various hydrologic, geologic, environmental investigations, including project management, design, permitting, construction, and testing of Public Water Supply Wells/ Wellfields Class I injection wells, Class V ASR wells, Aquifer Recharge wells, industrial supply wells, irrigation wells, monitor wells, and rehabilitation of deteriorated wells.

- MDWASD | Hydrogeological and Engineering Services for Production, ASR Wells Disposal, Storage, and Monitoring Well Networks | Technical Lead
- Cape Coral | Comprehensive Water Resources Program | Technical Lead

Amanda Monnette, GIT

HYDROGEOLOGY/ WELLS

YEARS EXP.: TOTAL: 2 | BV: 1

Experience primarily in deep injection well and monitoring well construction and also in feasibility studies, permitting, and design of a vary of hydrogeologic projects. Skilled in geologic sample collection and analysis, data collection and analysis, packer testing, groundwater sampling, research, and intermediate experience with Geographic Information Systems (GIS).

- Miami Dade MDWASD | North District Wastewater Treatment Plant (NDWWTP) | Hydrogeologist
- City of Cape Coral | Production Wellfield Expansion | Hydrogeologist

Scott Carr, PE, BCEE

RESIDUALS MANAGEMENT

YEARS EXP.: TOTAL: 37 | BV: 28

Global Practice and Technology Leader for biosolids and residuals management. Focused on biosolids and residuals management, including processing and beneficial use of biosolids. His expertise encompasses all aspects of biosolids management, from master planning through design and construction administration.

- Pinellas County | Biosolids Master Plan | Technical Advisor
- City of San Jose | Biosolids Dewatering Facility | Technical Advisor

Brad Vanlandingham, PE

ELEVATED STORAGE TANKS

YEARS EXP.: TOTAL: 37 | BV: 37

Extensive experience designing a variety of projects including water and wastewater treatment plants, solid waste transfer stations, laboratories, and power stations. Experience providing treatment process studies, ozone pilot plant, preliminary and final designs, bidding, permitting, construction phase services, as well as startup assistance.

- City of Fort Myers | IMAG Elevated Storage Tank Plan | Structural Engineer
- SFWMD | C-43 West Basin Storage Reservoir Civil Works | Structural Engineer

Chris Barlow, PE, CDT

PUMP STATIONS

YEARS EXP.: TOTAL: 22 | BV: 3

Experienced engineer that has focused his practice on the analysis and design of municipal water utility projects, primarily in south Florida including the successful completion of numerous rehabilitation and new designs of pump station installations.

- City of Hollywood | Continuing Professional Services Agreements | Project Manager
- City of Hollywood | High Service Pump Station Upgrades, Water Treatment Plant | Project Manager

Pablo Gala-Serra, PE

FACILITIES DESIGN

YEARS EXP.: TOTAL: 16 | BV: 10

Involved in both traditional design and design-build projects, and in that role has designed both new and retrofitted facilities.

- MDWASD | Ocean Outfall Legislation Program | Central District WWTP (CDWWTP) Effluent Filtration Pilot Study and Effluent Pump Station Evaluation | Engineering Manager
- MDWASD | Ocean Outfall Legislation Program | South District WWTP (SDWWTP) Engine Generation and Electrical Distribution Building No. 3 | Engineering Manager

Tammy Martin, PE

FACILITIES DESIGN

YEARS EXP.: TOTAL: 17 | BV: 8

Experience with environmental engineering projects including stormwater design, permitting, and construction management. Proficient with WaterGEMS modeling, HEC-RAS modeling, and Arc GIS. She has participated in detailed design and construction of alternative delivery methods (design/ build/operate).

- City of Key West | Dennis Street Stormwater Improvements Pump Station Phase I and Phase II | Engineering Manager
- City of Deerfield Beach | Water Treatment Plant General Engineering Services | Engineering Manager

Olena Lytvyn, PE

PIPELINE PLANNING & ROUTING STUDIES & DESIGN

YEARS EXP.: TOTAL: 10 | BV: 5

Experience in civil engineering designs, including composing preliminary engineering reports, route analysis, pipeline design of various sizes, developing cost estimates, and inspections. She has also served as the client manager for various clients in the Tampa Bay area.

- MDWASD | 54-inch Condition Assessment Carbon Fiber Repairs | Project Engineer
- MDWASD | SL-2.1 | Engineering Manager

Renee Murch, PE

HYDRAULIC MODELING/SURGE ANALYSES

YEARS EXP.: TOTAL: 20 | BV: 1

Areas of expertise include the development and application of hydraulic, hydrologic, and statistical models, restoration of surface water resources, evaluation of saltwater and freshwater interaction, simulation of regional and local scale hydrologic conditions as part of water resourcing planning efforts, and assessment of scouring and erosion processes associated with the construction of bridges and other civil infrastructure.

- Hillsborough County | Wellhead Protection Modeling Study | Project Engineer
- (SJRWMD) | Peer Review of Trout Lake HSPF Model | Project Engineer

Stephen O'Connell, PG

TRENCHLESS TECH. DESIGN & REHAB

YEARS EXP.: TOTAL: 17 | BV: 15

Black & Veatch's east region tunnel practice lead with experience in heavy civil, tunnel, trenchless, and geological engineering. His relevant experience includes subsurface investigations, design, and construction phase services for subsurface construction projects.

- Renewable Water Resources | Reedy River Basin Sewer Tunnel | Project Manager/Construction Manager
- City of Charleston | Spring/ Fishburne US 17 Drainage Improvements Project | Project Manager

Sergio Baltodano

GEN. CIVIL/ PIPELINE DESIGN

YEARS EXP.: TOTAL: 12 | BV: 1

Engineering manager and mechanical engineer with direct experience in water and wastewater systems Experience with a variety project in water/wastewater collection and transmission systems that include, rehabilitation and design projects for pump stations and pipelines.

- MDWASD | Pump Station Improvement Program | Deputy Project Manager/Design Manager
- MDWASD | Stormwater Master Plan Design Services | Technical Lead

Carlos Ortega, PE

SEA LEVEL RISE/GREEN INFRASTRUCTURE

YEARS EXP.: TOTAL: 16 | BV: 1

Extensive experience with all stages of project delivery of site development and stormwater infrastructure projects. Experience includes management of projects, assisting clients in procurement, and providing client support during construction for various types of projects ranging from municipal roadway projects to seaport improvements.

- Broward County | North Regional Wastewater Treatment Plant (NRWWTP) | Engineering Manager
- City of Miami | NE 10th Avenue Roadway and Drainage Improvements | Project Engineer

Sam Miller, PE

SUSTAINABILITY & RESILIENCY

YEARS EXP.: TOTAL: 7 | BV: 5

Experience working on several different types of projects ranging from solar but primarily civil/site roles and water resource project. Experience in grading, stormwater modelling, yard piping, site design, master planning, environmental permitting, and construction phase services.

- City of Cape Coral | Cape Coral Utilities Extension Program | Stormwater Design Engineer
- City of Winter Haven | One Water Master Plan| Project Engineer

George Joyce, PE, PMP

QA/QC & VALUE ENGINEERING

YEARS EXP.: TOTAL: 23 | BV: Z

Senior construction professional with experience in water and wastewater infrastructure sales, management, marketing, training and strategic planning. Proven record of accomplishment of significant contribution to profit levels and productivity by developing, training, and motivating a successful technical team.

- MDWASD | Digesters Renewal, Central District Plant 2, Cluster 1 | Project Manager
- Hillsborough County | Design-Build Criteria Professional for River Oaks Diversion | Principal-in-Charge

Mike Mackenzie, DBIA

QA/QC & VALUE ENGINEERING

YEARS EXP.: TOTAL: 22 | BV: 6

Long record of success in planning, pursuing, and bidding construction projects for infrastructure, industrial, and environmental projects. Proven record of developing and implementing cost control systems and documented internal review process for scope and cost validation for construction operations buy-in prior to bid submission

- City of Fort Lauderdale | Waterworks 2011 Program Management | Cost Estimator
- Collier County | Facilities Management | Program Manager

Julie Inman, PE, PMP

SCADA OPTIMIZATION

YEARS EXP.: TOTAL: 37 | BV: 33

Serves as the Global Instrumentation, Control and Automation Discipline Leader for Black & Veatch Experience providing SCADA and Instrumentation & Control consulting on water and wastewater projects through all phases, including planning, design, construction, field services, equipment/system procurement, operator training, and startup.

- City of Hollywood | SRWWTP - Sludge Process Control Automation Improvements Phase 1, 2 and 3 | Quality Control
- City of Hollywood | Energy Efficiency Master Plan | Automation Tech. Lead

Laurie Kusmaul

SCADA PROGRAMMING & AUTOMATION

YEARS EXP.: TOTAL: 16 | BV: 3

IT professional with proven success designing, implementing, and integrating cost-effective, high-performance technical solutions in various markets, especially the water and wastewater pumping industry. She possesses a strong background in information technology, project management, and electrical controls.

- City of Hollywood | Automation & SCADA Improvements | PLC & SCADA HMI Programmer
- Pinellas County Utilities | Phase I - Radio to Cellular Modem Upgrades for Lift Stations | Project Manager & SCADA Engineer

Jorge Villalobos

UTILITY OPTIMIZATION

YEARS EXP.: TOTAL: 29 | BV: 8

Experience in the areas of financial analysis for bond feasibility, cost of service, rate design as well as capital prioritization and business process evaluation for water, wastewater, stormwater and electric utilities.

- City of Delray Beach | Stormwater Rate Study | Consultant
- City of Baton Rouge | Stormwater Feasibility Study | Consultant

Ari Copeland

OPERATIONS OPTIMIZATION

YEARS EXP.: TOTAL: 19 | BV: 15

Experience in water and wastewater plant design, water distribution system operations, permitting, facility assessments and benchmarking, treatment plant startup and commissioning, operator training, process control troubleshooting, conducting pilot studies, standard operating practices, and operations and maintenance manual preparation.

- Pinellas County | Dunn Water Reclamation Facility Staffing Assessment and Facility Assessment| Operations Specialist
- MDWASD | Dade Cross Connection Control Plan| Operations Specialist

Nick Burns, PE

PILOT STUDIES

YEARS EXP.: TOTAL: 22 | BV: 21

Director of the Water Technology Group at Black & Veatch. Specializes in the development and application of water treatment technologies, in particular chemical treatment through coagulation and softening, oxidation, and multimedia filtration. Assisted numerous utilities with evaluation of treatment alternatives and developing conceptual level cost.

- Cave Creek WRP | Facility Design | Lead Process Engineer
- Hampton Roads Sanitary District | Advanced Treatment Plant Facility Design | Lead Process Engineer

Robert Chambers, MBA

CAPITAL PRIORITIZATION

YEARS EXP.: TOTAL: 17 | BV: 16

Knowledge covers a wide range of utility management and operating issues, including cost of service and rate analysis, financial planning, capital financing, acquisitions and valuations, energy management, customer affordability, business case analysis, and strategic planning.

- City of Hollywood | Energy Master Plan | Project Manger
- Palm Beach County WUD | Strategic Sustainability Plan | Project Manager

Tom Bohrer

AMI

YEARS EXP.: TOTAL: 14 | BV: 1

Progressive experience in the water, energy and utility industry with specialized expertise in Advanced Metering Infrastructure (AMI) technologies and smart infrastructure

- City of Sugar Land | AMI Vendor RFP Release and Selection Process | Principal Consultant
- City of Houston | AMI Deployment | Account Manager

Black & Veatch has continually provided innovative ideas for solving Miami-Dade WASD's challenges. They think outside of the box, and deliver innovative solutions that result in cost and schedule savings, while meeting the requests of the operations staff."

