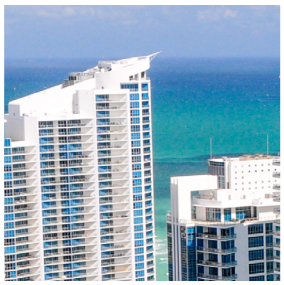
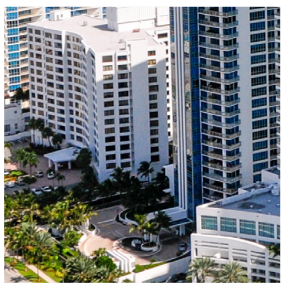
Brown AND Caldwell

Water Treatment Plant and Wastewater Treatment Plant Projects

CITY OF Hollywood FLORIDA

February 28, 2023 // RFP#-041-23-JJ // **ELECTRONIC**



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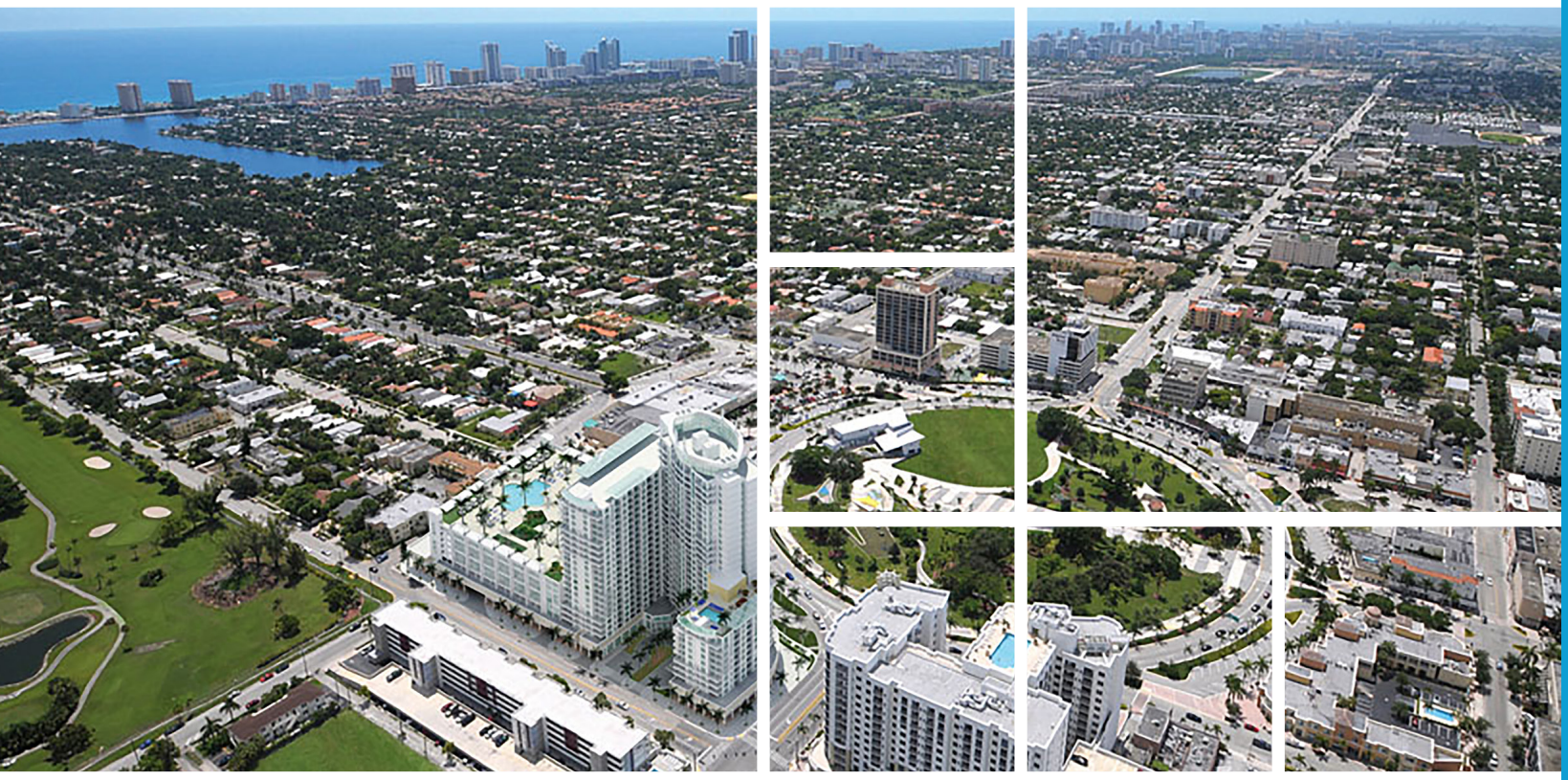

Brown AND Caldwell

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Proven Partnership.
Trusted Solutions.

Executive Summary

TAB B

Brown AND Caldwell

Executive Summary

Company Background

Brown and Caldwell is a privately held firm and the largest in North America that is solely focused on water and wastewater services.

Brown and Caldwell (BC) is a full-service, employee-owned environmental firm with over 1,900 professionals nationwide in 52 offices. BC has been advancing infrastructure innovation for more than 75 years, earning the firm high ENR rankings year after year

BC opened its first Florida office over 35 years ago and today, BC has 6 offices in Florida: Sunrise, Miami, West Palm Beach, Tampa, Sarasota and Orlando. Our South Florida offices are home to over 50 of our Florida staff, and are comprised of experts in infrastructure, wastewater, water, compliance, permitting, design specialties and construction management, safety, and a host of other important supporting criteria.

BC is the right fit (size, location, relevant experience, and staff expertise) for the City of Hollywood in meeting all anticipated requirements. The City is very familiar with our well-established team of professionals with key staff who bring over 25 years of history with Hollywood. Our Team has successfully delivered wide-ranging and important initiatives, including the ongoing Ocean Outfall Legislation (OOL) compliance program.

Company details:

1. Business Entity: Brown and Caldwell
2. Corporate Headquarters: 201 N. Civic Drive, Walnut Creek, CA 94596

   www.brownandcaldwell.com
3. Local Office: 1580 Sawgrass Corporate Parkway, Sunrise, FL
4. Primary Contact: Dr. Celia Earle, BCEEM | cearle@brwncald.com | 954.200.7615

Section + Overview

This section includes the completed Attachment X.

Evaluation Criteria

- ✓ **Compay Background**
- ✓ **Key staff**
- ✓ **SOQ Summary**

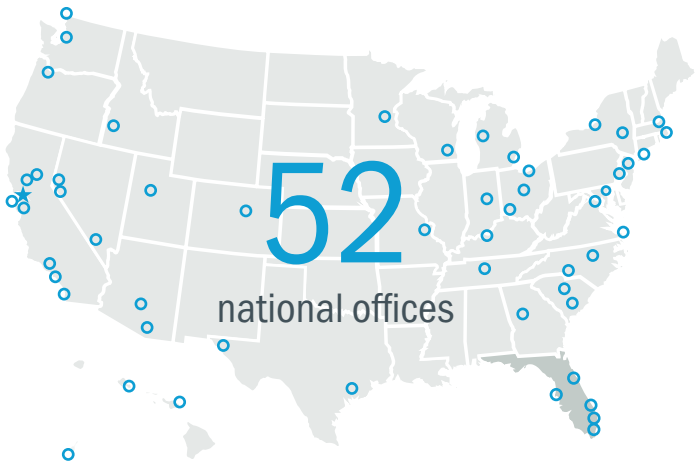
BC's Florida operations offers a strong local team, as well as a deep bench of national technical experts to ensure you have the resources needed to complete your projects.

1,900+ National Employees

100% Environmental

75 Years in Business

100% Employee-owned



Proven Leadership You Know and Trust

The City of Hollywood can take confidence in our leadership. Celia, Nigel, and Albert have worked together for years to support you with consistent, successful project delivery.

Our senior managers are well known to the City of Hollywood and bring proven experience serving in their assigned role on past projects. They will work in unison throughout the life of this contract to enable our entire team to meet our commitments and your expectations on every project assignment. They serve in complementary senior leadership roles in our firms so they have the ability to draw in additional resources as needed.

Proven Partnership. Trusted Solutions.

Nigel Grace, PE
Project Delivery Officer
PM Water Supply & Treatment

For over 20 years, Nigel has served as an engineer to the City of Hollywood. Through his efforts, he has played an instrumental role in supporting the development of the City's diverse portfolio of water supplies as well as a modified plan for complying with the Ocean Outfall Legislation that resulted in concessions that saved the City an estimated $200 million. His diverse experience and credibility makes him well suited to ensure we deliver your projects on schedule and within budget.

Celia Earle, PhD
Client Service Manager

Celia has been a consultant for over 27 years in Florida. She is currently the Client Service Manager and proven partner to the City of Hollywood for your water treatment plant expansions, buried infrastructure, and ocean outfall-related studies, design and construction administration. She brings the best BC has to offer for this role. **Her primary mission is to ensure we ask the right questions, listen well, consider nuanced factors and apply appropriate resources to deliver well integrated and trusted solutions.**

Albert Perez, PE
Principal-In-Charge

Albert leads our Florida Gulf Coast Operations and will serve as the Principal-in-Charge for this Contract. In this role, **he is authorized to commit the full resources of the company and will work to ensure the full BC Experience is delivered.** He has over 25 years of management experience in the public and private sectors. Prior to working with BC, he worked as the Director for the City of Hollywood Department of Public Utilities.

We will work collaboratively with you and deliver best-in-class service.

Experienced Project Management Team

Our project managers will be able to handle any assignment you give our team.

The City of Hollywood needs strong, proven project managers who bring proven experience with each project component, know how to lead multi-disciplined teams, and availability to be responsive to the City's needs. All of our project managers meet the criteria perfectly. Their availability is over 50%, so they are ready to start working on your projects. Led by Nigel Grace, who brings a proven and trusted 25-year track-record with Hollywood, we believe our team is well equipped to efficiently and appropriately deliver any project assigned to us under this contract.

Our key Project Managers bring experience that span from 20 years to approximately 50 years, history with successful project delivery for Hollywood, working together and bring specialized national expertise in areas that are directly pertinent to Hollywood. They were selected because of their successful track record of driving teams to project completion on schedule and within budget. Based on the specific needs of each assignment, the right project manager will be selected and assigned. Nigel will oversee the resources and overall delivery performance of our entire team's work to ensure your expectations and met.

William Eleazer, PE

Wastewater Treatment

EXPERIENCE SUMMARY

Over 22 years of experience in project management and design of all process elements of wastewater treatment plants including headworks, screening's and grit removal systems, chlorine and ultraviolet disinfection systems, advanced oxidation systems for groundwater recharge, and solid stream processes.

Marie Burbano, P

Wastewater Treatment

EXPERIENCE SUMMARY

Over 20 years experience with focus on analysis and design of wastewater treatment and pumping systems. Dr. Burbano also serves as BC's National Wastewater practice leader and consequently, has a keen grasp of industry best practices and trends. She will leverage this experience with the City's wastewater projects.

Victor Hurlburt, PE

Infrastructure

EXPERIENCE SUMMARY

Over 45 yrs experience designing buried infrastructure, pump stations, supply and treatment projects, reclaimed water transmission projects, wastewater collection. He has also managed the design of over 125 miles of pipelines (various applications) with sizes as small as 4-inch.

Jim Nissen, PE

QA/QC/Value Engineering

EXPERIENCE SUMMARY

Over 40 years of experience in major water, wastewater and solid waste utilities and for regional planning agencies ranging in size from less than $100,000 to over $100M in construction cost. He routinely has responsibility for ensuring that QA/QC protocols are properly carried out by our project teams.

Statement of Qualifications Summary

The BC Team provides the City with a trusted leadership that understand your priorities, a proven track record delivering impactful results for your most challenging needs, local responsive multi-disciplinary capabilities, and world-class technical expertise that will continue to deliver outstanding results and provide continuity with critical initiatives.