- MARISELA ARANGUIZ, PE
DEPUTY DIRECTOR
MIAMI-DADE WASD

SPECIALIZED PROJECT SUPPORT

PROFESSIONAL	RELEVANT QUALIFICATIONS	YRS. EXP
STEVE KING, PE *Regulatory Review, Permitting & Compliance Reporting*	Extensive experience obtaining regulatory approvals for a variety of water and wastewater projects. Prior experience includes working as Permitting supervisor during a seven-year employment with FDEP.	20 | 13
LARRY BROUILLETTE, PE *I&C/SCADA Control Strategies*	Senior I&C engineer responsible for the process design and development of various wastewater, reclamation, and potable water facilities. Participated in a wide range of project activities including feasibility studies, alternative technologies review, design, construction services, commissioning, and training.	37 | 13
RONY CRUZ *I&C/SCADA Control Strategies*	Skilled in PLC/SCADA/HMI programming and Process Control and Instrumentation Systems. Strong understanding of control systems from design and specifications to development, implementation, commissioning, and documentation.	9 | 1
DAVID GARCIA, PE *Electrical*	Experienced in the development of security and privacy SCADA policies for water and wastewater utilities, led and supported projects to replace low and medium voltage switchgears, as well as replacing and adding power generation to utilities.	9 | 1
MARK LUTHER *(Hillers) Electrical*	Experienced in electrical, instrumentation, communication, and control system design actively performing electrical, lighting, communication, fire alarm, instrumentation and control system design/SCADA for many clients.	36 | 26
DIEGO BARRIOS, PE *Process Mechanical*	Experienced in generating mechanical specifications for procurement and coordinating with the suppliers for several retrofit projects.	15 | 11
MICHELE ROTH, PE *Building Mechanical*	Experienced in the design and task leadership of various mechanical systems, including heating, ventilating, and air conditioning (HVAC), odor control, plumbing, and dehumidification systems for many water and wastewater treatment, distribution, and collection facilities.	39 | 21
GREGORY STELMACK, PE *(WRIX) Geotechnical/ Testing*	Expert in providing geotechnical and materials engineering and design recommendations, QA/QC materials testing and inspection support, and CEI inspection services for water and wastewater facilities, and pump stations.	33 | 1
PHIL RISHEL, RA, LEED AP *Architectural*	Experienced in all phases of architectural design for water and wastewater treatment facilities including schematic development, conceptual graphics and renderings, 3D computer modeling, production of drawings and documents, specification writing, finish selection, and construction phase services.	16 | 16

PROFESSIONAL	RELEVANT QUALIFICATIONS	YRS. EXP
MARK CASTANO, PE *(Keith) Site/Civil*	Extensive technical knowledge in water distribution systems, stormwater management systems, sanitary sewer systems including sewer lift stations, gravity sewers and force mains, roadway design throughout Miami-Dade, Broward, and Palm Beach counties.	25 | 20
JAME WILLS, PE, LEED AP *(Keith) Site/Civil*	Experienced in design, permitting, and construction inspection including many projects with South Florida clients. Duties include drainage calculations, plans preparation, shop drawing review, responding to contractor's request for information, and coordinating with reviewers.	9 | 4
TIMOTHY GRAY, PSM, CFM *(Keith) Surveying*	Experience includes a variety of surveying assignments, including right-of-way mapping, chain of title research and review, computations, topographic surveys, drainage surveys. Proficient in the industry's software.	23 | 6
MICHAEL MOSSEY, PSM *(Keith) Surveying*	Extensive senior project management experience for large-scale projects and continuing service, on-call type contracts for both public and private sector clients in land surveying and mapping in South Florida.	42 | 4
MARK MITCHELL *(Keith) SUE*	Experience includes creating DTMs, topos, TIN models, PNCs, and test hole summary spreadsheets. Liaison between the design team, utility agencies, and owners on behalf of clients to provide utility coordination, documentation, inter-coordination, and maintenance of files of all activities for each utility agency.	23 | 9
MELODY GONZALEZ *Construction Admin./ Inspections*	Experienced in civil design, including yard piping, route analysis, composing preliminary engineering reports, pipeline design of various sizes, permitting, and construction management services.	4 | 4
KEVIN CEVALLOS, PE *Construction Admin./ Inspections*	Experience and knowledge of water and wastewater systems through serving as design engineer on several civil engineering projects, including water and wastewater treatment plant facilities design.	4 | 4
CLAYTON GLATT *GIS/CAD Design*	BIM/CAD project lead for Black & Veatch water conveyance projects throughout Florida with experience leveraging both CAD and GIS platforms across disciplines.	20 | 1
MATT DEEKEN *GIS/CAD Design*	Specializes in the use of BIM on complex infrastructure projects and coordinated with global project teams on BIM projects for water and wastewater facilities.	22 | 22
MARK CHOMTID, PHD, PE *Geotechnical Analysis/ Design*	Extensive experience in design, construction and inspection of earthen embankments including overseeing geotechnical engineers, geologists, and scientists specializing in geotechnical investigation, design and construction.	24 | 3
ROBERTO SANTIAGO, PE *Scheduling*	Experience covering the complete life cycle of projects with a main objective of delivering projects with the required quality with the least amount of resources and time in the safest way.	16 | 8
JENA MIER, PMP *Remediation/Environmental Assessments*	Experience in environmental resource permitting and licensing including providing environmental guidance to clients throughout the project life cycle, from early in project development with siting and design, through permitting and construction, to post-construction monitoring and reporting.	35 | 1
MATT MOREY, GSIP *Asset Management/CMMS*	Specializes in CMMS solution requirements development, systems implementation and refinement, report writing, and systems integration requirements development.	15 | 6
NICK ALEXANDROU, GISP *Asset Management/CMMS*	Experience implementing organization-wide asset management programs and strategies and performed large-scale data analysis for phased capital expenditure replacement plans for aging infrastructure.	12 | 1
MARCUS DURAN *Wellfields Assessment & DIW Construction Insp.*	Experience including production well drilling oversight, pad monitoring wells (PMWs) construction oversight, multimedia water quality sampling of existing and rehabilitated wells. Also has experience in construction of production wells and rehabilitation of existing wells.	1 | 1
RON PARKER *Start Up/Commissioning*	Experience in the management of treatment plant operations, facilities operation and maintenance (O&M), treatment plant startup and commissioning, disinfection and neutralization of assorted structures and pipelines, operator training, process control troubleshooting, equipment maintenance, and O&M manual preparation.	38 | 13
DANNY CHADWICK, CPE, LEED AP BD + C *Cost Estimating*	Principal Estimator with extensive experience in managing and estimating new construction and renovations from concept to completion.	43 | 4

PROJECT TEAM AVAILABILITY

NAME	ROLE	LOCAL/FL	% AVAILABILITY
MANAGEMENT TEAM			
Rafael Frias, PE	Project Director	■	25%
Isabel Botero, PE	Project Manager	■	50%
TASK LEADERS			
Lucas Botero, PE, BCEE, ENV SP	Wastewater Treatment Plant Projects	■	50%
Jamie Abreu, PE	Waster Supply and Treatment Projects	■	50%
Jon Dinges, PE	Infrastructure Projects	■	50%
Mark Seastead	QA/QC, Value Engineering, and Utility Optimization		50%
KEY PROFESSIONAL ENGINEERING SERVICES			
Natalia Garcia, PE	Facilities Planning	■	60%
Timur Deniz, PhD, PE, BCEE	Process Evaluations/Capacity Analysis	■	60%
Jo Ann Jackson, PE	Reclaimed Water	■	25%
Lee Kimbell, PhD	Biosolids Management	■	60%
Melissa Velez, PE, LEED AP	Advanced Wastewater Treatment for OOL	■	50%
Irene Testa	Facilities Design	■	50%
Anamaria Sarmiento, PG	Deep Injection Wells	■	50%
Felipe Franco, GIT	Deep Injection Wells	■	50%
Amanda Schwerman, PE	Facilities Planning | Hydraulic Modeling/Surge Analysis	■	50%
Arturo Burbano, PhD, PE, BCEE	Process Evaluations/Capacity Analysis	■	50%
Ed Rectenwald, PG, PMP	Hydrogeology/Wells	■	50%
Amanda Monnette, GIT	Hydrogeology/Wells	■	50%
Scott Carr, PE, BCEE	Residuals Management		40%
Brad Vanlandingham, PE	Elevated Storage Tanks	■	30%
Chris Barlow, PE, CDT	Pump Stations	■	30%
Pablo-Gala Serra, PE	Facilities Design	■	50%
Tammy Martin, PE	Facilities Design	■	40%
Olena Lytvyn, PE	Pipeline Planning & Routing Studies & Design	■	40%
Renee Murch, PE	Hydraulic Modeling/Surge Analysis	■	30%
Stephen O'Connell, PG	Trenchless Technologies Design & Rehab		30%
Sergio Baltodano	General Civil/Pipeline Design	■	50%
Carlos Ortega, PE	Sea Level Rise/Green Infrastructure Design	■	30%
Sam Miller, PE	Sustainability & Resiliency	■	30%
George Joyce, PE, PMP	QA/QC & Value Engineering	■	30%
Mike Mackenzie, DBIA	QA/QC & Value Engineering	■	30%
Julie Inman, PE, PMP	SCADA Optimization		30%
Laurie Kusmaul	SCADA Programming & Automation	■	50%
Jorge Villalobos	Utility Optimization	■	20%
Ari Copeland	Operations Optimization		20%
Nick Burns, PE	Pilot Studies		20%
Robert Chambers, MBA	Capital Prioritization & Optimization	■	20%
Tom Bohrer	AMI		30%

SECTION E

Approach to Scope of Work

The City will benefit from resilient and reliable water and wastewater treatment facilities that meet future regulations and challenges through Black & Veatch's in-depth experience on similar continuing services contracts and an unmatched knowledge of the City's needs.

UNDERSTANDING OF THE CITY'S NEEDS

Black & Veatch has had the honor to serve as the City of Hollywood Department of Public Utilities (City) providing a range of general engineering services since 2012. These opportunities have allowed us to work closely with staff to support with the implementation of energy efficiency improvements, automation, and asset management at the City's Water Treatment Plant (WTP) and South Regional Wastewater Treatment Plan (SRWWTP).

During our work, we have learned that the leadership of the City's Department of Public Utilities has established a culture of continuous improvement and increased efficiencies. In support of this progressive culture, Black & Veatch will continue to evaluate opportunities for the City to benefit from optimized operations, automated treatment systems, reduced energy consumption and chemicals usage at the City's WTP and SRWWTP in support of achieving cost-effective operations. Our thorough knowledge of the utility's operations, coupled with our global expertise and thought leadership in water and wastewater treatment systems, provides the City with a highly qualified project team that will successfully deliver all City WTP, SRWWTP and infrastructure-related projects.

Project Understanding

The City is actively seeking qualified, experienced, and/or licensed firm(s) to provide professional engineering (including design, planning and construction administration support) services on an as-required basis related to WTP and SRWWTP projects through Continuing Contracts.

A full range of professional engineering design services is needed to support the design and construction of various Department of Public Utilities projects. Consultant services will include, but not be limited to, the conceptual, preliminary and final design, permitting, construction administration and management, studies, reviews and other services necessary to implement the City's proposed Capital Improvement Program, and such incidental projects as are necessary for daily operation.

We have been executing work for the City of Hollywood for the past 10 years, including serving as your general engineering services consultant since 2017.

Our locally managed team is ready to continue to collaborate with the City staff in the execution of these important assignments for the improvement of the water/wastewater systems.

CITY'S NEEDS	OUR SOLUTIONS	CITY BENEFITS
SRWWTP South Electrical Service Center Rehabilitation	Integrate knowledge of working with both the City and FPL in multiple utility projects to create an integrated solution.	Well-structured project from the start by having all stakeholders involved. More efficient implementation of the improvements.
SRWWTP Bar Screen Bypass – Construction Management	Define proper plan for inspections in the field that have adequate coverage for monitoring of construction tasks.	Assurance of the project being built per the intended design due to experienced staff that will support the City during the construction inspections.
SRWWTP Clarifiers Rehabilitation	Identify through condition assessment inspections the improvements required to have a targeted plan for rehabilitation.	A rehabilitation approach that maximizes the available funds by rehabilitating only the components of the system that truly need to be replaced.
SRWWTP Oxygenation Trains Rehabilitation	Implementation of a vacuum pressure swing absorption (VPSA) oxygen system.	Lower cost of operations due to the significant cuts in power required for this technology in comparison to the existing Cryo Plant.
WTP Membrane Softening Trains Replacement	Evaluation of current technologies through piloting to ensure proper selection.	New membranes selection that may eliminate the need for the sulfuric acid feed system or optimized the chemical usage of the membrane softening system.
Hydrogeological Services	Renewal of water use permits with increased allocations from the surficial aquifer. Renewal of UIC permits, MITs and rehabilitation services. Support with the installation of numerous new deep injection wells and their associated monitoring wells.	Immediate access to a variety of professional hydrogeologists that specialize in surficial and Floridan water supply wells, groundwater modeling, as well as the professional services related to deep injection wells.
Modernize AMI	Evaluate the condition and remaining useful life of the City's existing AMI system so the City can make a more informed decision and develop the solicitation for the replacement of this system.	Cost savings and continued beneficial use of the investments that have been made into its AMI system.
Large User Meters (LUM) Evaluation, Calibration, and Standardization	Provide conditional assessments of the four types of large user meters, identifying the necessary improvements, provide the design for improvements, and supporting the City in the construction of these improvements.	Assessments, calibration and upgrades to LUM's will reduce lost revenue associated with the meters that are out of calibration. Construction improvements to meters will greatly improve operations and maintenance of these essential components.
Grant Application and Grant Management	Identifying and secure grant funds for the City.	Funds will offset of the City's financial burden necessary to meet its goals that will be identified in the Water, Wastewater, and Stormwater Master Plans.
Asset Management Program	Provide support in developing the foundation of an asset management program.	Continuity and consistency between efforts while helping to establish a framework for long-term success.
Project Management Information System (PMIS)	Develop a PMIS system to effectively manage the City's CIP for near-term and long-term projects.	Comprehensive project information can be managed uniformly will increase the efficiencies of identifying the status of projects allowing the City to track budgets and projects of its CIP.
CityWorks Implementation	Continue to work together with the City on deployment of Cityworks upgrades/improvements and provide training to staff.	Facilitation of seamless transition of long-term knowledge transfer ensuring the City gets this project and the AMP completed.

The City will receive projects on schedule, on budget, and of high technical quality by leveraging our proven project control tools and ISO 9001-compliant Quality Management System.

PROJECT MANAGEMENT PLAN

Black & Veatch has supported the City of Hollywood since 2012 starting as its Energy Efficiency Services consultant and helping the City create a masterplan centered around energy savings. Since 2017, under the Water/ Wastewater General Engineering Services contract, we have been supporting the City with multiple assignments including SCADA upgrades and asset management with the implementation of Cityworks. We understand what it takes to provide exceptional value to the City under this contract. **Our Project Management Plan revolves around delivering services through our local staff to continue to provide the City with highly responsive service and direct interface with our project execution team.** Our local team is made up of a diverse group of technical professionals and includes a range of expertise in the areas of water, wastewater, and linear infrastructure projects.

Our approach includes leveraging consistent local professionals, who will quickly learn about and come up to speed with your facilities, staff, procedures, and standards, in order to enhance the efficiency of our work and to make sure our services meet your needs. Black & Veatch has completed more than 1,000 individual task orders for Florida water utilities under continuing services contracts. Through this experience, we have developed a proven management approach that will be effective at meeting the City's needs under this contract.

Black Veatch's project management approach involves enhanced single- point-of-contact communications, firm understanding of each assignment, use of local resources, continuous progress reporting, schedule and budget control, and detailed quality control.

Approach to Task Authorization Development

Black & Veatch recognizes the value of a solid upfront effort in the development of new Task Orders. The Black & Veatch **Project Manager, Isabel Botero,** will meet with the City's Project Manager and City staff as necessary to clearly identify the goals of each project, to develop a detailed project schedule, and to define the specific deliverable requirements. All of these issues will be incorporated into the scope of services for a given task for the City's review and approval.

Thorough coordination with the City's Project Manager, along with operations staff, is essential to define a scope of services that will meet the City's needs with respect to schedule, budget, and usefulness of project deliverables.

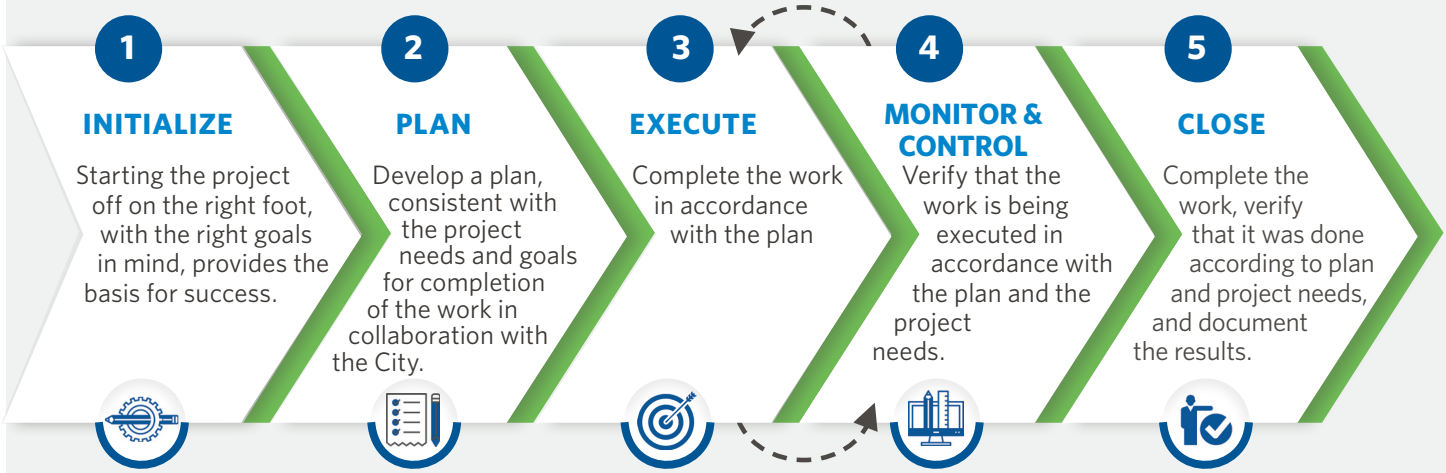
We understand there are times that unplanned projects arise or schedules become tightened and a Notice to Proceed (NTP) for a work order is needed immediately.

Black & Veatch provides our clients with a wealth of experience in managing continuing-services contracts. We understand your needs and are committed to preparing work order scopes and fees quickly, assigning our best team of professionals based on the needs of each work order, and delivering the projects on time, on schedule and on budget, while meeting your quality expectations.

We have applied creative methods to accelerate projects to meet tight deadlines. Close coordination with permitting agencies has allowed certain phases of a project to start early. Also, in some projects, certain design tasks may be executed in parallel. **Workshops early in the project help define project goals to reduce uncertainty and aid the design to move faster.**

APPROACH TO TASK AUTHORIZATION DEVELOPMENT

We will follow a responsive project management model:



Communication Ability

Isabel Botero, as Project Manager, will provide the City with a primary point of contact, therefore, facilitating communication and ensuring consistency in administrative functions. Isabel's skills and experience are well suited for this role. She has extensive experience managing different assignments under the continuing professional services contract. **Isabel has extensive experience in similar scope project managing groups of numerous subconsultants during design and construction services.** Isabel will identify the best engineers and scientists to assign to a given project and the most knowledgeable specialists to solve the tough and complex challenges that any project may involve.

The City's job will be made easier by leveraging our proven project management plan that will improve project quality, eliminate rework, and keep tasks on schedule and budget.

PROJECT CONTROLS

At the commencement of each Task Authorization, Black & Veatch's Project Manager will define project scope, schedule, and budget in consultation with the City's Project Manager. Our Project Manager will closely monitor and measure critical path activities to ensure the project is delivered on time and on budget.

Black & Veatch's Project Controls system, complete with budget information, will be used to track time and cost expenses for earned value (EV) reporting on all aspects of each project with the City. EV is a method of reporting project performance against in terms of schedule and budget.

Every month as part of the invoicing process, the EV of each activity is computed based on the percent complete of each task and the budget expended.

This process reveals problem tasks in terms of budget or schedule (or both), allowing for timely corrective actions.

Our Project Controls system and commitment to accountability for change is crucial to meeting project quality and budget goals and will save money to the City by preventing cost overruns.

Projects will be managed by leveraging industry-proven project control tools.

Our clients receive successful, quality projects as a result of Black & Veatch's complete library of state-of-the-art project control tools. Our project controls approach includes the following:

SCHEDULE CONTROL | We work with clients during the scope development phase of each assignment to establish a schedule that will meet their established goals. Schedules may be developed in **Primavera** or **Microsoft Project.** We will provide your project managers with updated project schedules at each project milestone and other times as determined to be beneficial.

BUDGET CONTROL | Our project managers have access to an array of tools to facilitate tracking and management of project costs. For example, **EcoSys** is an earned-value management-based system that enables the establishment of control accounts so that expenditures can be tracked and managed by both task and work group. We leverage **Power BI** to pull date from multiple platforms, providing project teams with insightful dashboards presenting vital project status information on which to make management decisions during project execution.

QUALITY CONTROL | Black & Veatch employs a strict QA/QC program in alignment with the key principles of **ISO 9000.** QA/QC reviews will be conducted at key milestones, which support schedule and budget success through early identification of developing issues and avoiding rework.

DOCUMENT CONTROL | Black & Veatch utilizes the **ProjectWise** document management system, which provides a secure environment for storage, collaboration, and retrieval of project drawings, specifications, reports, and data. This system provides our clients with increased cybersecurity, avoids document loss, and supports efficient production. Our teams routinely set up client-facing document sharing facilities using ProjectWise or Microsoft Teams.

CONSTRUCTION COST CONTROL | Black & Veatch is a leading contractor in the water and wastewater industry, with half of the firm's project volume from design-build projects. The resulting expertise and available estimating tools (i.e. **Timberline**) and resources enable us to develop accurate construction cost estimates and value engineering reviews. We utilize trend reporting to continually communicate updates on the construction estimate.

CONSTRUCTIBILITY | Our experience as a contractor also provides the expertise and resources to develop sound designs that can be constructed efficiently from the perspective of both cost and schedule. By thoroughly addressing construction sequencing and maintenance of operations during design, our clients benefit from avoidance of costly change orders and delays during construction.

SAFETY | Black & Veatch has an extremely strong safety culture. Prior to any site visits, the team prepares and reviews the project-specific healthy & safety plan to ensure that all participants are aware of the hazards and have proper personal protection equipment (PPE) for the tasks. More robust or higher-risk activities require more in-depth safety planning and internal H&S management approvals. At the beginning of every meeting, we open with a "Safety Moment" which has proven that safety is always on our minds.

QUALITY ASSURANCE/QUALITY CONTROL MANAGEMENT PLAN

Quality Assurance

Our Quality Assurance program encompasses engineering/design, procurement (if applicable), construction/construction management and commissioning. Maintenance and improvement of the QMS are accomplished by quality audits, continuous improvement and QMS management review.

Quality Audits

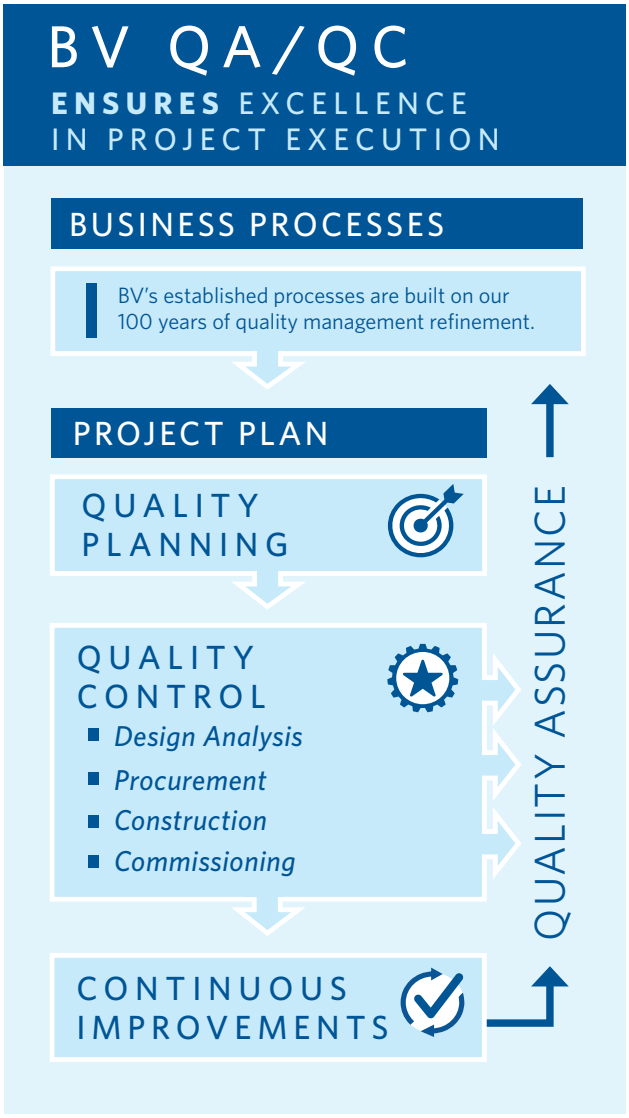
Black & Veatch's internal quality auditors perform planned, systematic audits to give our management team and your project managers twofold assurance: that projects are being executed in accordance with quality plans, and the resultant products and services will meet specified requirements. Audit requirements come from industry standards, client contractual requirements, QMS compliance and project specific requirements. Audit follow-up actions, including corrective and preventive action, are tracked through to closure, and are reviewed and verified through subsequent audits.

Continuous Improvement

Black & Veatch reviews quality metrics, including audit reports, corrective action and preventative action records, customer feedback, verification records, and non-conformance records, along with other pertinent performance feedback information.

These reviews include the search for adverse process trends across functions and multiple projects. **The purpose is to determine if revisions to the QMS are required and, to promote continuous improvement.** These reviews also promote the critical nature of timely, transparent, and deliberate communication of the QMS documents.

Black & Veatch understands that most projects fail because of lack of communication – not because QA documents were not maintained. Black & Veatch will use these reviews to communicate with appropriate technical staff to reach consensus quickly and efficiently.



QMS Management Review

Black & Veatch reviews overall performance of the QMS annually, issuing written performance reports that includes recommendations for improving the system. The report is reviewed by Black & Veatch's leadership team and the results of the review are a set of action items that are assigned to our project managers with target completion dates. Our project managers plan, initiate, complete, and report the action item's completion. Completed actions are verified through subsequent audits. **In this way, the City is assured that we are following best management practices as they pertain to quality and continuous improvement.**

Quality Control

ISO 9001-Compliant Quality Assurance/ Quality Control Program

For all the projects under this contract, our goal will be to provide you with high-quality, on-time deliverables that can be counted on.