FIRM QUALIFICATIONS AND EXPERIENCE

Over our firm's 75-year history, over 35 years has been spent delivering solutions for South Florida utilities like Hollywood. Our local experience (refer to Tab C for details) is well aligned with the City's identified project priorities with the following highlights:

- Oxygenation trains rehab (Miami-Dade WASD)
- Membrane softening (Hollywood, Miramar)
- Clarifier rehabilitation (MDWASD, Sunrise, ECR)
- Electrical Service Center (Broward, Hollywood, MDWASD)
- Bar Screens Bypass (Sunrise, MDWASD)
- Asset Management and Grant Application (Hollywood, Riviera Beach, North Miami Beach)

ORGANIZATIONAL PROFILE AND PROJECT TEAM QUALIFICATIONS

As the largest consulting firm in the US that's exclusively focused on the water, wastewater and related markets, BC is a resourceful firm that is well equipped to meet the City's diverse utility needs. Our leadership and project management team bring diverse and complimentary expertise, significant history with Hollywood and successful project execution track record. For over 25 years, our Team Members has led the diversification of the City's water supplies, master planning, performance improvements, development and implementation of the City's OOL compliance program to not only deliver enhanced resiliency by cost saving of over $200 million. Experience highlights of key team members are previously summarized and developed in detail in Tab D. Key benefits of our Team include:

- A backup PM is provided for each service area to ensure staff availability and responsiveness
- Availability for emergencies and on-site meetings 24/7
- Our project leadership bring a multi-decade history of hands-on impactful results for Hollywood
- Subconsultant partners that bring specialty expertise and a proven history of working with BC to deliver for Hollywood and/or other South Florida utilities.

APPROACH TO SCOPE OF WORK

The BC team has consistently proven to Hollywood its ability to competently deliver effective results in wide-ranging situations, details of which are presented in Tab X. Our history of no construction change orders that increase project cost to the City, promoting stakeholder engagement and buy in, efficiently delivered studies and program cost savings demonstrate the effectiveness of our project delivery capabilities.

Our project management function is an essential framework that connects and coordinates the application of appropriately aligned and committed resources to clearly understood needs, to consistently deliver the quality the impactful results the City has come to expect. Keys to our consistent success lie in getting the right expertise involved in the project at the very onset and consistently applying our proven project delivery protocols that are managed through our internally developed WorkSmart System.

Our work order management approach is designed to ease schedule and budget management and build consistency and accountability. Key elements include:

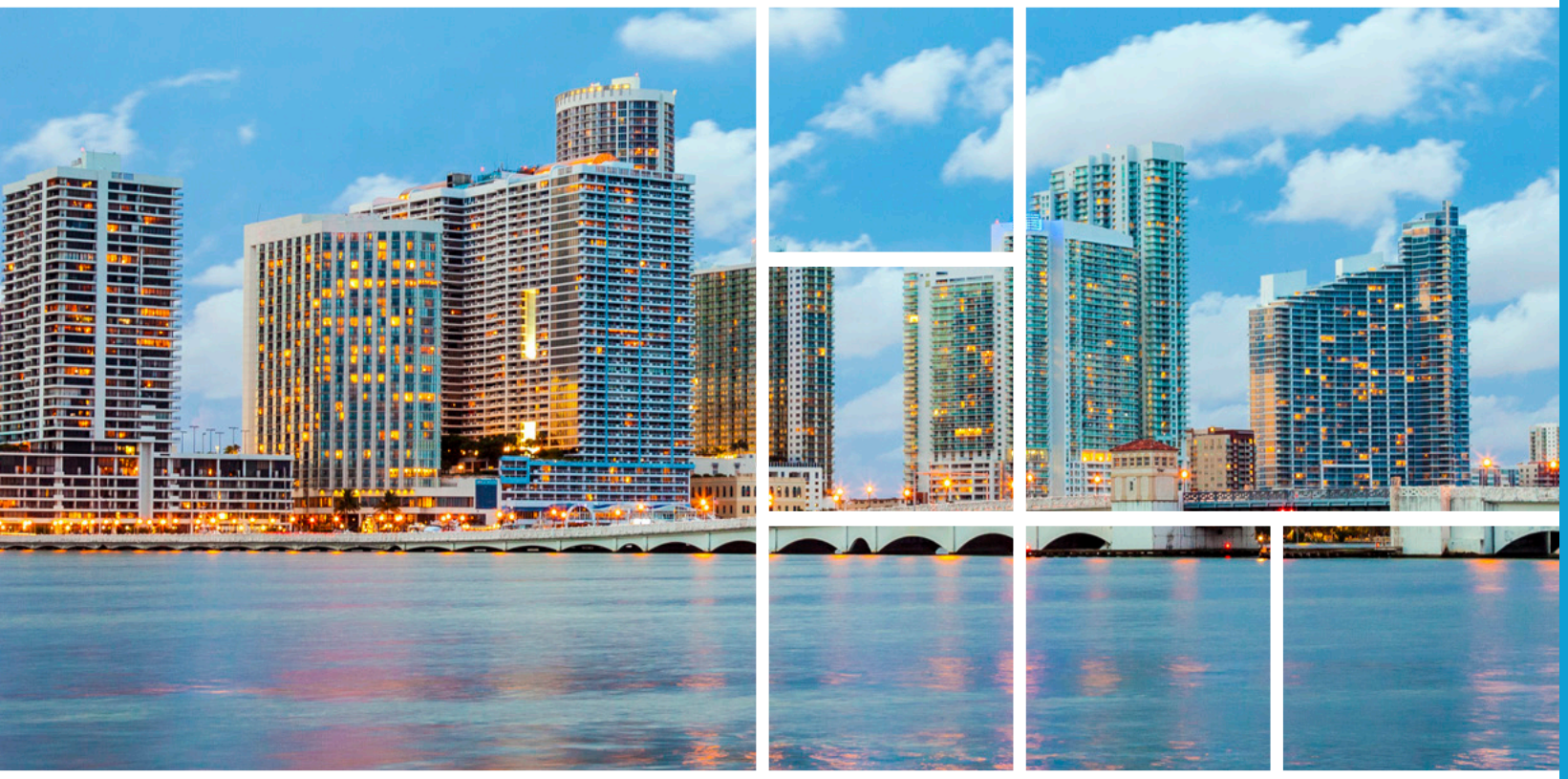
- Listen well to confirm understanding of project goals, key stakeholders and critical success factors and structure the project scope accordingly
- Engage appropriate project team with requisite experience to deliver on project expectations
- Prepare scope of work with based on collaborative input from the City and project team
- Execute project delivery plan within the framework of BC's WorkSmart System
- Celebrate successful achievement of project goals

VALUE OF PAST CONTRACT AWARDS

The value of past general consulting work orders issued by the City to BC is approximately **$700,000** (does not include competitively procured standalone projects. **Over the past 5 years, BC has delivered a return of over $200 million in savings for the City's capital program, water quality improvements, and advanced the City's diverse priorities.**

Firm Qualifications and Experience

TAB C



Brown AND Caldwell

Firm Qualifications and Experience

Industry-Leading Water and Wastewater Capabilities Since 1947, BC has been at the forefront of water and wastewater innovation with one primary goal: providing effective and sustainable solutions.

Brown and Caldwell (BC) is a Corporation and a national consulting engineering firm with over 75-years of history exclusively focused on the environment with a staff of over 1,900 in more than 50 offices. We have the internal resources to effectively respond to any challenge that emerges. BC offers the City a team that will deliver exceptional project management, technical direction, design production, and QA/QC for all projects under this contract. The breadth and depth of our team, as well as our local presence, allow us to quickly respond to effectively deliver all services listed in your proposed scope for RFQ-041-23-JJ Water Treatment Plant and Wastewater Treatment Plant Projects.

In addition to BC's in-house water and wastewater experts, we have assembled a team of highly qualified engineers and consultants that know the City of Hollywood well and have successfully supported the City in the past.

Our national reputation is based on exceptional client service and an unwavering commitment to quality. We are an employee-owned, 100% environmental firm. That makes us truly unique in our industry.

Our team's resources, are second to none. These individuals have worked on complex, multi-disciplined projects that include innovative yet practical approaches to meet our clients' widely varied requirements. You can expect our team to continue to deliver sustainable solutions that will move the City of Hollywood forward to an efficient and reliable utility system that builds the trust and confidence of your stakeholders.

BC has more than **75 years** of experience delivering water and wastewater solutions to clients across the country. We will draw on lessons learned to provide project efficiencies.

6 offices with 100 professionals in Florida

BC has:

13 million work hours

5 continuous years without a lost time injury.

over 1,900 National Employees

75 Years in Business

100% Environmental

100% Employee-owned

BC delivers full-service planning, engineering, construction, and program management solutions to meet our nation's water and wastewater needs.

We help utilities make confident decisions in building and maintaining infrastructure to provide reliable, resilient service and achieve the greatest return on the investment of resources. Our key services and specialized expertise are listed below.

Helping utilities deliver cost-effective, environmentally beneficial solutions since 1947

Drinking Water

Hydrogeology/Hydrology
Resource Investigation
Conservation Programs
Water Reuse
Aquifer Recharge
Reservoirs/Storage
Treatment Process Design
Groundwater Wells

Wastewater

Treatment Process Design
Solids Management
Industrial Pretreatment and Water Quality
Disinfection
Odor Control/Air Quality
Pilot/Treatability Testing

Reclaimed Water/Reuse

Feasibility Investigations
Treatment Technology Evaluation
Treatment, Pumping, Storage & Distribution Design
Policy & Institutional Arrangements
Permitting & Regulatory Assistance
Market Assessment & End-User Interface
Public Involvement & Public Communications
Program Development

Program and Integrated Delivery

Program Management
Construction Management
Design-Build/Owner's Advisor

Water Resources and Stormwater

Integrated Planning
Watershed Planning/Management
Stormwater Management
Water Quality Management
Lake Management
Green Infrastructure
Ecosystem Restoration
Wetlands and Ecosystem Assessment
Conservation and Drought Planning

Compliance and Permitting

Permitting and Auditing
Environmental Impact Assessments
Environmental Monitoring
Modeling and Design
Regulatory Planning/Review

Conveyance Infrastructure

Pumping Station Design
Distribution/Collection Systems
Infiltration/Inflow Reduction
CSO/SSO Reduction
Condition Assessment
Rehabilitation/Replacement Programs

Utility Performance

Asset Management
CIP Planning/Prioritization
Regulatory and Enforcement Support
Business Process Optimization
IT and Business Visualization

Construction Management/ Administration

Field Inspection, Testing and Start-up
Construction Schedule Review
Cost Estimating & Control
Document & Information Management
Value Engineering

Operations and Maintenance

Startup, Testing, and Commissioning
Decommissioning
Asset Optimization
Operations Management Services
Maintenance Improvement Initiatives
Staff Augmentation and Training

Planning/Technical Support

Treatability Studies
Treatment Plant Optimization
Hydraulics
Master Planning/Modeling
Capacity Assessment
GIS Development/Mapping
Electrical and Process Automation
Stakeholder Outreach

Energy and Sustainable Development

Energy Management/Alternative Energy
Triple Bottom Line Analysis
Low Impact Development
Water Footprinting
Greenhouse Gas Management
Climate Change Adaptation

Relative Size of Firm

Our firm's size enables us to customize solutions, and our culture encourages practical innovation. We collaborate as one with our clients and, in doing so, we have earned their respect and continuing trust.

Through our years of working on similar projects with the City, we understand what you expect in a consulting firm. As a result, each member of our team has been specifically selected for this contract based on his/her technical expertise, prior working relationships with each other, and previously demonstrated ability to be responsive and reliable.