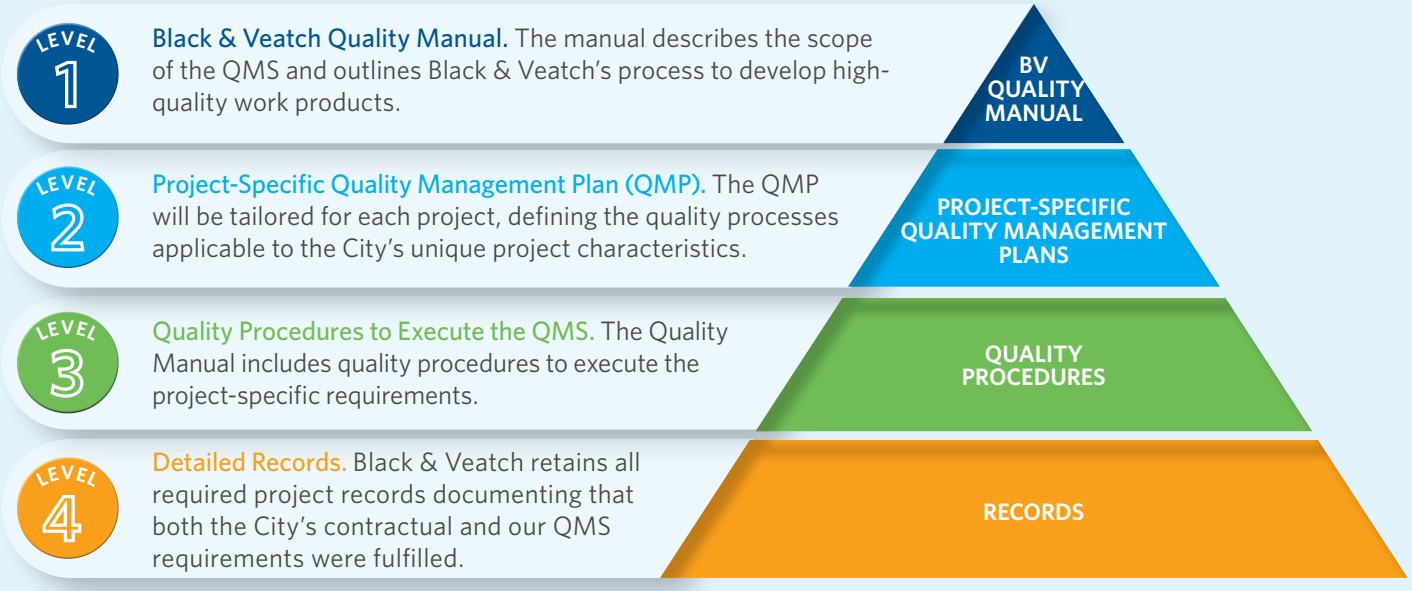
Black & Veatch's Quality Management System (QMS) is a company-wide documented system of planned processes and activities that ensures the effective operation, planning and control of our processes. We recognize that quality is a continuous improvement process updated through a constant feedback process to incorporate successful techniques and lessons learned from our project execution practices.

Our QMS is based on ISO 9001:2015 Quality Management System-Requirements and addresses all elements of the international standard as well as any project-specific codes, standards, contracts, drawings, and objectives. All Black & Veatch professionals are familiar with Black & Veatch's QMS. Our subconsultants will also be provided with our quality assurance and quality control requirements to ensure their submittals are in accordance to the expectations and meet your requirements of the scopes of work.

Black & Veatch is committed to providing quality-focused design engineering, construction and startup services.

- Assigning experienced team members that will remain throughout the duration of the projects for consistency
- Effectively communicating with the team and with your staff to ensure our commitment to quality meets your expectations
- Following your Standards and Ordinances
- Following Black & Veatch's established design and quality assurance and quality control procedures
- Providing independent quality review and verification of project deliverables
- Performing regular project quality audits to ensure compliance with all quality procedures
- Controlling project schedules and costs

Our Clients Receive High-Quality Projects from Black & Veatch's QMS Governance



ABILITY TO PERFORM EXPEDITIOUSLY

Black & Veatch will approach tasks in a consistent and uniform manner that will allow us to efficiently respond to changing project requirements, while developing engineering solutions that meet the the City's needs.

The foundation of this strategy is effective communications and establishing clear responsibility and understanding of the work requirements at the outset of the task.

The numerous technical and non-technical issues of potential projects will require a collaborative approach that encourages the direct involvement of the City staff in workshops and selected meetings; we believe this approach is vital to the success of the project. Our collaborative approach will bring together project stakeholders on a regular basis.

Black & Veatch recognizes the importance of meeting schedule and budget requirements. We are prepared to devote the necessary resources to meet even the most challenging schedules. We control the schedule and budget on projects through experienced and attentive project management. Development of a work plan at the beginning of each project and diligent adherence to that work plan are the key to executing projects in an efficient and timely manner.

Our project manager, task leads, and support staff are highly experienced in the types of work to be performed under this contract, providing them the knowledge to develop a solid work plan and efficiently guide the work.

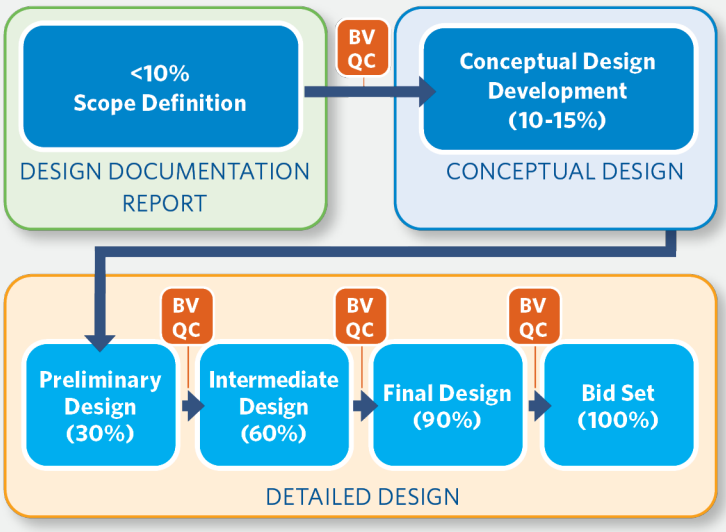
THE PROJECT WORKFLOW MODEL STREAMLINES COMMUNICATIONS

One of the most important components of the design process is producing contract documents that are accurate, easy to interpret, and constructible. Black & Veatch starts with the development of a sound Project Execution Plan (PEP) to provide a guideline for the efficient execution of each project.

Black & Veatch has developed an effective tool called the **Project Workflow Model (PWM)**, illustrated below, to enhance coordination among design disciplines and optimize efficiency of the design team production of contract drawings, technical specifications, and other deliverables.

The City will benefit from the PWM by receiving a complete, accurate, and well-coordinated set of documents produced without time delays avoiding re-design efforts.

PROJECT WORKFLOW MODEL



TECHNOLOGICAL CAPABILITIES TO IMPROVE DESIGN OUTCOMES

Civil 3D

Black & Veatch utilizes Civil3D to help eliminate rework. Some of the benefits of Civil 3D include:

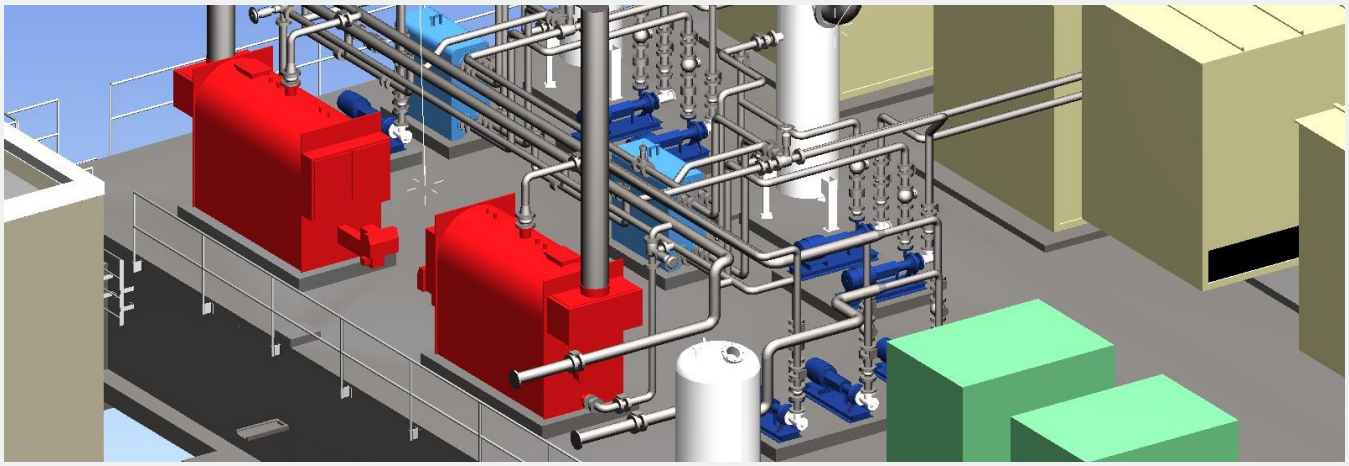
- Interactive design tool
- Survey, new information and SUE data is an efficient update that makes a seamless adjustment to a final design
- Automatically adjust to new project information and unforeseen changes (e.g., new surface, utility relocations, design criteria changes, etc.)
- Conflict detection that can be leveraged to automatically modify utilities alignment and elevations, labels, etc.

Computer Aided Design and Drafting Capabilities

Our BIM+ tool incorporates real-time estimating and scheduling to develop a complete picture of a project, from design through construction to operations and maintenance.

The tool helps manage assets and executes large-scale projects on schedule and with minimal construction issues. We use it to guide decision-making at every stage of the design process and anticipate future needs. It allows us to emphasize operations and constructability and promote safety and reliability.

COMPREHENSIVE INTEGRATED DESIGN
Key aspects of Black & Veatch's 3D Design



Black & Veatch uses 3D design and Building Information Modeling (BIM) for design of certain types of projects, including pipelines and treatment plants. The BIM process is integral to the design development and facilitates design changes and cost estimating. In the case of pipeline design, the ground profile above the pipe centerline is automatically generated by the software. If the alignment is changed during design, the ground profile is automatically regenerated, streamlining design.

Our advanced capabilities with this technology also enable us to produce 3D images and virtual facility "walkthroughs" to support conflict resolution in complex mechanical layouts. This enables the design team (including O&M staff) to identify and address important issues, such as clearance, accessibility for maintenance, spacing, and aesthetics among others.

Beyond BIM - Black & Veatch BIM+

Black & Veatch has customized a BIM process to support the unique design aspects of the water and wastewater industry. BIM+ is an integral component to the design process and the source of our design deliverables. We can share and leverage information at each stage of a project, improving project quality and efficiency, reducing risk, and providing a superior client and team experience.

INTEGRATED DESIGN
Sweeney GAC Facility BIM Model

Black & Veatch developed this BIM model of the Sweeney GAC facility to provide a better understanding of the size, shape, configuration, and spatial allocations relative to the existing facilities. The BIM model was used to engage maintenance, operations, and engineering staff in the design process, drawing out valuable feedback and improving interaction and understanding during progress meetings and workshops through more clear conveyance of the design.

COMPREHENSIVE INTEGRATED DESIGN
Key aspects of Black & Veatch's BIM approach

Owner/Operator Review. Using BIM models during design allows a virtual walk-through of the facility with a focus on critical engineering issues and operations and maintenance concerns, ultimately providing more user-friendly facilities.

Safety/Hazop Reviews. The use of BIM is an efficient way to receive input on safety/security, site arrangement, equipment access, piping/valve layout and room/facility organization.

Community Awareness/Good Neighbor. If desired, photorealistic renderings of the site and the new facilities can be developed directly from the BIM model, which can be useful for open forum meetings or project stakeholder meetings.

Beyond the benefits of improved collaboration, BIM is also used to generate traditional 2D construction documents and develop quantity take-off s for construction cost estimates, as well as during quality control reviews to reduce conflicts and potential change orders. The BIM model can be used in cooperation with the Contractor to facilitate constructability and schedule interfaces and pipe fabrication/procurement processes, and other detailed construction content creation. After the project is completed, the BIM model can be used for O&M support, asset management, incorporation into GIS, and development of future designs.

SCHEDULE AND BUDGET CONTROL

Black & Veatch will maintain schedule control through early planning of each project, followed by detailed schedules for project execution. We will leverage our recent experience and lessons learned from similar contracts to provide realistic time and budget estimates for the delivery of this continuing services contract.

For each project assigned, we will develop a project execution plan at the commencement of the project and diligently adhere to the project execution plan to ensure efficient project execution on time and within budget. Our project manager, Isabel Botero, is highly experienced in the types of work to be performed, providing them with the knowledge to develop a solid project execution plan to efficiently guide each project or groups of projects.

For each assigned project, Isabel will work closely with the City's project manager to establish a schedule, including key milestone dates, appropriate internal review periods and the project's critical path. Through our Business Intelligence Center (BIC), data on project charges is available to Isabel within one-day of time reporting. This supports timely adjustment to ensure the work is completed on budget.