BC is an employee-owned company. We are registered as a corporation. Our officers and board of directors include:

- Richard D'Amato | CEO, *President, Chairman of the Board*
- Cynthia Paulson | Senior VP, *Chief Technical Officer*
- Marc Damikolas | Senior VP, *Chief Operating Officer*
- Meghan Krishnayya | *Vice President*
- Amy Fairbank | *Senior VP, Chief Financial Officer*
- Robert Goodson | *Senior VP, Secretary*
- *Directors:* Richard D'Amato, Cynthia Paulson, Meghan

BC Headquarters:

201 N. Civic Drive
Walnut Creek, CA 94596
www.brownandcaldwell.com

Discipline	No. of Employees in Brown and Caldwell
Administrative	370
Architect	4
CADD Technician	115
Chemical Engineer	17
Civil Engineer	281
Construction Inspector	41
Construction Manager	37
Cost Engineer/ Estimator	18
Electrical Engineer	105
Environmental Engineer	360
Environmental Scientist	101
GIS Specialist	13
Geologist	20
Mechanical Engineer	69
Planner: Urban/Regional	2
Project Manager	170
Sanitary Engineer	5
Structural Engineer	36
Technician/Analyst	31
Water Resources Engineer	45
Other Employees	63
TOTAL	1,903

The breakdown of our staff by Discipline is presented to the left and pertinent licenses are provided on the following page.

Company General Information

BC is a registered legal entity in the State of Florida. Our Florida license is shown below. BC has three local offices in Broward County, Miami-Dade County, and Palm Beach County that collectively support our South Florida operations; they work seamlessly as one office. Service delivery for your projects will be managed out of our Broward County office located at:

1580 Sawgrass Corporate Parkway,
Suite 400, Sunrise, FL 33323
(954) 200-7611 (ph.) | (954) 200-7612 fax)

Dr. Earle will serve as a second point of contact, so that the needs can be met in a timely manner. Her contact information is:

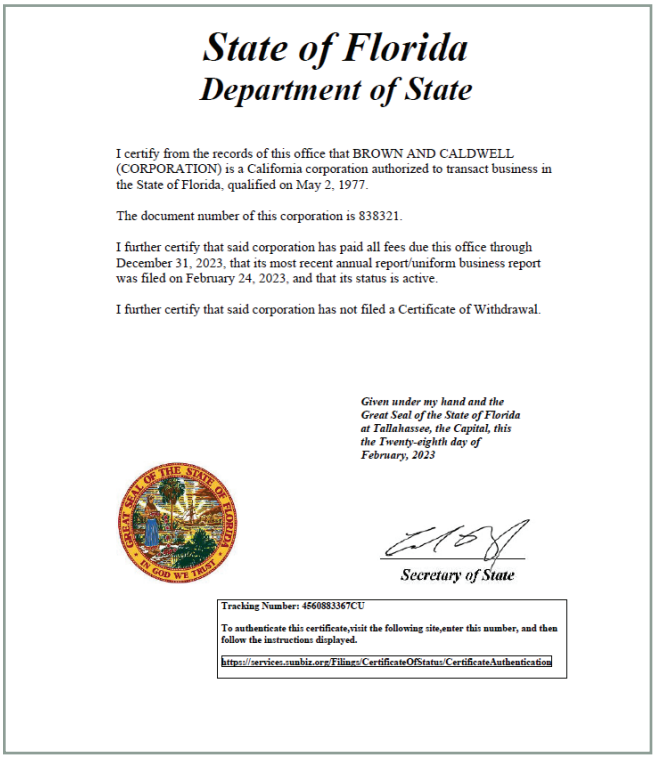
Dr. Celia Earle, BCEEM | cearle@brwncald.com
1580 Sawgrass Corporate Parkway, Suite 400,
Sunrise, FL 33323
(954) 200 - 7615 (work) | (954) 600 - 6918 (cell)

This office is under the leadership of Client Service Manager and Company Officer, Dr. Celia Earle who will be the second point of contact for the City. The Project Delivery Officer and Company Officer, Nigel Grace, is the primary contact and is also located in that same office. His contact information is:

Nigel Grace, P.E. | ngrace@brwncald.com
1580 Sawgrass Corporate Parkway, Suite 400,
Sunrise, FL 33323
(954) 200 – 7230 (work) | (954) 260 – 9587 (cell)

Our Principal-in-Charge and Company Officer, Albert Perez is out of our Miami-Dade County office. Our Broward County and Miami-Dade County offices are both approximately 20 minutes away from the City of Hollywood Department of Public Utilities Administration building

Albert Perez, PE | Alperez@brwncald.com
2333 Ponce de Leon Blvd., Suite R-205
Coral Gables, FL 33134
305.418.4090 (work) | 954.554.7176 (cell)



State of Florida
Department of State

I certify from the records of this office that BROWN AND CALDWELL (CORPORATION) is a California corporation authorized to transact business in the State of Florida, qualified on May 2, 1977.

The document number of this corporation is 838321.

I further certify that said corporation has paid all fees due this office through December 31, 2023, that its most recent annual report/uniform business report was filed on February 24, 2023, and that its status is active.

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

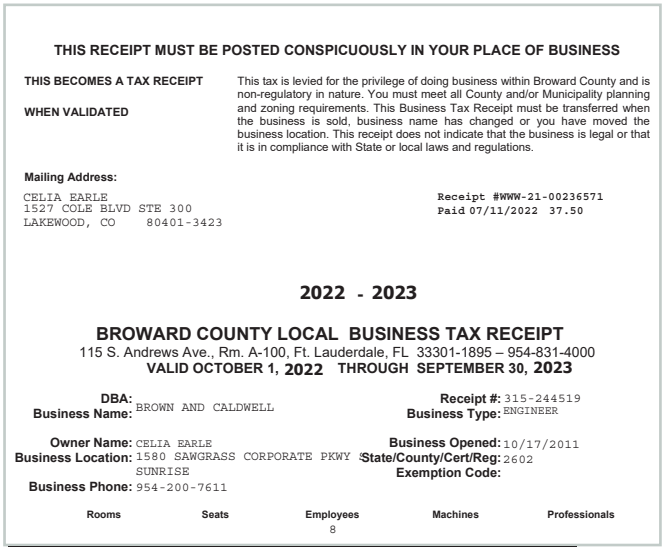
Given under my hand and the Great Seal of the State of Florida at Tallahassee, the Capital, this the Twenty-eighth day of February, 2023

Secretary of State

Tracking Number: 4560883367CU

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

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



THIS RECEIPT MUST BE POSTED CONSPICUOUSLY IN YOUR PLACE OF BUSINESS

THIS BECOMES A TAX RECEIPT WHEN VALIDATED

This tax is levied for the privilege of doing business within Broward County and is non-regulatory in nature. You must meet all County and/or Municipality planning and zoning requirements. This Business Tax Receipt must be transferred when the business is sold, business name has changed or you have moved the business location. This receipt does not indicate that the business is legal or that it is in compliance with State or local laws and regulations.

Mailing Address:
CELIA EARLE
1527 COLE BLVD STE 300
LAKEWOOD, CO 80401-3423

Receipt #WWW-21-00236571
Paid 07/11/2022 37.50

2022 - 2023

BROWARD COUNTY LOCAL BUSINESS TAX RECEIPT
115 S. Andrews Ave., Rm. A-100, Ft. Lauderdale, FL 33301-1895 – 954-831-4000
VALID OCTOBER 1, 2022 THROUGH SEPTEMBER 30, 2023

DBA:
Business Name: BROWN AND CALDWELL
Receipt #: 315-244519
Business Type: ENGINEER

Owner Name: CELIA EARLE
Business Location: 1580 SAWGRASS CORPORATE PKWY SUNRISE
Business Phone: 954-200-7611
Business Opened: 10/17/2011
State/County/Cert/Reg: 2602
Exemption Code:

Rooms	Seats	Employees	Machines	Professionals
		8		

BC is a **Proven Partner** in Florida Operations.

Since the early 1980's, BC has supported the engineering needs of several South Florida utility systems across a diverse array of service areas. We have delivered impactful results in planning, compliance, operational optimization, asset management and implementation of improvements that are well aligned with the City of Hollywood's needs. Examples of our local track record of proactively anticipating and addressing challenges, challenging the norm, and delivering impactful results that serve the best interest of our clients include the following:

1. Mitigated potential risks of a Reuse Compliance Plan developed by others that relied on Floridan Aquifer recharge and led the initiative to develop an alternative strategy that mitigated the risks at an estimated savings of over $200 million. This is currently being implemented **(Hollywood).**
2. Collaborated with operations and compliance staff to assess and implement measures to enhance system operations and water quality, as well as designed and performed construction administrative services for membrane plant improvements (**Hollywood**, Broward County WWS, Miramar, West Palm Beach, Palm Beach County WUD, Riviera Beach, Seminole Tribe of Florida, others).
3. Planned and implemented significant wastewater treatment plant improvements throughout all areas of the WWTP including those addressing climate change impacts. Many of these improvements included installing energy saving equipment, as well as reductions in chemical costs (**Hollywood**, Broward County WWS, Miami-Dade WASD, ECR, Florida Keys Aqueduct Authority, others)
4. Planned and implemented major buried infrastructure planning, design and/or condition assessment projects on-time and within schedule. Applications included force main and collection system condition assessment, the planning of intracoastal waterway crossings, regional septic tank elimination planning, and design of major watermains replacement projects (**Hollywood,** Sunrise, Broward County WWS, Miami-Dade WASD, Seminole Tribe of Florida, others).
5. Supported decisions associated with deploying upgraded business systems (e.g. billing), customer service staffing needs, operational staffing assessments, piloting of advanced metering technologies, development of asset management programs (**Hollywood,** Broward County, West Palm Beach, others).
6. Significantly reduced fuel consumption and carbon footprint to realize forecasted savings of $20 million over 20 years (St. Petersburg).

These additional examples further illustrate our range of capabilities and the impactful results that can also be delivered to Hollywood, as well as the flexible approaches taken to adapt our management and delivery efforts to the specific needs of each project assignment.

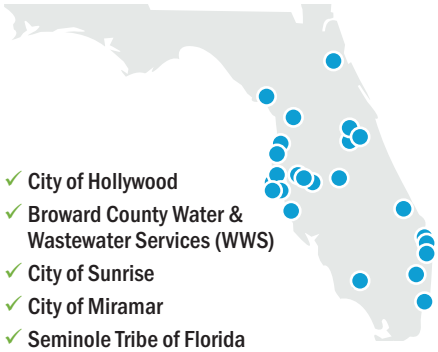
BC is the right fit (size, location, elevant experience, and staff expertise) for the City in meeting all anticipated requirements.

BC offers a well-established local team of professionals who have successfully planned and implemented challenging projects for many utlities just like Hollywood.

BC's National Recognition

- #5 ENR Top 20 Design Firms in Sewer
- #13 ENR Top 20 Design Firms Water
- #7 ENR Top 30 All-Environmental Firms
- #40 ENR Top 500 Design Firms

BC provides similar continuing contract services to more than 25 Florida cities, counties and utilities. A partial list is included below.



- ✓ City of Hollywood
- ✓ Broward County Water & Wastewater Services (WWS)
- ✓ City of Sunrise
- ✓ City of Miramar
- ✓ Seminole Tribe of Florida
- ✓ City of West Palm Beach
- ✓ City of Riviera Beach
- ✓ City of North Miami Beach
- ✓ Miami-Dade Water & Sewer Department (WASD)
- ✓ Palm Beach County Water Utilities Department (WUD)
- ✓ Palm Beach County Solid Waste Authority
- ✓ East Central Regional Water Reclamation Board
- ✓ South Florida Water Management District
- ✓ Southwest Florida Water Management District
- ✓ St. Johns River Water Management District
- ✓ Suwannee River Water Management District
- ✓ City of St. Petersburg
- ✓ Pinellas County
- ✓ Sarasota County
- ✓ Pasco County
- ✓ City of Tampa
- ✓ City of Clearwater
- ✓ City of Largo
- ✓ City of Haines City
- ✓ Orange County Utilities Dept.
- ✓ Reedy Creek Improvement District
- ✓ Hernando County
- ✓ Tampa Bay Water

Recent and Relevant Municipal Experience

We bring a significant depth of experience working at your facilities, supporting your programs and delivering the quality and performance you expect.

With a solid track record of delivering water, wastewater, reclaimed water and water resource projects in Florida and throughout the U.S., we understand the challenges that public works and utilities are facing as they comply with regulations; address population growth and impacts of climate change; and grapple with aging infrastructure.

BC has a comprehensive resume of in-house services that we can offer to the City. In this section, we have included featured projects within the last five years that demonstrate our expertise in the following categories:

- Wastewater Treatment Plant Projects
- Water Supply and Treatment Projects
- Infrastructure Projects
- Quality Assurance, Quality Control and Value Engineering Services

Proven Partnership. Trusted Solutions.

Our Commitment to You

We have had the pleasure of serving the City for many years - brainstorming solutions and addressing challenges together. Our commitment to you is to continue to partner with your staff to consistently deliver impactful and creative solutions.

Delivery and Performance You Can Count On

Our team offers an unparalleled blend of extensive and proven knowledge of the City's utility system as well as the fresh perspectives derived from experienced professionals who are well positioned to bring new thinking to advance the City's goals.

Dating back to the mid to late 1990's, key members of the BC leadership team have supported the City's utility system with the assessment and mitigation of important challenges that impact its utility system. A timeline is presented below that presents our unparalleled impact on the City's Utility Program. Important projects developed under the leadership of our proposed Project Delivery Officer, Nigel Grace, that continues to chart the course of the City's direction include the previous Water System Master Plan and diversification of the City's water supply through permitting and expansion of the Floridan aquifer supply and associated reverse osmosis (RO) process expansion, and implementation of the Ocean Outfall Legislation program.

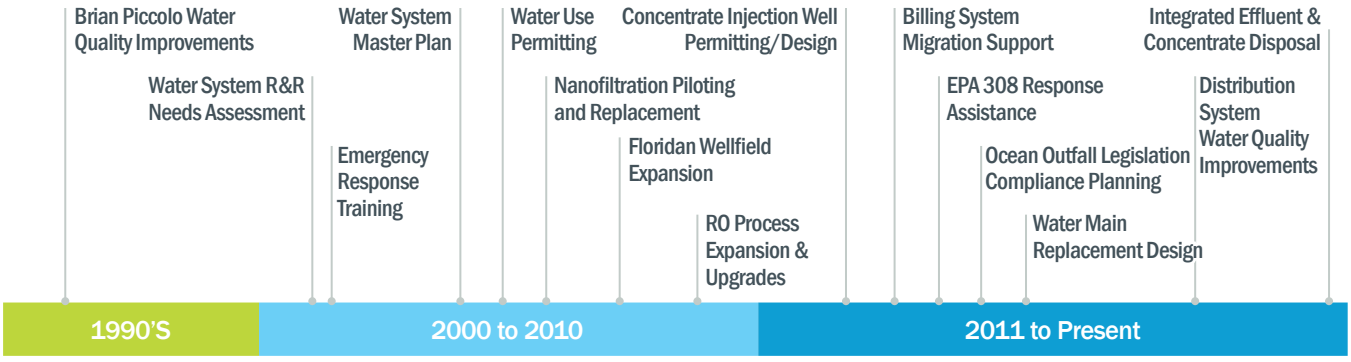
A Proven Partner in Hollywood Operations

Since 2009, BC has served as one of the City's infrastructure consultants. In this role, we have worked side-by-side with you to advance the City's interests in several important areas. Not only did **we successfully implement a major water main replacement project with no construction change orders**, but we undertook several wide-ranging initiatives that include reclaimed water compliance assistance, integrated planning of effluent and concentrate residuals disposal requirements, and addressed distribution system water quality improvements.

Proven Partnership. Trusted Solutions.

Since 2017, BC has served as one of the City's Water Treatment Plant and Wastewater Treatment Plant consultants. Under this contract, we have performed numerous projects including, but not limited to, design and permitting for deep injection wells Nos. 3 and 4 and the monitoring well, leading contract reuse efforts with FDEP and other utilities, water treatment plant nanofiltration evaluation, water quality improvements, SRWWTP Headworks evaluation, and operations support. Over the past five years, the Contract Value under this contract has amounted to $700,000, as we have received seven professional engineering services work orders for $100,000 each under which we perform requested assignments.

Unparalleled Impact of the BC Team on Hollywood's Utility Program (1990's to present)



Benefits:

- Improved Reliability & Performance

Benefits:

- Practical Innovation
- Diversified Water Supply

Benefits:

- $200 million Cost Savings in Reuse Program
- Reduced Rate Impact
- Improved Distribution System Water Quality

BC offers a strong local team, as well as a deep bench of national technical experts to ensure you have the resources needed to complete your projects

Value of Past Contract Amounts

As stated previously, under the Water Treatment Plant and Wastewater Treatment Plant GEC, we have received seven work orders valued at $700,000. Each one was $100,000. Apart from this contract, we have been competitively selected for two standalone projects that are external to this GEC; (1) the construction services for the Deep Injection Wells and the monitor well and (2) the design and construction for the Deep Injection Wells Pump Station.

Familiarity with the City's and County's Permitting Agencies and their Procedures

BC's Keys to Success – Permitting process know-how and proactive coordination with key regulatory agency stakeholders throughout the life of the project ensures that design schedules are met and construction change delays are mitigated.

BC has collaborated to successfully deliver projects that have required significant coordination with State, County, and the respective Cities permitting agencies. These Agencies have a high standard of care and requirements that demand that there not only be close coordination, but that all deliverables are of the highest quality. During this process, BC has gained invaluable experience, which has resulted in solid professional relationships with these agencies and their representatives.

The BC Team understands that early engagement with the respective agencies issuing permits for a project is critical in ensuring success. For most of the City's utility projects, BC's strategy for success will include performing an initial coordination with the City to identify the State, County, Local, and City's permitting requirements. The scope and definition of the project will be discussed with the agencies, which guide the City and the BC Team on the type of permits (if any) that are needed. As stated previously, a key approach that BC uses to successfully obtain permits is the coordination with the State Agencies at the early stages of the project, during conceptual or basis of design phase. During the coordination process with the State Agencies, BC keeps close contact with the City, reporting on the progress of the permitting process, asking pertinent questions associated with potential constraints to obtain the permits, and identifying possible impacts across permitting agencies that could impede an expeditious permitting completion.

At the State level, BC has successfully obtained permits from:

- Florida Department of Environmental Protection (FDEP)
- Florida Department of Health (FDOH)
- Florida Department of Transportation (FDOT)
- South Florida Water Management District (SFWMD)
- USEPA

Throughout its tenure in Broward County, BC has learned that obtaining Broward County permits is typically the critical path to ensuring a shortened permitting process and, subsequently, construction activities can start as quickly as possible.

Our BC Team has developed solid working relationships with key staff in Broward County's Environmental Protection and Growth Management Department (BCEPGMD) in their Environmental Engineering and Permitting Division; the Surface Water Management Division; the Broward County Department of Health (which has now relocated to Palm Beach County); and the Pollution Prevention Division.

These relationships, along with a key understanding of the information that needs to be conveyed to these permitting agencies, as well as the timing, have resulted in reduced permitting efforts in our more recent projects.

Our project leadership team offers:

- **No learning curve with several decades of Hollywood experience**
- **Expertise delivering some of the most complex wastewater projects in Florida**
- **Unparalleled knowledge of Hollywood's most critical water quality and compliance needs**
- **Availability and commitment to the City of Hollywood**
- **Credibility to be trusted with your most important priorities and the respect of key stakeholders**

Design and Construction Services for Deep Injection Wells No. 3 & No. 4 and Monitoring Well No. 2 and Design for Deep Injection Wells No. 3 & No. 4 Pump Station

Hollywood, Florida

The City of Hollywood selected BC to conduct the preliminary engineering, detailed design, permitting, bid support services, construction oversight, startup and operational testing of the proposed pump station and associated improvements.

BC'S ROLE IN PROJECT
Prime

PROJECT VALUE
BC Fees: $7.5 million
Construction Value: $152million

PROJECT DATES
Start: 2019
Construction: Ongoing

BC KEY STAFF, ROLE
Albert Perez: Principal in Charge
Nigel Grace: Project Delivery Officer
Dr. Celia Earle: Client Service Manager
Dr. Marie Burbano: Project Manager (PM) (DIWs PS Design)
Diego Herrera: PM (DIWs Construction)
Mark Haber: CM and PM (DIWs PS construction)
Gui DeReamer: Design Manager
Scott Hall: Pumps Lead
Bill Eleazer: Reviewer
Robert Abordo: Electrical Lead
Hector Serrano: I&C Lead
Victor Hurlburt: Civil/Site
Melissa Jauregui: Permitting

The City of Hollywood owns and operates the Southern Region Wastewater Treatment Plant (SRWWTP). The SRWWTP is permitted to treat an average annual daily flow of 55.5 million gallons per day (mgd). The SRWWTP currently disposes of treated effluent via three routes – two injection wells (IW-1 and IW-2) rated for 37.4 mgd, a reuse water distribution system rated for 4 mgd, and an ocean outfall rated for 46.3 mgd. Among other requirements of the 2008 Ocean Outfall Legislation (OOL), the City is required to cease discharge of non-peak effluent flow to the outfall. To meet the requirements of the 2008 OOL, the City intends to construct two new injections wells (IW-3 and IW-4), a dual zone monitoring well, and new pumping facilities with the capacity to dispose of up to 39.8 mgd of secondary treated domestic wastewater effluent from the SRWWTP and reverse osmosis concentrate from the City of Hollywood water treatment plant (WTP).

Design and Construction Services for Deep Injection Wells No. 3 and No. 4

BC assisted the City of Hollywood with obtaining the FDEP permit to construct the two proposed injection wells and monitoring well. The permit establishes a 5-year period during which the construction of the wells must be completed and an operating permit, which requires that the wells be placed in normal operation, must be issued. BC was selected to provide for the services during construction of the proposed wells, and conduct the planning, engineering, permitting and implementation of supplemental improvements required to place the wells in normal operation required to apply for and secure the Operating Permit. The construction of the deep injection wells is currently underway.

Deep Injection Wells No. 3 and No. 4 Pump Station

The permit for Deep Injection Wells No. 3 and No. 4 requires them to be placed in service and permitted for normal operation by January 2024. To meet the 2024 permitting deadline, the design and construction of limited piping components of the proposed system will be implemented to allow an early start of operational testing and the subsequent major elements (pump station, electrical and other facilities) that are not essential for operational demonstration pursuant to the permitting requirements will be implemented on a separate timeline. Additionally, as part of initial efforts, an FDEP permit application will be prepared and submitted for approval for the entire project with the goal of locking in the conceptual approach prior to the expedited implementation of the initial phase of work. The construction is currently underway.

Professional Engineering Services

Hollywood, Florida

BC previously had a buried infrastructure General Consulting Contract with the City of Hollywood and since 2017, has held a Water and Wastewater Professional Engineering Services Contract.

BC'S ROLE IN PROJECT
Prime

PROJECT VALUE
BC Fees: $700,000
Construction Value: $4 million

PROJECT DATES
Start: 2018
Construction: 2022

BC KEY STAFF, ROLE
Albert Perez: Principal in Charge
Nigel Grace: Project Delivery Officer
Dr. Celia Earle: Client Service Manager
Diego Herrera: Project Manager/ Design Manager
Victor Hurlburt: Civil/Site
Larry Vicars: Permitting
Todd Bosso: QA/QC

This contract which is used as a vehicle to provide wide-ranging engineering support in areas relating to the planning, optimization, compliance and design of water, wastewater, and reclaimed water infrastructure. The City operates a large water and wastewater utility that serves approximately 138,000 residents, as well as wholesale customers inclusive of areas of Broward County (drinking water and wastewater treatment/disposal) and the Cities of Pembroke Pines, Dania Beach, and Hallandale Beach (wastewater treatment/disposal). Highlights of services provided over the past five years are summarized below.

Nanofiltration Membranes Replacement Approach

The existing nanofiltration membranes in service at the WTP were installed about 10 years ago and are approaching the end of their functional useful life as evidenced by a decline in performance. The City plans to implement a comprehensive upgrade of its membrane process, however, the City has determined that limited replacement existing membranes is required to maintain operational reliability until more comprehensive upgrades can be planned, engineered and constructed. Consistent with this limited objective, Brown and Caldwell retained to assisted the City with identification of two vendors from which competitive proposals may be solicited, review and comment on preliminary vendor submittals, and developing the key considerations and scope of procurement for the replacement of the existing nanofiltration membrane elements and associated components.