Isabel will be responsible for managing the project schedules to ensure that all tasks are completed, and all deliverables are submitted on schedule. The schedule will allow the assigned project lead to track the progress of each assignment, identify any scheduling and staffing bottlenecks, and implement corrective actions and recovery plans, if needed.

PERFORMANCE EXAMPLES OF ABILITY TO MEET PROJECT SCHEDULES AND BUDGETS

Projects Completed by Black & Veatch's Coral Springs Office	Planned Schedule	Final Schedule	Original Budget	Final Budget	
Hollywood - SCADA Improvements Phase 2	12	12	$299,970	$299,970	✓
Delray Beach - Cityworks Implementation Phase 1	8	8	$202,334	$202,334	✓
Broward County - Clarifier Rehabilitation	25	25	$79,711	$78,546	✓
Broward County - Master Pump Stations Rehab	18	18	$151,431	$170,246	✓
Broward County - In-House Electrical O&M Services	6	6	$95,245	$88,226	✓
SFWMD - S-127 CCC North Shore Automation CPS	18	18	$503,288	$477,896	✓
SFWMD - GG4 Structure Construction Phase Services	24	24	$290,556	$290,556	✓
MDWASD - Hydraulic Modeling Support	12	12	$58,766	$58,766	✓
MDWASD - Sewer Service to Commercial Properties	3	3	$178,662	$178,662	✓
Deerfield Beach - East WTP Site Improvements	10	10	$84,052	$84,052	✓
SUA WW LS RTU Conversion	22	22	$499,921	$499,921	✓
ISW Wellfield Monitoring Application	2	2	$24,915	$24,915	✓

COST SAVINGS

OOL Program | Miami-Dade Water and Sewer Department

Black & Veatch helped MDWASD select a more cost-effective filtration technology that complied with all OOL regulations while providing significant savings at two wastewater treatment plants. We recommended the use of more reliable and cost-effective high-speed generators that also increase sustainability.

BENEFIT: More than $300 million in capital savings and additional operations & maintenance efficiencies of over $3 million per year at the county's WWTPs.

Willingness to Meet Budget and Schedule

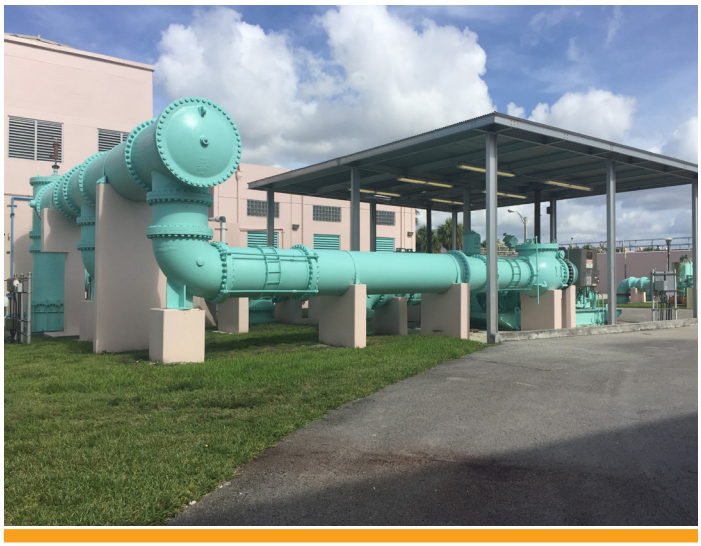
In addition to a design firm, Black & Veatch is also a construction company. This will benefit the City by receiving construction cost estimates that properly represent local market conditions, as they will be prepared by Florida-based construction estimators and will include constructability reviews performed by our construction professionals.

The City and staff will have access to the resources necessary to meet the most challenging schedules within the assigned budgets for any CIP projects that will continue on an as-needed basis. Your expectations for this continuing professional services contract will be met by leveraging Black & Veatch's proven experience completing multiple projects on time and budget.

Effective project management and efficient project delivery are paramount to meeting schedule and budget. Our team's technical approach is structured to ensure that we do just that successfully.

Black & Veatch will maintain schedule and budget control through early planning of each task order followed by detailed schedules for project execution.

We will leverage our recent experience and lessons learned from similar contracts to provide realistic time and budget estimates for the delivery of all projects under this professional services contract.



Black & Veatch's City of Hollywood project is one of several recent projects that have met or been below its original budget.

COST AND SCHEDULE CONTROL

Black & Veatch Tools and OUR APPROACH – Our team will do the following:

- Apply scheduling and cost management techniques that will work immediately with the current planning documents.
- Work with City staff and the desired schedule tools.

- Integrate cost and schedule controls with the cash flow and rate model prepared by Black & Veatch in collaboration with. Update the model with actual expenditures and revenues as they occur.
- Develop construction cost estimate utilizing our bottom-up contractor approach.
- Integrate consultant and contractor schedules into a master schedule, while maintaining the integrity of any individual schedule.

The City's expectations for this contract will be met by leveraging Black & Veatch's proven experience completing projects on time and budget and by having access to our Florida-based construction professionals.

SCALABILITY TO SUPPORT VARIOUS PROJECTS

Should the need arise, Black & Veatch has as a deep pool of additional resources that we can apply to meet any project need under this contract. The firm has a diversely capable staff of more than 10,000 professionals which our local team can draw on when in our clients' best interests to meet challenging schedules or if needed to back up our local staff in the case of unforeseen circumstances.

Black & Veatch's diversity provides access to a unique set of specialized services and expertise. As one of the most diversely capable engineering firms in the world, we have the experience and professional resources to provide the broad range of services needed under this contract. In addition, Black & Veatch offers expertise in a host of specialty fields that differentiate us in the industry and enhance the value we deliver.

Specific technical expertise can be provided from other offices of our firm, as needed, to bring the best and latest technology that we have to offer. Application of industry-leading expertise, while involving relatively small amounts of time, can realize the tremendous benefits.

While our local team offers the skill set to complete any expected project requirement, our ability as a top-ranked global firm to apply industry-leading expertise when needed will result in added value to all stakeholders.

Backup Staffing Capabilities

In the event of unforeseen circumstances, our team's exceptional depth of resources will allow us to apply equally qualified backup personnel without delay. We have the ability to quickly and efficiently identify additional resources for any project team role without impact to the project's schedule or budget requirements.

Our local team is cross-trained in multiple areas of water infrastructure and services. This variety of experience enables our team the resiliency to seamlessly provide equivalent resources in the case of an unforeseen circumstance.

While our capacity to handle the workload under this contract is more than adequate with current staffing, Black & Veatch's business plan also includes making substantial additions to our Florida resources over the next year. Open positions include project management, technology specialists, and planning/modeling resources which will increase our workload capacity and ability to serve our local clients.

DEPTH OF RESOURCES

Diverse capabilities and depth of resources to meet any project need.

10,000+
PROFESSIONALS

120+
OFFICES

Our local team is cross-trained in multiple areas of water infrastructure and services.

Our offices include state-of-the-art design equipment and software that enhances our innovative, cost-effective solutions.

Our depth of resources enables us to accelerate project schedules, if there is a preference to do so.

SECTION F

Knowledge of the Site and Local Conditions

KNOWLEDGE OF LOCAL PERMITTING AGENCIES, PROCEDURES AND TESTING PROTOCOLS

The City desires to engage a firm with permitting experience at the city, county, state, and federal level. Our history of continuously delivering projects in Florida since the 1950s has allowed us to develop a detailed understanding of local and Florida regulatory requirements for the development of water and wastewater treatment projects. It also has given us experience collaborating with regulatory agencies and resulted in established, credible relationships with regulators to ensure successful permitting outcomes. Our local team will leverage this knowledge, together with our relationships and experience **to provide the City with expedited permitting and seamless coordination with local agencies.**

Our team will successfully navigate plan formulation and regulatory approval processes with agencies through pre-application consultation meetings held prior to the beginning the design work so that any agency concerns can be identified and be fully addressed during design. A series of review workshops will be provided during the design phase, application submittal and review process.

OUR PROPOSED PERMITTING STRATEGY FOR THIS CONTRACT MAY BE SUMMARIZED AS FOLLOWS:

Identification of issuing permitting agencies

Completion of pre-application meetings with identified permitting agencies prior to commencement of designs

Meetings with permitting agencies during different stages of the design to ensure established permitting requirements are being met

Communicate with permitting agencies prior to the final design documents

Having a review workshop with permitting agencies after the final design submittal to summarize the project and how permitting requirements were met

Work closely with permitting agencies (local, state, and federal) and develop relationships during the design life-cycle of the projects

Our permitting strategy guarantees close coordination with the appropriate agencies, and in every experience where this process has been utilized, the outcome has been mutually beneficial for our clients and the regulatory agencies.

Familiarity with Regulatory Agencies

Permits under this contract will be required from different agencies, including the City of Hollywood, Broward County Environmental Protection and Growth Management Department (EPGMD), South Florida Water Management District (SFWMD), Florida Department of Environmental Protection (FDEP), and the U.S. Environmental Protection Agency (USEPA).

City of Hollywood Building Division | Design projects under this contract will require authorizations from the City, including site plan approval, building permits, and plan review and approval. The City is also involved in the inspection and approval/acceptance of the construction.

Broward County Environmental Protection and Growth Management Department | The EPGMD will be involved in the review of construction documents and the issuance of construction permits for treatment plant improvements, water distribution, wastewater collection and reclaimed water system modifications. Broward County EPGMD will also be involved with the compliance of plant effluent water quality standards that must be met for groundwater and surface water discharge, per Chapter 27 of the County statues. This is relevant to any aquifer recharge project and surface water augmentation project.

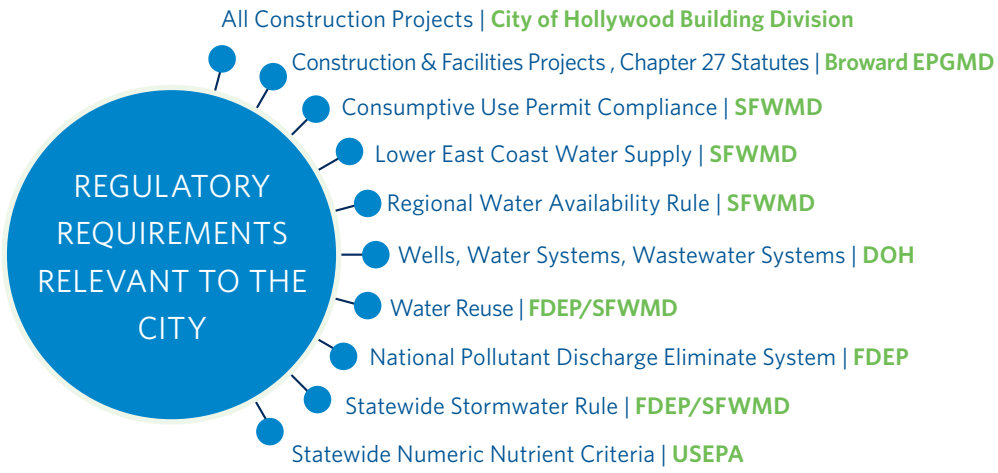
South Florida Water Management District | SFWMD will review and permit source water withdrawals and will issue a modified Consumptive Use Permit (CUP) for new or alternative water uses. The SFWMD's restrictions to increased groundwater withdrawals from the Biscayne Aquifer through its recent regulation called the Water Availability Rule, results in greater future use of the lower Floridan Aquifer. This rule prevents any water use that increases recharge from the canal system since the water is coming from the Everglades. Consequently, the deeper Floridan Aquifer will be the source for future supplies, offset by more conservation programs and greater use of reclaimed water.

SFWMD in conjunction with the FDEP will also review and permit site modifications and issue an Environmental Resource Permit (ERP).

Florida Department of Environmental Protection | FDEP will be involved with SFWMD in the review and permitting of site modifications through the ERP for wastewater treatment facilities. FDEP will also review and permit any Underground Injection Control (UIC) Program construction and operation permits. NPDES Construction Activity permit applications will also need to be filed with FDEP.

THE CITY WILL RECEIVE EXPEDITED PERMITTING OF ITS PROJECTS BY LEVERAGING BLACK & VEATCH'S LOCAL PERMITTING STRATEGY

The Black & Veatch team has extensive experience working with Broward County, SFWMD, FDEP, and the EPA, which will allow us to successfully navigate the regulatory processes pertaining to this contract. As part of our contract delivery strategy, the permitting task will be directed by our Permitting Task Lead, Steven King. He will provide an expedited permitting review and approval process through a proactive coordination process with each regulatory agency, identified in this graphic.



References

VENDOR REFERENCE FORM

City of Hollywood Solicitation #:	RFQ-041-23-JJ
Reference for:	Black & Veatch Corporation
Organization/Firm Name providing reference:	Broward County Water and Wastewater Services
Organization/Firm Contact Name:	Steven Doyle
Title:	Construction Project Manager Supervisor
Email:	sdoyle@broward.org
Phone:	(954) 831-0962
Name of Referenced Project:	NRWWTP Biosolids Management White Paper
Contract No:	PCN2117097P1
Date Services were provided:	7/2020 - 2/2021
Project Amount:	$78,874
Referenced Vendor's role in Project:	☒ **Prime Vendor** ☐ **Subcontractor/ Subconsultant**
Would you use the Vendor again?	☒ **Yes** ☐ **No.** Please specify in additional comments

Description of services provided by Vendor (provide additional sheet if necessary):
The main objective of this project was to update the previously issued in 2001 Biosolids Management White Paper for the North Regional WWTP. The update evaluated the current land applications practices and provided recommendations into the future for near term and long term biosolids management.