Assessment of Impact of Elevated Groundwater Chloride Levels

Coastal areas with elevated chloride levels in the ground water have had a sustained a significant impact on effluent quality. This project was to quantify the scope of impact by identifying the areas of the collection system most impacted and quantifying the amount of brackish groundwater that contributes to overall effluent flow. This data was used to support discussions with FDEP to explore conceptual strategies for accounting for and managing these influences.

The City of Hollywood has an ocean outfall that is used for disposal of secondary effluent. Recent legislation by the State of Florida, generally known as the "Ocean Outfall Legislation", eliminates the use of ocean outfalls for disposal after 2025, except during wet weather events and limited to 5 percent of the Baseline Flow of the facility. The Outfall Legislation also mandates the implementation of a wastewater reclamation program with a minimum capacity of 60 percent of the facility's Baseline Flow above and beyond current reclaimed water application. Following the implementation of this legislation, a compliance plan was developed (by others) and approved by the FDEP that provided for the implementation of a Floridan Aquifer recharge program to meet the City's reuse requirement. The estimated cost of this original program was the original plan, while technically feasible, faced challenges relative to environmental and economic factors. Since that time, BC has worked with the City, in conjunction with the FDEP, to develop an integrated strategy that has resulted in agreement on a feasible reclaimed water compliance approach that leverages contracted reuse opportunities and maximizes the use of effluent that is not impacted by brackish groundwater influences. As a result of this effort, the aquifer recharge element of the original plan was eliminated and the actual reuse to be implemented was limited only to the amount determined to be technically, environmentally and economically feasible. As a result of the realignment of its compliance plan, the City has realized an estimated cost savings of approximately $200 million from its baseline plan. Most recently, BC worked closely with the FDEP and developed plans and specs for the drilling of two deep injection wells and a monitoring well. As a result, the City obtained a construction permit for the drilling of these wells in January 2019. BC is currently providing the oversight of the drilling of these wells, as well as the continued coordination with FDEP.

Water Main Replacement Projects. The City of Hollywood's water distribution system consists of over 600 miles of pipe with diameters ranging from 2-inch to 36-inch. The vast majority of these facilities are over 35 years old. The distribution system piping is constructed of various materials including cast iron and galvanized iron piping which exhibits significant corrosion that limits its remaining useful life. In addition, the City is currently undergoing growth via development and redevelopment efforts which puts further strain on its existing infrastructure. Given the age, condition, and pressure losses of the existing distribution system piping, the majority of this infrastructure will have to be replaced over a multi-year period.

BC provided design, permitting, and construction management services for water distribution system improvements for approximately 29,000 linear feet of new potable water main. This project involved work within a busy Florida Department of Transportation (FDOT) right-of-way, advanced permitting requirements, complex maintenance of traffic (MOT) considerations, the use of trenchless construction methods such as horizontal directional drill (HDD), and work with existing large diameter pre-stressed concrete cylinder pipe (PCCP).

BC has also completed design services for water main replacement within the project limits defined as between Hollywood Boulevard, Johnson Street, N. 60th Avenue, and N. 52nd Avenue. This work consisted of surveying, geotechnical investigations, design, permitting, bidding, and limited construction observation services for the replacement of approximately 60,500 linear feet of water mains. Included is the replacement of all water mains located within the Hollywood Boulevard right-of-way between N. 60th Avenue and N. 52nd Avenue including FDOT permit applications for Roadway Right-of-Way construction. It also included the design of five HDDs.

General Professional Engineering Services for Water and Wastewater Infrastructure Projects

Sunrise, Florida

BC has held a General Engineering Contract with the City of Sunrise since 2010.

BC'S ROLE IN PROJECT
Prime

PROJECT VALUE
BC Fees: $6 million
Construction Value: $40 million

PROJECT DATES
Start: Ongoing
Construction: 2023

BC KEY STAFF, ROLE
Dr. Celia Earle: Project Delivery Officer
Albert Perez: Principal-in-Charge
Nigel Grace: QA/QC
John Willis: Role
Bill Eleazer: PM/Civil
Dr. Jose Jimenez: Process Lead
Diego Herrera: Project Manager
Victor Hurlburt: Technical Lead
Melissa Jauregui: Permitting
Robert Abordo: Electrical Lead
Hector Serrano: I&C Lead
Ryan Abrahiem: I&C
Harry Tomlinson: Project Manager
Mark Harber: Constructability
Robert Hrabovsky: Structural Lead
Breeze Walter: Cost Estimating

BC was re-selected in 2020. Projects performed under this contract over the last five years include:

Springtree WWTP Headworks BODR, Design, and Construction Administration
The Springtree WWTP headworks is in need of rehabilitation and improvements as identified in the City's 2008 Wastewater Master Plan. This project involves improvements to the screening, grit removal and odor control facilities. BC was asked to complete the BODR, design and recently completed construction administration for this project. The BODR included the condition assessment consisting of a structural assessment, in-situ odor control testing, and grit characterization. The design included the replacement of their existing headworks with perforated plate screens and the replacement of their odor control system with a bio trickling filter option.

Sawgrass WWTP Headworks Improvements
The Sawgrass Wastewater Treatment Plant (WWTP) headworks was in need of rehabilitation and improvements due to age, general process area deterioration and a desire to improve the overall screenings capture capabilities, improve the odor profile, and provide system bypassing and redundancy. BC was hired by the City to provide engineering services including design, permitting and construction management services for the headworks improvements at the Sawgrass WWTP.

Sawgrass WWTP Train A Preliminary and Secondary Treatment Design
The Sawgrass WWTP is divided into two separate, parallel secondary treatment systems, referred to as Train A and Train B. Train A was originally constructed in two phases and completed circa 1987 and 1989, respectively. The blowers and electrical equipment are reaching the end of their useful life. This project will replace the equipment in the blower building by constructing a new building adjacent to the existing building and removing the existing (old) building once the new process and electrical services are operational. The project will also include modifications to the aeration basins that will eliminate the existing surge tanks by incorporating them into the aeration basins, as well as the large dosing pumps, which have also reached the end of their useful life. BC's scope for this project is preliminary evaluation, design, process modeling, engineering, permitting, bidding assistance and construction administration. This project has been bid and will soon be going into construction.

SDWWTP Oxygen Train 1 – 7 Rehabilitation and Electrical Buildings

Miami-Dade WASD, Miami, Florida

The cogeneration facilities position WASD to take full advantage of the plant's predicted capacity.

BC'S ROLE IN PROJECT
Prime

PROJECT VALUE
BC Fees: $15 million
Construction Value: $91,412,000

PROJECT DATES
Start: November, 2021
Construction: June, 2025

BC KEY STAFF, ROLE
Albert Perez: Principal-in-Charge
Bill Eleazer: Project Manager
Jose Jimenez: Lead Process Engineer
Robert Abordo: Lead Electrical
Hector Serrano: Lead I&C
Bob Hrabvosky: Lead Structural

BC provided project management, process design and detail design services for the project. The process efforts included complex pure oxygenation system modeling to determine the aerator needs for the upgrade.

The precise scope of the upgrades is detailed below.

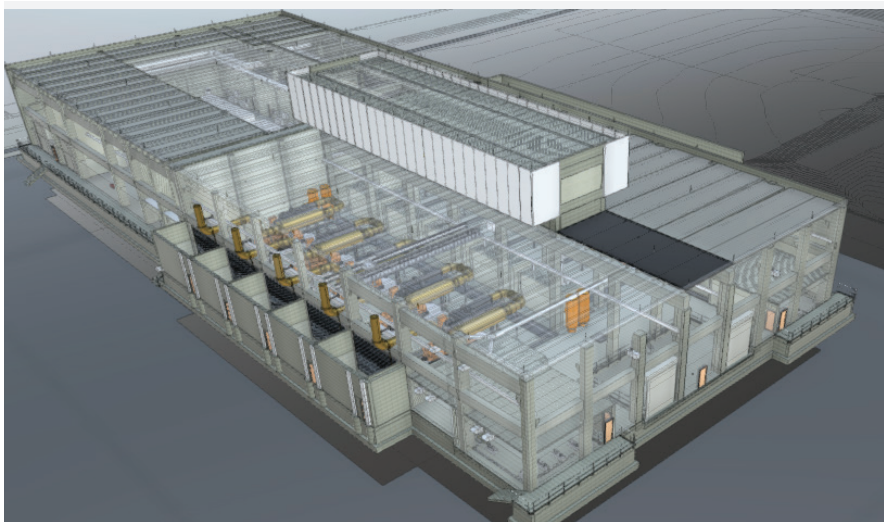
- Demolition – Oxygenation Trains (Ox. Trains) 1 to 7
  - Demolition of existing pipe penetrations into ox trains 1 to 7.
  - Enlargement of existing baffle wall openings.
  - Demolition of existing effluent weirs.
  - Demolition of existing 36-inch RAS pipelines at Ox. Trains 1 to 4 and Ox. Trains 5 to 7.
  - Removal and salvage of existing flowmeters and knife gate valves.
  - Demolition of existing 48-inch process water connections at Ox. Trains 1 to 7.
  - Demolition of existing low-pressure oxygen pipeline as indicated in the contract documents.
  - Demolition of existing mechanical aerators.
  - Demolition of existing electrical conduits to equipment in the existing concrete slab of oxygenation trains 1 to 4 and 5 to 7
  - Demolition of existing electrical equipment in UNOX Electrical building 1-4 and 5-8 related to the existing oxygenation system in oxygenation trains 1 to 4 and 5 to 7.
- Construction – Oxygenation Trains 1 to 7:
  - Retrofitting of oxygenation trains with step feed capability.

This project will produce 50+ years of additional life to the existing oxygenation trains.

  - Perform structural rehabilitation repairs of ox trains 1 to 7.
  - Construction of new concrete slab with electrical conduits and access ramps over existing concrete slab of oxygenation trains 1 to 4 and 5 to 7.
  - Furnishing and installation of new mechanical aerators, blowers, gates, valves, and other process mechanical equipment.
  - Furnishing and installation of new sensors, including flowmeters, gas samplers, wastewater analyzers, and gas detection.
- Construction – O2 Trains 1-4 and 5-8 Electrical Buildings
  - Construction of two (2) new electrical buildings for oxygenation trains 1 to 4 and 5 to 7.
  - Furnishing and installation of new fire alarm system, electrical systems, SCADA system (supply of select SCADA equipment by SCADA Equipment Supplier), conduits, MCCs, VFDs, control panels, and lighting systems.
  - Furnishing and installation of new HVAC systems, water source heat pumps (WHPs) cooling water pumps (CWPs), cooling towers (CTs), fans, air ducts and air purification system.
  - Furnishing and installation, doors, windows and rollup doors.
  - Furnishing and installation of all plumbing.
  - Furnishing and installation of all appurtenances for control room.
- Construction – Site and Yard Piping
  - Site grading and construction of new yard piping and electrical conduits to connect new structures to the SDWWTP existing electrical, water, sewer, process water, fire alarm and SCADA systems.
  - Construction of new pavement and sidewalks around new structures.
  - Improvements to the SDWWTP potable water, fire water and plant water distribution networks, including replacement of existing yard piping.

Electrical Improvements at the CDWWTP

Miami-Dade WASD, Miami, Florida



BC is designing replacements to nearly all electrical service facilities at CDWWTP with two new Electrical Distribution Buildings, new power feeds and ductbanks to substantially improve reliability and resiliency.

BC'S ROLE IN PROJECT
Prime

PROJECT VALUE
BC Fees: $9 million
Construction: $220 million

PROJECT DATES
Start: May, 2021
Construction: June, 2025

BC KEY STAFF, ROLE
Albert Perez: Principal-in-Charge
Marie Burbano: Project Manager
Eli Tilen: Design Manager
Robert Abordo: Electrical Lead
Hector Serrano: I&C Lead
Melissa Jauregui: Permitting

The Central District Wastewater Treatment Plant (CDWWTP) is the oldest of Miami's three WWTP, with aging electrical infrastructure, many over 40 years old, and located in a location vulnerable to climate change. The plant is currently permitted to treat an annual average daily flow (AADF) of 143 million gallons per day (mgd) and treats the sludge from both NDWWTP and CDWWTP, making it critical to the safe disposal of wastewater in Miami. As part of the Ocean Outfall Legislation (OOL), WASD contracted with BC to design the electrical improvements portion of the OOL improvements (CT-3C). While the project is powering facilities related to the OOL requirements, it also will provide power to all processes at the CDWWTP in a comprehensive replacement of electrical facilities.

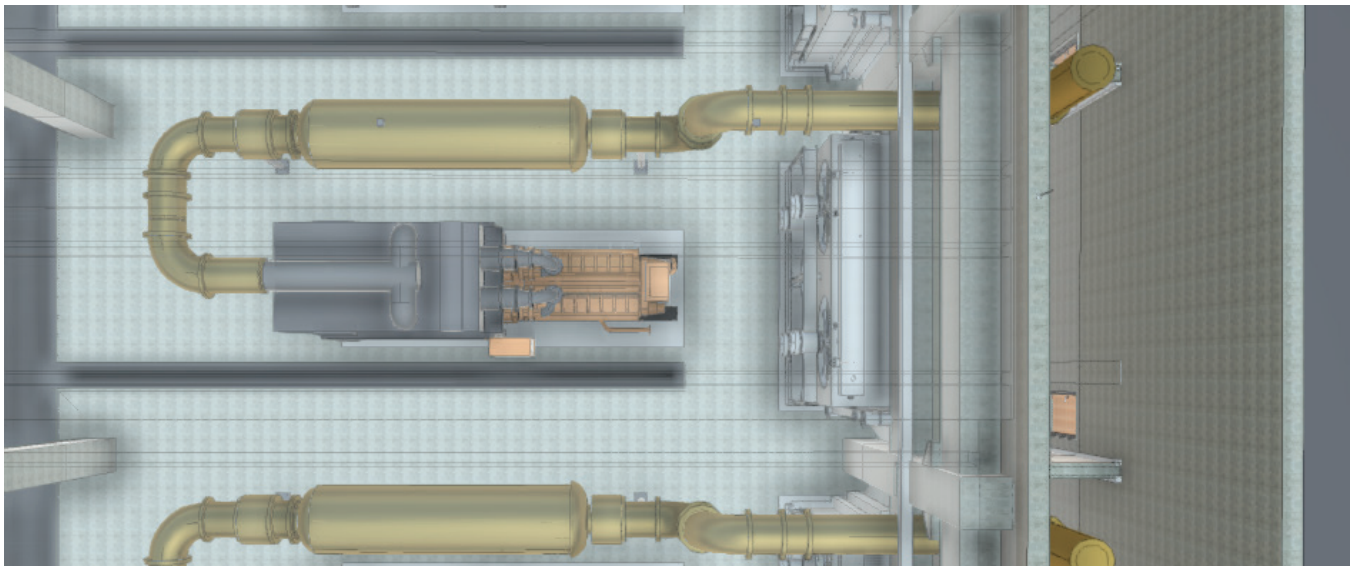
The CT-3C starts with decommissioning Electrical Distribution Building (EDB) 1, which is located at ground elevation (8 feet below the recommended resiliency elevation) and houses aging equipment. BC is designing two new EDBs (EDB-2 and EDB-3) to replace EDB-1 and provide improved resiliency with a finished floor elevation of 21 ft. BC is leading negotiations with Florida Power & Light Company (FPL) for reliable power feeds to the EDBs and replacing all ductbanks from the new EDBs to substations located throughout the plant with added resilient features. The design of this critical infrastructure demands high-quality engineering with comprehensive efforts to coordinate existing and future facilities.

Re-thinking Power Supply at CDWWTP

EDB-2 and EDB-3 will be the primary power distribution centers to all existing and new process areas for the CDWWTP. These EDBs will each be fed by new, dual power feeds from a nearby FPL substation(s) to provide a reliable power supply at the plant with 13.2 kV feed.

The EDBs split the plant and its substations into two distribution areas; EDB-2 will be located on the north side of the CDWWTP and EDB-3 will be located at the south side of the plant. By splitting the plant into two areas, it provides two durable buildings that can be manned during storm events. The buildings increase the reliability of power during a storm with each building equipped with 9 emergency generators including two standby generators per building. Each building is approximately 338 feet long and 164 feet wide with a height ranging from 40 to 60 feet above finished grade.

BC's design identified options that will result in savings of $18M in capital costs.



The use of 3D modeling facilitates the ability to quickly visualize a design and gives operators an opportunity to provide overthe-shoulder input in real time for expedited, high-quality project delivery.

BC is designing replacements to nearly all electrical service facilities at CDWWTP with two new Electrical Distribution Buildings, new power feeds and ductbanks to substantially improve reliability and resiliency.

Decommissioning Aging Electrical Distribution Building. EDB-1 and many of its assets are over 40 years old and nearing the end of their useful lives. Additionally, EDB-1 does not meet the requirements for sea level rise criteria or the working clearances required by the National Electrical Code (NEC). Upon completion of the construction and commissioning of EDB-2 and EDB-3, loads will be transferred and redistributed to the new buildings.

Resilient and Reliable New Electrical Distribution Buildings. EDB-2 and EDB-3 will be strategically located in the north and south sides of the plant, respectively, to decrease the new length of new ductbanks for cost-savings. Additionally, splitting the EDBs will provide two locations onsite with emergency generators for backup power service.

The buildings will be approximately 44,242 square feet and will include electrical rooms, a control room, and mechanical space. The safe room will accommodate 10 staff and include a break room and kitchen area. Plant staff will be able to safely stay in the safe room area and continue to provide the essential service of keeping the plant running with access to an office and emergency generator equipment. Surrounding the buildings, and EDB complex is being designed with an elevated site at 19 feet. There are ramps for truck access going up and down in the site area. Each elevated site includes the EDB plus the fuel storage area for the emergency generators. The EDBs will have a finished floor elevation of 21 feet, protecting all equipment in the event of a storm surge and sea level rise event.

EDB-2 and EDB-3 will house all new equipment, including electrical switchgears, transformers, battery systems, motor control centers, electrical/oil powered generators, generator fuel tanks, air compressors, air-conditioning units, and plant wide distribution control systems specific to each EDB service area. This new infrastructure replaces the aging equipment in EDB-1 for improved reliability.

In order to finalize the number of generators to provide a reliable, cost-effective solution, BC conducted a load analysis of over 2000 existing and new loads at the plant to optimize the emergency generator requirements. As a result, BC recommended decreasing the number of generators by 2, for a savings of up to $6M.

Partnering with Local Agencies. BC is coordinating with several outside agencies in the execution of the design. BC has met with FDEP in the process to obtain the Title V air permit for the Tier 4 engine generators. BC has also conducted several coordination meetings with FPL to optimize the 13.2kV power feeds to EDB-2 and EDB-3, including the design of a vault to meet FPL standards.

BC is finalizing the design for the new EDBs. As part of the finalization, BC is providing a detailed maintenance of plant operations plan to provide uninterrupted power during construction of this critical new infrastructure. BC is also developing a Critical Path Method (CPM) construction schedule for the entire project. The project's longest path is driven by the submittals for obtaining permit for the disposal of the contaminated soil and submittal of the pile driving operation. BC is working with design documents to shorten this longest path on the schedule, while planning for facility preliminary testing, energizing the buildings, final testing, and load transfer to minimize plant power interruptions.

SDWWTP Headworks 3, 02 Trains 9 & 10, and Substation 57/58

Miami-Dade WASD, Miami, Florida

The cogeneration facilities position WASD to take full advantage of the plant's predicted 2030 digester gas production.

BC'S ROLE IN PROJECT
Prime

PROJECT VALUE
BC Fees: $5.2 million
Construction: $107.6 million

PROJECT DATES
Start: November, 2017
Construction: December 2023

BC KEY STAFF, ROLE
Albert Perez: Principal in Charge
Bill Eleazer: Project Manage
Dr. Jose Jimenez: Lead Process Engineer
Robert Abordo: Lead Electrical
Hector Serrano: Lead I&C
Bob Hrabovsky: Lead Structural
Melissa Jauregui: Permitting

BC provided project management, process design and detail design services for the project. The process efforts included complex CFD modeling of the new Headworks 3 to optimize grit removal and pure oxygenation system modeling to determine the aerator needs for the upgrade. To support the projects upgrades to the plant water and potable water systems, a plant wide distribution model was developed to test and optimize plant water and potable water infrastructure improvement concepts.

The precise scope of the upgrades is detailed below.

- Construction –232nd Street Forcemain Tie-in, Influent Metering Valve Box, Headworks 3, Odor Control Building, and Process Drain Lift Station
  - Construction of a connection to an existing plant 72-inch influent force main header located on SW 232nd Street.
  - Construction of a new influent valve box which will regulate the flow to a new headworks building.
  - Construction of a new headworks building and grit chamber (Headworks 3).
  - Construction of a new lift station which will receive flow from the process drains from the new headworks.
  - Construction of interconnecting piping between existing and new facilities.
  - Furnishing and installation of pumps, screens, collectors, conveyors, gates, valves, and other process mechanical equipment. Furnishing and installation of fire alarm systems, electrical systems, SCADA system (supply of select SCADA equipment by SCADA Equipment Supplier), MCCs, conduits, duct banks, control panels and lighting systems.
  - Furnishing and installation of new sensors, including flowmeters, wastewater samplers and other instruments.

The improvements provide hydraulic capacity to allow the required level of treatment to comply with the approved OOL program.

The new headworks building site will maximize the use of existing land available on the plant site.

  - Furnishing and installation of new fire suppression systems, HVAC systems, water source heat pumps (WHPs) cooling water pumps (CWPs), cooling towers (CTs), fans, air ducts and air purification systems.
- Construction – Substation 57/58
  - Construction of Substation 57/58 to power all new process areas that are part of the Work.
  - Furnishing and installation of new fire alarm system, electrical systems, SCADA system (supply of select SCADA equipment by SCADA Equipment Supplier), transformers, switchgears, MCCs, conduits, duct banks, control panels and lighting systems.
  - Furnishing and installation of new HVAC systems, water source heat pumps (WHPs), cooling water pumps (CWPs), cooling towers (CTs), fans, air ducts and air purification system.
- Construction – Ox. Trains 9 and 10 and Sampling Building
  - Construction of two (2) new Oxygenation Trains and Sampling Building.
  - Construction of interconnecting piping between existing and new facilities.
  - Furnishing and installation of new mechanical aerators, blowers, pumps, gates, valves, and other process mechanical equipment.
  - Furnishing and installation of new exterior lighting systems.
  - Furnishing and installation of new sensors, including flowmeters, gas samplers, wastewater analyzers, and gas detection.
- Construction – 02 Trains 9-12 Electrical Building
  - Construction of one (1) new electrical building for oxygenation trains 9 and 10.
  - Furnishing and installation of new fire alarm system, electrical systems, SCADA system (supply of select SCADA equipment by SCADA Equipment Supplier), conduits, MCCs, VFDs, control panels, fire alarm, and lighting systems.
  - Furnishing and installation of new HVAC systems, water source heat pumps (WHPs) cooling water pumps (CWPs), cooling towers (CTs), fans, air ducts and air purification system.
  - Construction – Site and Yard Piping
  - Site grading and construction of new yard piping and electrical conduits to connect new structures to the SDWWTP existing electrical, water, sewer, process water, fire alarm and SCADA systems.
  - Construction of new pavement and sidewalks around new structures.
  - Improvements to the SDWWTP potable water, fire water and plant water distribution networks, including replacement of existing yard piping, and a new tie-in to the potable water forcemain in 232nd Street.

Reclaimed Water Plant Expansion

Broward County Water and Wastewater Services, Pompano Beach, Florida

This expansion ensures that BCWWS will meet its OOL requirements and provide beneficial use for Broward County as well as Palm Beach County.