Please rate your experience with the Vendor	Need Improvement	Satisfactory	Excellent	Not Applicable
Vendor's Quality of Service				
a. Responsive	☐	☐	☑	☐
b. Accuracy	☐	☐	☑	☐
c. Deliverables	☐	☐	☑	☐
Vendor's Organization:				
a. Staff expertise	☐	☐	☑	☐
b. Professionalism	☐	☐	☑	☐
c. Staff turnover	☐	☐	☑	☐
Timeliness/Cost Control of:				
a. Project	☐	☐	☑	☐
b. Deliverables	☐	☐	☑	☐

Additional Comments (provide additional sheet if necessary):
The vendor is one of the few consultants that apply the proper resources to the task in hand. They are diligent, budget conscious and work as a Team with the owner. They readily accept comments and suggestions from County staff, County Operations and Management. Great to work with.

****THIS SECTION FOR CITY USE ONLY****					
Verified via:	**Email:** ☐	**Verbal:** ☐	**Mail:** ☐		
Verified by:	**Name:**		**Title:**		
	Department:		**Date:**		

VENDOR REFERENCE FORM

City of Hollywood Solicitation #:	RFQ-041-23-JJ
Reference for:	Black & Veatch Corporation

Organization/Firm Name providing reference:	Seacoast Utility Authority		
Organization/Firm Contact Name:	Brandon Selle, P.E.	**Title:**	Chief Operations Officer
Email:	bselle@sua.com	**Phone:**	(561) 627-2900 ext. 1316
Name of Referenced Project:	SCADA - WW LS RTU Conversion	**Contract No:**	Seacoast Utility Authority
Date Services were provided:	April 2021 - January 2023	**Project Amount:**	Seacoast Utility Authority

Referenced Vendor's role in Project:	☒ **Prime Vendor**	☐ **Subcontractor/ Subconsultant**
Would you use the Vendor again?	☐ **Yes**	☐ **No.** **Please specify in additional comments**

Description of services provided by Vendor (provide additional sheet if necessary):
BV provides programing, troubleshooting, preventive maintenance, security improvement and SCADA design on a regular and ongoing basis as requested and initiated by SUA staff.

Please rate your experience with the Vendor	**Need Improvement**	**Satisfactory**	**Excellent**	**Not Applicable**
Vendor's Quality of Service				
a. Responsive	☐	☐	☒	☐
b. Accuracy	☐	☐	☒	☐
c. Deliverables	☐	☐	☒	☐
Vendor's Organization:				
a. Staff expertise	☐	☐	☒	☐
b. Professionalism	☐	☐	☒	☐
c. Staff turnover	☐	☐	☒	☐
Timeliness/Cost Control of:				
a. Project	☐	☐	☒	☐
b. Deliverables	☐	☐	☒	☐

Additional Comments (provide additional sheet if necessary):

******THIS SECTION FOR CITY USE ONLY******						
Verified via:	**Email:**	☐	**Verbal:**	☐	**Mail:**	☐
Verified by:	**Name:**				**Title:**	
	Department:				**Date:**	

VENDOR REFERENCE FORM

City of Hollywood Solicitation #: RFQ-041-23-JJ
Reference for: Black & Veatch Corporation

Organization/Firm Name providing reference: Miami-Dade Water and Sewer Department
Organization/Firm Contact Name: Victor Delgado, PE, PMP **Title:** Project Manager
Email: Victor.Delgado@miamidade.gov **Phone:** (786) 552-4368
Name of Referenced Project: Preston High Service Pump Station Electrical Improvements **Contract No:** E15-WASD-18
Date Services were provided: 2/11/2020 - Ongoing **Project Amount:** $897,204

Referenced Vendor's role in Project: ☒ **Prime Vendor** ☐ **Subcontractor/ Subconsultant**
Would you use the Vendor again? ☒ **Yes** ☐ **No.** **Please specify in additional comments**

Description of services provided by Vendor (provide additional sheet if necessary):
This project includes the design of a new electrical room for the existing HSPS pump and a new GES switchgear to replace the existing switchgear located in the room. The electrical upgrades included creating a new electrical room on the existing Generator Building No. 2 mezzanine, including three adjustable frequency devices

(AFD) and one reduced voltage soft starter (RVSS) for the three existing 45-mgd pumps and one existing 30-mgd pump.

Please rate your experience with the Vendor	**Need Improvement**	**Satisfactory**	**Excellent**	**Not Applicable**
Vendor's Quality of Service				
a. Responsive	☐	☐	☒	☐
b. Accuracy	☐	☐	☒	☐
c. Deliverables	☐	☒	☐	☐
Vendor's Organization:				
a. Staff expertise	☐	☐	☒	☐
b. Professionalism	☐	☐	☒	☐
c. Staff turnover	☐	☐	☒	☐
Timeliness/Cost Control of:				
a. Project	☐	☒	☐	☐
b. Deliverables	☐	☒	☐	☐

Additional Comments (provide additional sheet if necessary):

****THIS SECTION FOR CITY USE ONLY****						
Verified via:	**Email:**	☐	**Verbal:**	☐	**Mail:**	☐
Verified by:	**Name:**				**Title:**	
	Department:				**Date:**	

VENDOR REFERENCE FORM

City of Hollywood Solicitation #:	RFQ-041-23-JJ
Reference for:	Black & Veatch Corporation

Organization/Firm Name providing reference:	Miami-Dade County Water and Sewer Department		
Organization/Firm Contact Name:	Virginia Walsh, P.G., Ph. D.	**Title:**	Chief Hydrogeology Technical Services Division
Email:	Virginia.Walsh@miamidade.gov	**Phone:**	786-552-8266
Name of Referenced Project:	Task Authorization No. 01	**Contract No:**	E20-WASD-07
Date Services were provided:	2/15/2022 - Ongoing	**Project Amount:**	$1,004,718

Referenced Vendor's role in Project:	☒ **Prime Vendor**	☐ **Subcontractor/ Subconsultant**
Would you use the Vendor again?	☒ **Yes**	☐ **No.** Please specify in additional comments

Description of services provided by Vendor (provide additional sheet if necessary):
Water Use Permitting, Modeling Support, ASR Systems Evaluation and Staff Support

Please rate your experience with the Vendor	Need Improvement	Satisfactory	Excellent	Not Applicable
Vendor's Quality of Service				
a. Responsive	☐	☐	☒	☐
b. Accuracy	☐	☐	☒	☐
c. Deliverables	☐	☐	☒	☐
Vendor's Organization:				
a. Staff expertise	☐	☐	☒	☐
b. Professionalism	☐	☐	☒	☐
c. Staff turnover	☐	☐	☒	☐
Timeliness/Cost Control of:				
a. Project	☐	☐	☒	☐
b. Deliverables	☐	☐	☒	☐

Additional Comments (provide additional sheet if necessary):

****THIS SECTION FOR CITY USE ONLY****						
Verified via:	**Email:**	☐	**Verbal:**	☐	**Mail:**	☐
Verified by:	**Name:**				**Title:**	
	Department:				**Date:**	

VENDOR REFERENCE FORM

City of Hollywood Solicitation #:	RFQ-041-23-JJ
Reference for:	Black & Veatch Corporation

Organization/Firm Name providing reference:	Broward County Water and Wastewater Services		
Organization/Firm Contact Name:	Lance M. (Mike) Saltzman, P.E.	**Title:**	Construction Project Manager
Email:	LSaltzman@Broward.org	**Phone:**	(954) 831-0736
Name of Referenced Project:	Reclaimed Water Main Chlorine Booster Station - CDR	**Contract No:**	PCN2117097P1
Date Services were provided:	9/12/2022 - Ongoing	**Project Amount:**	$80,256

Referenced Vendor's role in Project:	☒ **Prime Vendor**	☐ **Subcontractor/ Subconsultant**
Would you use the Vendor again?	☐ **X Yes**	☐ **No.** Please specify in additional comments

Description of services provided by Vendor (provide additional sheet if necessary):
The services include to prepare a Conceptual Design Report for a new sodium hypochlorite facility that will include the necessary equipment and connections to provide the required chlorine residual dosing at the discharge point in the 42-in Palm Beach County reclaimed water line, and provide necessary instrumentation and control equipment to maintain communication with the NRWWTP.

Please rate your experience with the Vendor	Need Improvement	Satisfactory	Excellent	Not Applicable
Vendor's Quality of Service				
a. Responsive	☐	☐	X	☐
b. Accuracy	☐	☐	X	☐
c. Deliverables	☐	X	☐	☐
Vendor's Organization:				
a. Staff expertise	☐	☐	X	☐
b. Professionalism	☐	☐	X	☐
c. Staff turnover	☐	☐	☐	X
Timeliness/Cost Control of:				
a. Project	☐	X	☐	☐
b. Deliverables	☐	X	☐	☐

Additional Comments (provide additional sheet if necessary):

****THIS SECTION FOR CITY USE ONLY****						
Verified via:	**Email:**	☐	**Verbal:**	☐	**Mail:**	☐
Verified by:	**Name:**				**Title:**	
	Department:				**Date:**	

SECTION H

Sub Consultants Information

COORDINATION WITH SUBCONSULTANTS

Black & Veatch regularly teams with local subconsultants to complement our comprehensive engineering services capabilities. During preliminary discussions of the project scope, Black & Veatch will identify the subconsultant team members that will be utilized during the project. **We have teamed with several local subconsultants to best support this project. We have chosen firms that we have worked with in the past and are confident in their abilities to support this project.**

KEITH
Engineering Inspired Design.

Keith & Associates, Inc.
Site/Civil | Survey | SUE

KEITH was incorporated as a Florida corporation in 1998. As a mid-size, **DBE/WBE,** close-knit firm of over 180 professionals, they provide surveying and mapping, subsurface utility engineering, planning, civil engineering, traffic engineering, landscape architecture, construction management, and virtual design and construction services. The firm was founded on the principle of achieving success by combining the latest technology with client-oriented business practices, and a staff of experience and talented professionals.

WIRX ENGINEERING

WIRX Engineering, LLC
Geotechnical/Testing

WIRX Engineering, LLC (WIRX) is a Professional Geotechnical Engineering, **MWBE, DBE, and SBE** firm with offices in Broward and Palm Beach Counties. Our three principals have over 65 years of combined civil and geotechnical engineering experience including working on hundreds of high-profile projects with federal and local government agencies.

HEE
HILLERS ELECTRICAL ENGINEERING, INC.

Hillers Electrical Engineering, Inc.
Electrical

Hillers Electrical Engineering, Inc., is an SBE/MBE certified firm that has been in business since 1994. Hillers offers experience, expertise, and personalized service in electrical engineering design, control application programming, and construction management. Their electrical design services include power, control, instrumentation, telemetry, start-up assistance, construction management services, and PLC/computer programming for County and State municipal agencies as well as private industry.

Subconsultant Management

The City will receive services from Black & Veatch subconsultants as an extension of its own staff. Each subconsultant participating on an assignment will be required to have input on scoping, schedule, and cost on the front end of a project.

Black & Veatch requires subcontractor deliverables to engage the same quality management procedures as our own staff. Deliverables will always be reviewed and transmitted by Black & Veatch to our client unless other arrangements are made in advance of the assignment.

Financial Resources

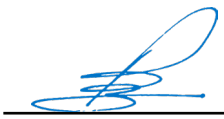
Black & Veatch Corporation is a leading global engineering, consulting and construction company specializing in infrastructure development in the fields of energy, water and information. Black & Veatch has had a long track record of profitability during the 100+ years that it has been in business. Our employee-owned company has more than 120 offices worldwide.

The financial information is submitted in confidence and should be considered as proprietary information. Respectfully, we request that these documents do not receive public distribution or disclosure.

Condensed consolidated financial information for Black & Veatch Holding Company and related companies is presented below in millions.

Black & Veatch Corporation is not involved in any prior or current bankruptcy proceedings.