BC'S ROLE IN PROJECT
Prime

PROJECT VALUE
BC Fees: $8.1 million
Construction: $53.3 million

PROJECT DATES
Start: December, 2018
Construction: October, 2021

BC KEY STAFF, ROLE
Albert Perez: Principal-in-Charge
Dr. Celia Earle: CSM/ Deputy PM
Mark Harber: Construction PM
Jose Jimenez: Lead Process Engineer
Eli Tilen: Process Mechanical Lead
Hector Serrano: I&C Lead
Robert Abordo: Lead Electrical
Bob Hrabovsky: Strucutral Lead

The North Regional Wastewater Treatment Plant (NRWWTP) utilizes a 54-inch ocean outfall and Class I Injection Wells as the primary means of treated effluent disposal. Recent legislation by the State of Florida, generally known as the "Ocean Outfall Rule", eliminates the use of ocean outfalls for disposal after 2025, except during wet weather events and limited to 5 percent of the Baseline Flow of the facility. Besides curtailing the use of the ocean outfall as a primary means of disposal, the Outfall Rule also mandates the implementation of a wastewater reclamation program with a minimum capacity of 60 percent of the facility's Baseline Flow above and beyond current reclaimed water application. For the NRWWTP, this translates to a total reclaimed water production of approximately 26 mgd.

The NRWWTP currently operates reclaimed water facilities that are rated at 10 mgd. Of this, 4.75 mgd is currently committed to existing users. WWS has developed a plan to allocate 20 mgd by supplying public access reclaimed water to Large Users in northern Broward County and has entered into a joint agreement with Palm Beach County to supply public access water to the County line; then Palm Beach County will re-distribute it throughout its system. BC developed an integrated hydraulic model of Broward County/Palm Beach County reclaimed water systems to simulate expansion conditions and buildout demands.

WWS tasked BC to perform pre-design, detailed design, bidding and permitting services, and engineering services during construction for the expansion of the existing reclaimed facility to increase its firm rated capacity to approximately 26 mgd. The expansion will treat secondary effluent to meet High Level Disinfection (HLD) standards as defined by the Florida Department of Environmental Protection (FDEP). The $53M construction cost includes:

- Expansion and modification of the existing filter feed transfer station to be able to convey up to an annual average daily flow of approximately 26 mgd to the tertiary filtration system. The existing pumps are currently located outdoors and the proposed expansion/ modification will maintain the transfer station outdoors.
- Expansion of the existing partitioned concrete structure that includes the tertiary filters and chlorine contact tanks to:
  - Install additional upflow filter units for a rated treatment capacity of 26 mgd. No retrofit upgrades to existing filter units will be included, however, the proposed filters will incorporate available improvements to enhance operating performance.
  - Expand the existing chlorine contact tanks (CCT) such that the tank volume provides sufficient hydraulic retention and adequate mixing conditions to achieve a minimum contact time of 15 minutes at peak flow.

- A new concrete slab and containment area that will house new chemical storage tanks (bulk tanks) and chemical transfer/metering pumping equipment for the chemical coagulation system and the commercial sodium hypochlorite system. Both chemicals will be fed neat and the building will be sized to store chemicals required for the total capacity resulting from this expansion only.
- A new concrete building to house a new electrical transformer, motor control center and gear associated with this expansion. This additional electrical load will require a new electrical feed from Florida Power and Light (FPL). Initially, the electrical gear installed in this project was to be limited to that required only for the reclaimed water expansion project, but during the design, it was expanded to the entire NRWWTP.
- Expansion of the reclaimed water distribution building to install new high service pumps to supply the new reclaimed water customers in northern Broward County and PBC. It is assumed that gravity flow from the CCTs to the existing onsite storage tanks will continue to be feasible (i.e. transfer pumping will not be required) and that high service pumping will be designed to supply a single pressure gradient over 24-hour continuous delivery (for supply to Palm Beach County) that is consistent with operating conditions established by WWS.
- Expansion of reclaimed water transmission piping that ends at the property line at Copans Road. This will connect to the WWS-designed transmission pipe to Palm Beach County.
- New yard piping connecting to the new process areas.
- Auxiliary systems and facilities inclusive of performance monitoring/controls, reject water management, sanitary drain piping/lift station, and standby power generation and fuel storage.
- Civil-site modifications as required to maintain adequate grading for the new facilities, to provide service roads to the new additions (if required) and to expand the existing stormwater collection to compensate for the addition of the new structures.

Additional elements include:

- Integration of existing/aging infrastructure with proposed infrastructure.
- Maintenance of operations during extensive electrical/structural/process tie-in.
- Design process to handle wide-ranging operating conditions from startup to buildout.
- Coordination between WWS operations and engineering team and eight subconsultants working on various elements.

Construction is currently underway and it is expected to meet its schedule for completion.

In addition, BC is meeting a small business participation goal of 24% on this Contract by including small and minority businesses in meaningful roles on this project.

BC has met each project milestone.

NDWWTP Oxygen Trains and Oxygen Production DB Assistance

Miami-Dade WASD, Miami, Florida

BC's design was able to incorporate other hydraulic structures and pipeline cleaning design efforts that were not completed by other Consent Decree projects.

BC'S ROLE IN PROJECT
Prime

PROJECT VALUE
BC Fees: $3.4 million
Construction: $110 million

PROJECT DATES
Start: September, 2019
Construction: 2026

BC KEY STAFF, ROLE
Albert Perez: Principal-in-Charge
Bill Eleazer: Project Manager
Dr. Jose Jimenez: Lead Process Engineer
Eli Tilen: Design Manager
Robert Abordo: Electrical
Melissa Jauregui: Permitting

The high purity oxygen (HPO) system serves as the NDWWTP biological treatment system and as such is a critical component of the NDWWTP. The HPO system's major components are three HPO plants and six oxygenation tanks. Much of the mechanical and electrical components in these areas have exceeded their useful life and are in need of replacement. In addition, a significant portion of the electrical and mechanical infrastructure is at an elevation 11.0 feet, which is below Miami Dade County's Sea Level Rise design elevation, in fact some of these have already experienced flooding issues that have resulted in failures. Therefore, upgrades will include relocating infrastructure to appropriate elevations. These upgrades are required by the current Consent Decree (CD) and are listed as projects CD 3.03 Oxygen Trains and CD 3.04 Oxygen Production.

CD 3.03 is described as the "Rehabilitation of Aeration Tanks structural, mechanical, and electrical systems." CD 3.04 is described as the "Rehabilitation of oxygen plant structural, mechanical and electrical systems." Both have a construction completion date of March 6, 2026. Since these two projects are associated with the NDWWTP's secondary system, require installation of major electrical equipment, and have similar CD deadlines, both projects are being combined into a single project.

BC first evaluated the flows and loads into the North District Wastewater Treatment Plant (NDWWTP) and forecast the oxygen demand expected in the next thirty years. Then BC evaluated oxygen production equipment and worked with the Owner to select two 100 ton per day cryogenic oxygen production plants. Following this selection, BC performed the preliminary planning and Basis of Design Report for the replacement of the existing plants. At completion of the Basis of Design Report, the Owner selected a design-build delivery and assigned BC the task of Owner's Advisor for the procurement of a design-build contractor, including preparation of the Design Criteria Package (DCP) documents, Request for Design Build Solicitation (RDBS) documents for bidders, preliminary permitting assistance, and assistance evaluating submittals from bidders, for the upgrades associated with the High Purity Oxygen (HPO) system at the plant.

This is the largest CD project at the NDWWTP. Due to its complexity and schedule constraints, the BC team worked to expedite the delivery method to a design-build project.

Broward County Water and Wastewater Services, General Engineering Services for Studies and Reports

Broward County, Florida

Since 2013, BC has held a General Engineering Services Contract for Studies and Reports.

BC'S ROLE IN PROJECT
Prime

PROJECT VALUE
BC Fees: $1.8 million
Construction: N/A

PROJECT DATES
Start: 2019
Construction: N/A

BC KEY STAFF, ROLE
Dr. Celia Earle: Project Delivery Officer
Albert Perez: Principal-in-Charge
Nigel Grace: Drinking Water Lead
Diego Herrera: Project Manager
Scott Hall: Pumping Lead
Victor Hurlburt: Infrastructure Lead
Tonya Simmons: Asset Management Lead
Robert Abordo: Electrical Lead
Hector Serrano: I&C Lead
Breeze Walter: Cost Estimating

This covers both water and wastewater. BC was competitively selected again in 2018 for the same contract. Since then, BC has completed several important study and design projects for Broward County Water and Wastewater Services (WWS) that have included Engineering, Operations, Water Management, and Business Operations Divisions. A limited summary of representative projects over the last five years are listed below.

High-Level Review of Source Water Influences on Finished Water Quality from the District 2A Water Treatment Facility
WWS operates the District 2A Water Treatment Plant (2A WTP) that serves areas of Northeast Broward and the City of Coconut Creek. WWS operations staff reports an apparent sensitivity of finished water chloramine residual stability to wellfield selection. Specifically, when operational needs require a shift in raw water supply production from the eastern wellfield, operating staff observe a variance with residual stability. Therefore, BC conducted an initial review of operating data to document the response of finished water quality to source water selection and identify potential contributing factors. BC also requested additional sampling and performed analysis to confirm the findings and determine the next steps.

WTP 1A and 2A Chemical Systems Evaluation
WWS Districts 1A (16 mgd) and 2A (40 mgd) Facilities utilize conventional lime softening of the Biscayne aquifer water supply for the removal of hardness and dissolved organics. Certain chemical systems (ferric chloride, polymer, fluoride, and certain portions of the sodium hypochlorite system) at both facilities require varying degrees of rehabilitation. Also, WWS is considering converting both facilities from anhydrous (gas) ammonia to either 19 percent aqua ammonia or liquid ammonium sulfate (LAS) to reduce the risk profile of its facilities. BC evaluated the potential conversion from gas to liquid ammonia conversion at both facilities, and developed a Basis of Design Report covering rehabilitation of the ferric chloride, fluoride, polymer, and sodium hypochlorite systems at the 2A facility. BC worked closely with both operations and engineering staff to develop recommendations that were favorable to all stakeholders.

3B Facility Chlorination System
WWS' 3B facility consists of water storage and pumping facilities that receive and distribute treated water from the City of Hollywood. The 3B distribution system water supply is fed primarily by the City of Hollywood through two 12-inch potable water interconnects. Another connection from the City of Pembroke Pines supplies water to the North Perry Airport. WWS maintains a 2.5 MG storage tank and high service pumps and an emergency generator at this facility, as well as a temporary chlorination system. WWS requested that BC develop the conceptualization for implementation of permanent chlorination and ammoniation systems at this location. BC also performed an assessment of the current operation of the ground storage tank.

3BC Septic Tank Elimination BODR
WWS 3BC area consists of pockets of unsewered areas that are served by septic tanks that the County has identified to be eliminated. The septic unsewered areas to be eliminated include the North Perry Airport (HWO) - the area bounded by Washington Street, State Road 7, Pembroke Road, and SW 72nd Avenue - and other pockets. The County previously conducted a study to assess the feasibility of eliminating the remaining septic tanks in the 3BC service area. Consistently with priority placed on eliminating the remaining septic tank areas, the County requested that BC prepare a Basis of Design Review (BODR) based on the recommended proposed sanitary sewer improvements outlined in the 3BC Sanitary Sewer Feasibility Study (also developed by BC).

Immokalee Water Treatment Plant Expansion

Immakolee, Florida

BC provided engineering services during construction of this project, which included permitting assistance, response to RFIs, construction meetings, and full-time construction observation.