Signed by Rafael E. Frias, III, Duly Authorized Representative:



FOR THE FISCAL YEARS	2021	2020
Revenue	$3,315	$3,018
Cost of Revenue	2,639	2,373
Overhead Expenses	507	511
Operating Income	**$169**	**$134**
Other Expenses & Taxes	0	13
Net Earnings	**$169**	**$121**
Operating cash flow	**$180**	**$277**
Investing cash flow	**31**	**(22)**
Financing cash flow	**(104)**	**(121)**
AT FISCAL YEAR END		
Cash & Cash Equivalents	$722	$620
Contract Receivables	356	325
Contract Assets	330	279
Other Current Assets	81	110
Total Current Assets	**$1,489**	**$1,334**
Building, Equipment & Other Non-Current Assets	251	251
Total Assets	**$1,740**	**$1,585**
Notes Payable & Current Portion of Long-Term Debt	5	7
Contract Liabilities	669	724
Accounts Payable & Other Current Liabilities	714	586
Total Current Liabilities	**$1,388**	**$1,317**
Long-Term Debt	9	3
Other Non-Current Liabilities	84	85
Equity	259	180
Total Liabilities & Equity	**$1,740**	**$1,585**
REVENUE BACKLOG	**$4,026**	**$3,395**

SECTION J

Legal Proceedings and Performance

BLACK & VEATCH CORPORATION
3111 N. University Drive, Suite 700, Coral Springs, FL
P +1 954-465-6872 | E FriasRE@bv.com

February 28, 2023

City of Hollywood
2600 Hollywood Blvd., Room 221
Hollywood, FL 33020

To Whom it May Concern:

Black & Veatch Corporation (Black & Veatch), together with its affiliates constitutes a large, international engineering and construction firm. Like similarly-sized firms, at any given point in time, we may be involved with claims and litigation. Black & Veatch maintains a program of insurance to protect against claims arising out of its work. In the opinion of Black & Veatch management, no pending claim or litigation will have a material impact on Black & Veatch's ability to execute this project.

Black & Veatch has never filed or sought protection under bankruptcy or reorganization proceedings or laws.

Legal Proceedings in Last Five Years	Status
Burkhalter Regging, Inc. v. Black & Veatch Corporation	Settled in 2018
ATC Sequoia & GTP Towers vs. City of Ontario, Minnesota - Black & Veatch Corp., et al.	BV voluntarily dismissed in 2019
North Texas Municipal Water District v. Black & Veatch Corp., et al	Settled in 2020
Black & Veatch Corp. v. Kaztroyservice Global BV	Pending
Black & Veatch Corp. v. Strongwell Corp.	Resolved in 2016
Black & Veatch Corp. v. Aspen Insurance (UK) Ltd. & Lloyd's Synidicate 2003	Settled in 2019
American Economy Insurance Company v. Black & Veatch Corp.	Settled in 2021
Security Limits Inc. v. Avangrid Networks, Inc. et al.	Dismissed
Bellsouth Telecommunications, LLC v. Black & Veatch Corp.	Pending
City of Shreveport vs. Black & Veatch Corp.	Pending

Very truly yours,

Black & Veatch Corporation

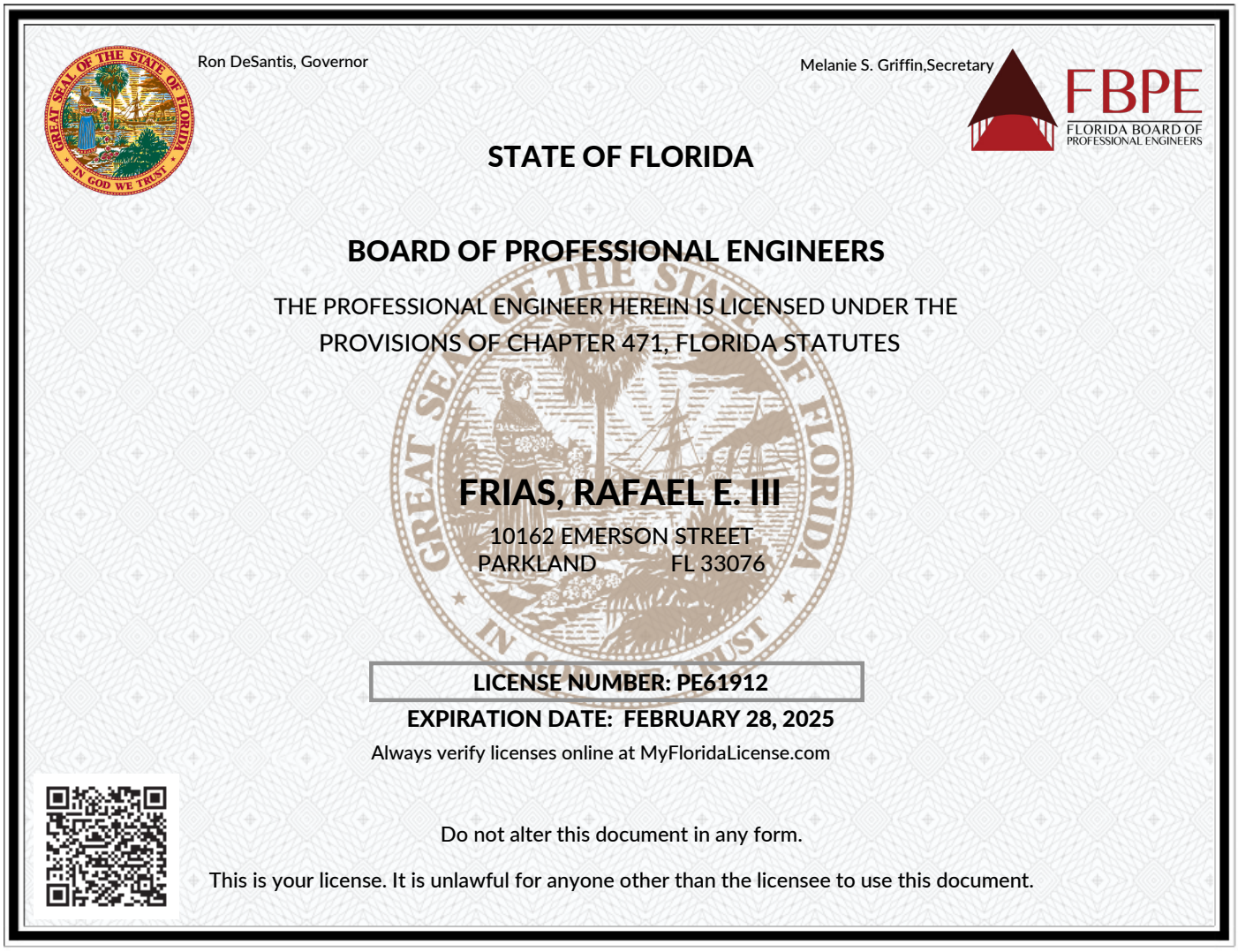
Rafael Frias, III
Project Director/Duly Authorized Representative

SECTION K

Forms

FIRM LICENSE

Florida House Bill 1193, as passed by the Florida Legislature in the 2020 Regular Session, removes the requirement that a Professional Engineer, Geologist, or Architect obtain a separate business license in addition to the occupational license issued to the individual. There is no longer a license to obtain or renew as a company license. Black & Veatch and its subconsultants are listed on the State's current free registry and maintain "active" status. Below are the individual Florida professional license for our Authorized Representative, Rafael Frias. Individual license for all team members can be made available to the City upon request.



Ron DeSantis, Governor

Melanie S. Griffin,Secretary

FBPE
FLORIDA BOARD OF PROFESSIONAL ENGINEERS

STATE OF FLORIDA

BOARD OF PROFESSIONAL ENGINEERS

THE PROFESSIONAL ENGINEER HEREIN IS LICENSED UNDER THE PROVISIONS OF CHAPTER 471, FLORIDA STATUTES

FRIAS, RAFAEL E. III

10162 EMERSON STREET
PARKLAND FL 33076

LICENSE NUMBER: PE61912

EXPIRATION DATE: FEBRUARY 28, 2025

Always verify licenses online at MyFloridaLicense.com

Do not alter this document in any form.

This is your license. It is unlawful for anyone other than the licensee to use this document.

FIRM CERTIFICATE OF STATUS

State of Florida
Department of State

I certify from the records of this office that BLACK & VEATCH CORPORATION is a Delaware corporation authorized to transact business in the State of Florida, qualified on December 22, 1998.

The document number of this corporation is F98000006965.

I further certify that said corporation has paid all fees due this office through December 31, 2022, that its most recent annual report/uniform business report was filed on April 19, 2022, and that its status is active.

I further certify that said corporation has not filed a Certificate of Withdrawal.

Given under my hand and the Great Seal of the State of Florida at Tallahassee, the Capital, this the Seventh day of July, 2022

Secretary of State

Tracking Number: 2156095829CU

To authenticate this certificate,visit the following site,enter this number, and then follow the instructions displayed.

https://services.sunbiz.org/Filings/CertificateOfStatus/CertificateAuthentication

CERTIFICATE OF OFFICER

BLACK & VEATCH

CERTIFICATE OF OFFICER

I, Andrea C. Bernica, the Assistant Secretary of BLACK & VEATCH CORPORATION, a corporation duly organized and existing under the laws of the State of Delaware, United States of America, certify that the following is a true excerpt of the by-laws of the Corporation and that said by-laws have not been rescinded or modified, and is still in full force and effect.

> RESOLVED, any note, mortgage, evidence of indebtedness, contract, share certificate, conveyance, power of attorney, or other instrument in writing and any assignment or endorsements thereof, or guarantee of any other entity's performance under any such executed document, entered into between this corporation and any other person or company shall be valid and binding on this corporation, when signed by either the Chairman of the Board, the President or any Vice President, and, if attestation is required, by either the Secretary, Assistant Secretary, Chief Financial Officer, Treasurer or any Assistant Treasurer of this corporation. Any such instruments may be signed by any other person or persons in such manner as from time to time shall be determined by the Board.

I further certify that the individual named below is an officer of the company holding the titles indicated and have signature authority to sign, seal, deliver, negotiate, accept and enter into agreements, contracts and other instruments or documents by and on behalf of the Company.

Rafael E. Frias, Vice President

IN WITNESS WHEREOF, I have hereunto set my hand and attached the corporate seal of BLACK & VEATCH CORPORATION this 14th day of February 2023.

BLACK & VEATCH CORPORATION CORPORATE SEAL DELAWARE

Andrea C. Bernica

Andrea C. Bernica
Assistant Secretary

Building a World of Difference.®

STATEMENT OF QUALIFICATION CERTIFICATION

STATEMENT OF QUALIFICATION CERTIFICATION

Please Note: All fields below must be completed. If the field does not apply to you, please note N/A in that field.

If you are a foreign corporation, you may be required to obtain a certificate of authority from the department of state, in accordance with Florida Statute §607.1501 (visit http://www.dos.state.fl.us/).

Company: (Legal Registration) Black & Veatch Corporation

Name/Principal/Project Manager: Rafael E. Frias, III, PE

Address: Local Address: 3111 N. University Drive, Suite 700

City: Coral Springs State: FL Zip: 33065

Telephone No. 754-229-3044 **FEIN/Tax ID No.** 43-1833073 Email: FriasRE@bv.com

Does your firm qualify for MBE or WBE status: MBE N/A WBE N/A

ADDENDUM ACKNOWLEDGEMENT - Proposer acknowledges that the following addenda have been received and are included in the proposal:

Addendum No.	Date Issued	Addendum No.	Date Issued
1	1/24/2023		
2	1/24/2023		

VARIANCES: State any variations to specifications, terms and conditions in the space provided below or reference in the space provided below all variances contained on other pages of bid, attachments or bid pages. No variations or exceptions by the Proposer will be deemed to be part of the bid submitted unless such variation or exception is listed and contained within the bid documents and referenced in the space provided below. If no statement is contained in the below space, it is hereby implied that your bid/proposal complies with the full scope of this solicitation. If this section does not apply to your bid/proposal, simply mark N/A. **If submitting your response electronically through OPENGOV you must click the exception link if any variation or exception is taken to the specifications, terms and conditions.**

The below signatory hereby agrees to furnish the following article(s) or services at the price(s) and terms stated subject to all instructions, conditions, specifications addenda, legal advertisement, and conditions contained in the bid/proposal. I have read all attachments including the specifications and fully understand what is required. By submitting this signed bid/proposal, I will accept a contract if approved by the City and such acceptance covers all terms, conditions, and specifications of this bid/proposal. The below signatory also hereby agrees, by virtue of submitting or attempting to submit a response, hereby agrees that in no event shall the City's liability for respondent's indirect, incidental, consequential, special or exemplary damages, expenses, or lost profits arising out of this competitive solicitation process, including but not limited to public advertisement, bid conferences, site visits, evaluations, oral presentations, or award proceedings exceed the amount of five hundred dollars ($500.00). This limitation shall not apply to claims arising under any provision of indemnification or the City's protest ordinance contained in this competitive solicitation.

Submitted by:

Rafael E. Frias, III, PE
Name (printed)

Signature

2/9/2023
Date:

Vice President
Title

PROPOSAL FORM

PROPOSAL

TO THE MAYOR AND COMMISSIONERS
CITY OF HOLLYWOOD, FLORIDA

SUBMITTED 2/28/2023

Dear Mayor and Commissioners:

The undersigned, as BIDDER, hereby declares that the only person or persons interested in the Proposal as principal or principals is or are named herein and that no other person than herein mentioned has any interest in this Proposal or in the Contract to be entered into; that this Proposal is made without connection with any other person, company or parties making a Bid or Proposal; and that it is in all respects fair and in good faith without collusion or fraud.

The BIDDER further declares that he has examined the site of the Work and informed himself fully in regard to all conditions pertaining to the place where the Work is to be done; that he has examined the Drawings and Specifications for the Work and contractual documents relative thereto, including the Notice to Bidders, Instructions to Bidders, Proposal Bid Form, Form of Bid Bond, Form of Contract and Form of Performance Bond, General, Supplementary and Technical Specifications, Addenda, Drawings, and Local Preference Program, Exhibit A, and has read all of the Provisions furnished prior to the opening of bids; and that he has satisfied himself relative to the work to be performed.

The undersigned BIDDER has not divulged to, discussed or compared his bid with other bidders and has not colluded with any other BIDDER of parties to this bid whatever.

If this Proposal is accepted, the undersigned BIDDER proposes and agrees to enter into and execute the Contract with the City of Hollywood, Florida, in the form of Contract specified; of which this Proposal, Instructions to Bidders, General Specifications, Supplementary Conditions and Drawings shall be made a part for the performance of Work described therein; to furnish the necessary bond equal to one hundred (100) percent of the total Contract base bid, the said bond being in the form of a Cash Bond or Surety Bond prepared on the applicable approved bond form furnished by the CITY; to furnish all necessary materials, equipment, machinery, tools, apparatus, transportation, supervision, labor and all means necessary to construct and complete the work specified in the Proposal and Contract and called for in the Drawings and in the manner specified; to commence Work on the effective date established in the "Notice to Proceed" from the ENGINEER; and to substantially complete all Contract Work within __N/A____ days with final completion within ___N/A__ days, and stated in the "Notice to Proceed" or pay liquidated damages for each calendar day in excess thereof, or such actual and consequential damages as may result therefrom, and to abide by the Local Preference Ordinance, Exhibit A.

The BIDDER acknowledges receipt of the any and all addenda.

~~And the undersigned agrees that in case of failure on his part to execute the said Contract and the Bond within ten (10) days after being presented with the prescribed Contract forms, the check or Bid Bond accompanying his bid, and the money payable thereon, shall be paid into the funds of the City of Hollywood, Florida, otherwise, the check or Bid Bond accompanying this Proposal shall be returned to the undersigned~~.

~~Attached hereto is a certified check on the~~

~~_____ Bank of _____~~

~~or approved Bid Bond for the sum of~~

~~_____ Dollars ($) according to the conditions under the Instructions to Bidders and provisions therein.~~

NOTE: If a Bidder is a corporation, the legal name of the corporation shall be set forth below, together with signature(s) of the officer or officers authorized to sign Contracts on behalf of the corporation and corporate seal; if Bidder is a partnership, the true name of the firm shall be set forth below with the signature(s) of the partner or partners authorized to sign Contracts in behalf of the partnership; and if the Bidder is an individual, his signature shall be placed below; if a partnership, the names of the general partners.

WHEN THE BIDDER IS AN INDIVIDUAL:

N/A_____
(Signature of Individual)

N/A_____
(Printed Name of Individual)

N/A_____
(Address)

****

WHEN THE BIDDER IS A SOLE PROPRIETORSHIP OR OPERATES UNDER A TRADE NAME:

N/A_____
(Name of Firm)

N/A_____
(Address)

N/A_____(SEAL)
(Signature of Individual)

****

WHEN THE BIDDER IS A PARTNERSHIP:

N/A_____
(Name of Firm) A Partnership

N/A_____
(Address)

By: N/A_____
(SEAL)
(Partner)

Name and Address of all Partners:

N/A_____

N/A_____

****

WHEN THE BIDDER IS A JOINT VENTURE:

N/A_____
(Correct Name of Corporation)

By:N/A_____
(SEAL)
(Address)

N/A_____
(Official Title)

As Joint Venture
(Corporate Seal)

Organized under the laws of the State of N/A_____, and authorized by the law to make this bid and perform all Work and furnish materials and equipment required under the Contract Documents.

****

WHEN THE BIDDER IS A CORPORATION:

Black & Veatch Corporation
(Correct Name of Corporation)

By: Rafael E. Frias, III, PE
(SEAL)

Vice President
(Official Title)

11401 Lamar Avenue
(Address of Corporation)

BLACK & VEATCH CORPORATION
CORPORATE
SEAL
DELAWARE

Organized under the laws of the State of Delaware, and authorized by the law to make this bid and perform all Work and furnish materials and equipment required under the Contract

Documents.

CERTIFIED COPY OF RESOLUTION OF
BOARD OF DIRECTORS

Black & Veatch Corporation
(Name of Corporation)

RESOLVED that Rafael E. Frias, III, PE
(Person Authorized to Sign)

Vice President of Black & Veatch Corporation
(Title) (Name of Corporation)

be authorized to sign and submit the Bid or Proposal of this corporation for the following project:

Water Treatment Plant and Wastewater Treatment Plant Projects
RFQ-041-23-JJ
Bid No. N/A

The foregoing is a true and ~~correct copy of the Resolution~~ adopted by

Black & Veatch Corporation at a meeting of its Board of
(Name of Corporation)

Directors held on the 1st day of March, 2022.

By: N/A

Title: N/A

(SEAL)

The above Resolution MUST BE COMPLETED if the Bidder is a Corporation.

- END OF SECTION -

Text that is a part of this form and does not pertain to the WTP and WWTP Projects RFQ has been struck out. We have included a copy of authorization from the board of directors for Rafael Frias to sign the proposal.

SWORN STATEMENT ON PUBLIC ENTITY CRIMES

SWORN STATEMENT PURSUANT TO SECTION 287.133 (3) (a) FLORIDA STATUTES ON PUBLIC ENTITY CRIMES

THIS FORM MUST BE SIGNED AND SWORN TO IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICIAL AUTHORIZED TO ADMINISTER OATHS

1. This form statement is submitted to the City of Hollywood by Rafael E. Frias, III, PE for Black & Veatch Corporation
(Print individual's name and title) (Print name of entity submitting sworn statement)
whose business address is 11401 Lamar Avenue, Overland Park, KS 66211
and if applicable its Federal Employer Identification Number (FEIN) is 43-1833073. If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement.

2. I understand that "public entity crime," as defined in paragraph 287.133(1)(g), Florida Statues, means a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with the United States, including, but not limited to, any bid, proposal, reply, or contract for goods or services, any lease for real property, or any contract for the construction or repair of a public building or public work, involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misinterpretation.

3. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(1)(b), Florida Statutes, means a finding of guilt or a conviction of a public entity crime, with or without an adjudication of guilt, in an federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, nonjury trial, or entry of a plea of guilty or nolo contendere.

4. I understand that "Affiliate," as defined in paragraph 287.133(1)(a), Florida Statutes, means:

    1. A predecessor or successor of a person convicted of a public entity crime, or
    2. An entity under the control of any natural person who is active in the management of the entity and who has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding 36 months shall be considered an affiliate.

5 I understand that "person," as defined in Paragraph 287.133(1)(e), Florida Statues, means any natural person or any entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts let by a public entity, or which otherwise transacts or applies to transact

business with a public entity. The term "person" includes those officers, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.

6. Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. (Please indicate which statement applies.)

_✓_ Neither the entity submitting sworn statement, nor any of its officers, director, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, nor any affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

_____ The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, or an affiliate of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

_____ The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime, but the Final Order entered by the Hearing Officer in a subsequent proceeding before a Hearing Officer of the State of the State of Florida,

Division of Administrative Hearings, determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. (attach a copy of the Final Order).

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CONTRACTING OFFICER FOR THE PUBLIC ENTITY IDENTIFIED IN PARAGRAPH 1 (ONE) ABOVE IS FOR THAT PUBLIC ENTITY ONLY AND THAT THIS FORM IS VALID THROUGH DECEMBER 31 OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THAT PUBLIC ENTITY PRIOR TO ENTERING INTO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017 FLORIDA STATUTES FOR A CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

_____
(Signature)

Sworn to and subscribed before me this 9th day of February, 2023.

Personally known Rafael E. Frias, III, PE

Or produced identification N/A Notary Public-State of Florida

_____ my commission expires May 2, 2023.
(Type of identification)

_____
(Printed, typed or stamped commissioned name of notary public)

JACLYN HINES
Notary Public-State of Florida
Commission # GG 330150
My Commission Expires
May 02, 2023

CERTIFICATE OF INSURANCE

ACORD®

CERTIFICATE OF LIABILITY INSURANCE

11/1/2023

DATE (MM/DD/YYYY) 2/2/2023

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Lockton Companies 444 W. 47th Street, Suite 900 Kansas City MO 64112-1906 (816) 960-9000 kctsu@lockton.com	**CONTACT NAME:** **PHONE (A/C, No, Ext):** **FAX (A/C, No):** **E-MAIL ADDRESS:**
	INSURER(S) AFFORDING COVERAGE — **NAIC #** **INSURER A :** Zurich American Insurance Company — 16535
INSURED 1482177 BLACK & VEATCH CORPORATION 11401 LAMAR OVERLAND PARK KS 66211	**INSURER B :** Lloyds of London **INSURER C :** National Fire and Marine Insurance Co — 20079 **INSURER D :** **INSURER E :** **INSURER F :**

COVERAGES **CERTIFICATE NUMBER:** 19311525 **REVISION NUMBER:** XXXXXXX

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY	Y	Y	GLO 4641358	11/1/2022	11/1/2023	EACH OCCURRENCE	$ 2,000,000
A	CLAIMS-MADE X OCCUR			GLO 1365630	11/1/2022	11/1/2023	DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 100,000
							MED EXP (Any one person)	$ 10,000
							PERSONAL & ADV INJURY	$ 2,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 4,000,000
	X POLICY PRO-JECT LOC						PRODUCTS - COMP/OP AGG	$ 4,000,000
	OTHER:							$
A	**AUTOMOBILE LIABILITY**	Y	Y	BAP 4641355 (AOS)	11/1/2022	11/1/2023	COMBINED SINGLE LIMIT (Ea accident)	$ 2,000,000
	X ANY AUTO						BODILY INJURY (Per person)	$ XXXXXXX
	X OWNED AUTOS ONLY; SCHEDULED AUTOS						BODILY INJURY (Per accident)	$ XXXXXXX
	X HIRED AUTOS ONLY; X NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$ XXXXXXX
								$ XXXXXXX
	UMBRELLA LIAB OCCUR			NOT APPLICABLE			EACH OCCURRENCE	$ XXXXXXX
	EXCESS LIAB CLAIMS-MADE						AGGREGATE	$ XXXXXXX
	DED RETENTION $							$ XXXXXXX
A	**WORKERS COMPENSATION AND EMPLOYERS' LIABILITY** Y / N	N / A	Y	WC 4641353 (AOS)	11/1/2022	11/1/2023	X PER STATUTE OTH-ER	
A	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? N **(Mandatory in NH)**			WC 4641354 (ID, MA, WI)	11/1/2022	11/1/2023	E.L. EACH ACCIDENT	$ 1,000,000
A	If yes, describe under DESCRIPTION OF OPERATIONS below			WC 1365632	11/1/2022	11/1/2023	E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000
B	PROFESSIONAL LIABILITY	N	N	GLOPR2202346	11/1/2022	11/1/2023	$10,000,000 PER CLAIM	
C				42-EPP-324748-01	11/1/2022	11/1/2023	$10,000,000 ANNUAL AGGREGATE	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

RE: PROJECT NUMBER: 907291.0008; PROJECT MANAGER: BOTERO, ISABEL; GENERAL LIABILITY AND AUTO LIABILITY ARE PRIMARY AND NON-CONTRIBUTORY. CITY OF HOLLYWOOD IS INCLUDED AS AN ADDITIONAL INSURED ON THE GENERAL AND AUTO POLICIES. WAIVER OF SUBROGATION IN FAVOR OF THE ADDITIONAL INSURED ON THE GENERAL, AUTO, AND WORKER'S COMPENSATION POLICIES. 30 DAY NOTICE OF CANCELLATION APPLIES, 10 DAYS NOTICE FOR NON-PAYMENT OF PREMIUM.

CERTIFICATE HOLDER	**CANCELLATION** See Attachments
19311525 CITY OF HOLLYWOOD 2600 HOLLYWOOD BOULEVARD HOLLYWOOD FL 33020	**SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.** **AUTHORIZED REPRESENTATIVE** Joseph M Agnello

FIRM W-9

Form **W-9**
(Rev. October 2018)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

▶ **Go to *www.irs.gov/FormW9* for instructions and the latest information.**

Give Form to the requester. Do not send to the IRS.

Print or type. See **Specific Instructions** on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

BLACK & VEATCH CORPORATION

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☑ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is **not** disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) 5

Exemption from FATCA reporting code (if any) _____

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.

11401 LAMAR AVE.

Requester's name and address (optional)

6 City, state, and ZIP code

OVERLAND PARK, KS 66211

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN,* later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number

			–			–				

or

Employer identification number

4	3	–	1	8	3	3	0	7	3

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here **Signature of U.S. person ▶** E R B **Date ▶** January 1, 2023

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9.*

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, *later.*

Cat. No. 10231X

Form **W-9** (Rev. 10-2018)