BC'S ROLE IN PROJECT
Prime

PROJECT VALUE
BC Fees: $721,814
Construction: $4 million

PROJECT DATES
Start: 2019
Construction: 2022

BC KEY STAFF, ROLE
Dr. Celia Earle: Project Delivery Officer
Nigel Grace: Technical Lead
Larry Vicars: Process Lead
Diego Herrera: Project Manager
Victor Hurlburt: Infrastructure Lead
Melissa Jauregui: Permitting Lead
Robert Abordo: Electrical Lead
Hector Serrano: I&C Lead
Robert Hrabovsky: Structural Lead
Breeze Walter: Cost Estimating

Conceptual Design Report

BC completed a Conceptual Design Report for proposed recommendations to the Seminole Tribe of Florida's (STOF) Immokalee WTP. The work included the review of previous work completed by others, performing a gap analysis, and developing innovative ideas to meet project objectives in a cost-effective manner. The improvements reviewed included: improvements to the existing Reverse Osmosis (RO) skids, existing RO clean-in-pace (CIP) system, capacity expansion (flow analysis), chemical modifications, modifications to the antiscalant pump skids, and review of post-treatment improvements. Additionally, disinfection byproduct testing and characterization of current water quality was reviewed. The final deliverable outlined capacity expansion alternatives and produced recommendations such as: modifications of the existing RO skids, elimination of a future third RO skid, modifications to the existing degasifier, addition of a third transfer pump, elimination of a future 3,500 GPM fire pump, and addition of an 8-inch HDPE watermain to connect to the existing distribution system. These improvements, as proposed, will enhance the overall reliability and safety of the WTP.

Final Design

Based on recommendations provided in the Conceptual Design Report, the STOF tasked BC with the design of the recommended improvements to the Immokalee Water Treatment Plant (WTP). Field investigations, review of record drawings, survey preparation, schematic design report, final design of the improvements (including structural, process, electrical, instrumentation and control (I&C), and civil), permitting assistance, schedule, and a construction estimate were prepared. This project will modify: the existing raw water by-pass line to increase and improve the finished water capacity, reverse osmosis (RO) skids to accommodate flushing of the RO skids using feed water as source and to better monitor and track membrane performance, existing RO clean-in-place system, existing chemical systems, existing degasifier system, addition of variable frequency drives to existing high demand pumps, interconnect the existing WTP generator to the existing wastewater treatment plant (WWTP) generator for redundancy, and addition of a new 8-inch watermain. These improvements will not only enhance the overall reliability and safety of the WTP, but also allow for operators to manage the different processes more efficiently. BC worked closely with WTP personnel in the development of this project. The final design has been completed and the project has been put out to bid. Construction commenced in Fall 2020 and was successfully completed in 2022. BC provided engineering services during construction of this project, which included permitting assistance, response to RFIs, construction meetings, and full-time construction observation.

Organizational Profile and Project Team Qualifications

TAB D

Brown AND Caldwell

Organizational Profile and Project Team Quals

The Right Team for This Contract Our team excels at performing under continuing contract assignments and looks forward to continuing our collaborative partnership with the City of Hollywood.

Brown and Caldwell (BC) is a firm that brings the right resources to our clients. Our firm's size enables us to customize proven solutions, and our culture encourages practical innovation. We collaborate as one with our clients and, in doing so, we have earned their respect and continuing trust. We understand your priorities and know what you expect in a consulting firm. Each member of our team was specifically selected for this contract based on their aligned expertise and ability to be responsive and reliable.

BC offers the City a team that will continue to deliver exceptional project management, project coordination, technical direction, design, engineering, construction management and QA/QC for all projects under this contract. The depth of our team and our locality allow us to quickly respond and provide all of the services listed in your proposed scope. This section contains detailed summaries about our proposed team, including resumes, as well as information about our subconsultants and client references.

Proven Partnership. Trusted Solutions.

BC's expertise of designated staff is proven through our previous performance on Related Projects.

This section describes the specific key individuals BC proposes to assign to projects including Project Managers and other key personnel. We also describe subconsultants who may participate in the performance of typical project tasks, and evidence of their qualifications.

Our team's history of working together has reinforced our strong partnership and passion to continue working together.

The BC team brings unparalleled expertise to the City of Hollywood

Our team was selected based on their technical expertise, prior working relationships with each other, and previously demonstrated ability to be responsive and reliable to the City of Hollywood. Our core team is primarily Florida-based to provide opportunities for face-to-face collaboration with Hollywood staff throughout the contract duration. In addition, we have selected subconsultants that also bring strong, relevant expertise in their fields. Together, our integrated team will partner with you to successfully deliver each project under this contract.

CITY OF Hollywood FLORIDA

QUALITY CONTROL/TECHNICAL ADVISORS
Jose Jimenez, PhD, PE*, BCEE *(Process)*
John Willis, PhD, PE *(Wastewater Solids)*
Kelly Comstock, PE, BCEE, DBIA *(Water/Wastewater Reuse)*
Scott Hall, PE *(Pumping Systems)*

PROJECT DELIVERY OFFICER
Nigel Grace, PE

PRINCIPAL-IN-CHARGE
Albert Perez, PE

CLIENT SERVICE MANAGER
Celia Earle, PhD, BCEEM

Project Management and Key Resources

WATER SUPPLY AND TREATMENT
Nigel Grace, PE
Larry Vicars, PE, CGC

WASTEWATER TREATMENT
Marie Burbano, PhD, PE
Bill Eleazer, PE

INFRASTRUCTURE
Victor Hurlburt, PE
Diego Herrera, PE

QA/QC/VALUE ENGINEERING
Jim Nissen, PE
Rob Gaylord, PE

Key Process and Technical Resources

WATER TREATMENT/WATER QUALITY
Nigel Grace, PE
Larry Vicars, PE, CGC
Celia Earle, PhD, BCEEM
Hisyam Mohsin

WASTEWATER TREATMENT
Eli Tilen, PE
Jim Nissen, PE

WATER DISTRIBUTION, COLLECTION, FORCE MAIN & PUMPING
Victor Hurlburt, PE
Diego Herrera, PE

R&R, CONDITION ASSESSMENT, & ASSET MANAGEMENT
Randy Krizmanich, PE
Tonya Simmons, PE

ENVIRONMENTAL & WATER RESOURCES
Gregg Jones PhD, PG
Ann Redmond, CEP

MECHANICAL, ELECTRICAL & PLUMBING
Anand Mody, PE
Gui DeReamer, PE

CIVIL/SITE
Diego Herrera, PE
Todd Bosso, PE

PLANNING
Celia Earle, PhD, BCEEM
Nigel Grace, PE

STAKEHOLDER ENGAGEMENT
Nigel Grace, PE
Hisyam Mohsin

ELECTRICAL
Robert Abordo, PE
Hector Serrano, PE

STRUCTURAL
Robert Hrabovsky, PE
Adarsh Shah, PE

HYDRAULIC MODELING & GIS
Kimberly Nguyen, EIT
Gabe Retana, PhD, PE

UTILITY MANAGEMENT/ AUTOMATION
Jeff Theerman, PE*
Lance Salerno, QEP

ARCHITECTURAL
Brandon Gomez

INSTRUMENTATION & CONTROLS
Hector Serrano, PE
Ryan Abrahiem, PE

CONSTRUCTION SERVICES
Mark Harber, PE, CCM
Harry Tomlinson, PE

PERMITTING
Melissa Jauregui, PE
Sydney Salit, EI

COST ESTIMATING
Breeze Walter
Stefani Couch

Subconsultants

SURVEY, SUE, UC
Stephen H. Gibbs, PSM ●
Stephen K. Seeley ●

HYDROGEOLOGICAL SERVICES
Jim Andersen, PG ●
Paul Stout, PhD, PG ●
David McNabb ●
Sarah 'Sally' Durall ●

GEOTECHNICAL ENGINEERING
Richard Wohlfarth, PE ●
Stephen Mrachek, PE ●

HVAC
Luis Rosario, PhD, PE ●
Satya Vangala, PE ●

GRANT APPLICATION AND GRANT MANAGEMENT/ WATER TREATMENT
Audra McCafferty, PE, LEED AP BD+C ●
Frank Brinson, PE, CDT ●

KEY

Gibbs Land Surveyors, Inc. ● JLA Geosciences, Inc. ● McNabb Hydrogeologic Consulting, Inc. ● Nutting Engineers of Florida, Inc. ● Metco ●
McCafferty Brinson Consulting, LLC. ● 🔑 Key Staff

Accurate Cost Estimates That Support Reliable Fiscal Planning

BC has a complete, in-house construction estimating department that allows our design teams to consistently deliver projects that meet our clients' budgets and expectations.

At each design level, we prepare a Basis of Estimate Report (BOE) summarizing the activities, findings, conclusions, assumptions and exclusions of the estimate. Estimates are prepared using historical database information and quantity take-offs and vendor quotes for equipment pricing. Our estimators obtain raw material pricing on large quantity items to keep current with market fluctuations.

Detailed estimates are prepared using a Windows-based, commercial estimating software engine coupled with BC's material and labor database. Estimates include direct labor costs, construction equipment operating costs, and, where possible, work anticipated to be performed by specialty subcontractors. BC develops estimates at each stage of project planning (preliminary design, mid-design, final design, and bidding), each of which is described in detail below.

Planning-Level Estimates (Class 4 and 5 Estimates). The goal in the planning estimate is to develop a cost model or conceptual estimate based on actual project conditions. A cost model is the most useful of all phase estimates because it sets up reasonable expectations and provides the basis for adequate funding. It also allows for the negotiation of reasonable consultant fees and prevents later surprises because of cost increases. Our experienced estimators build into this cost a reasonable and conservative contingency for items that may be anticipated but are not yet fully defined. We have already developed the framework for the initial cost estimates. We can efficiently update to the current cost database for ongoing cost estimating and control.

Mid-Design Estimates (Class 2 and 3 Estimates). As the project progresses through 30% and 60% design, estimators provide accurate and timely cost feedback to the project team so informed decisions can be made regarding design selections and overall project cost. Our experienced estimators include contingencies for work anticipated but not completely defined, uncertain future bidding climate, and cost inflation critical to design decisions at these stages.

Final-Design Estimates (Class 1 Estimates). Estimates made at design completion are the traditional "engineer's estimate" used to validate bids received from contractors. **BC's recent performance on Class 1 cost estimates has been more successful than many of our competitors**, as shown in Table IV-1, and is a source of confidence in our team for our clients.

Construction Cost Database. BC maintains a CSI formatted unit-price database of more than 42,000 construction items. Unit prices contain labor crew-hours and unit material costs, including normal contractor discounts. A separate database contains local wage rates for each trade or craft, using union, open shop, or prevailing wages rates. Estimators can also custom tailor this database to the specific project locale and conditions. BC regularly updates the unit cost and wage rate databases to further promote the value of this important tool.

Table IV-1. BC Estimates Compared to Final Bid

Project	BC Estimate	Contractor (s) Low Bid
Broward County Reuse Expansion	$53,282,000	$53,204,000
Hillsborough County Countryway Odor Control Improvements	$482,099	$482,000
Pinellas County South Cross Bayou WRF Lighting Improvements	$2,383,890	$2,337,028
Orange County – Primary Clarifiers	$72,487,445	$72,250,694
OWASA WWTP Expansion	$43,195,278	$40,273,914
Treatment Plant Capacity Restoration Project	$25,213,000	$24,795,000
Empire Pt. Outfall	$11,860,198	$12,137,000
Myrtle Creek and Tri-City WWTP	$10,151,105	$10,186,093
Miramar, CA Water Treatment Plant Upgrade and Expansion, Contract A	$80,639,359	$81,352,723
Miramar, CA WTP ESIP Phase II	$15,584,500	$15,286,413

BC has a highly qualified team of construction specialists consisting of professional engineers, construction managers, field inspectors, and operators throughout the company that provide construction inspection services; construction management; cost estimating, analysis, and forecasting; as well as value engineering and life cycle costing.

Proven Leadership You Know and Trust

The City of Hollywood can take confidence in our leadership. Celia, Nigel, and Albert have worked together for years to support you with consistent, successful project delivery.

Our senior managers are well known to the City of Hollywood and bring proven experience serving in their assigned role on past projects. They will work in unison throughout the life of this contract to enable our entire team to meet our commitments and your expectations on every project assignment. They serve in complementary senior leadership roles in our firms so they have the ability to draw in additional resources as needed.

Albert Perez, PE

Principal-in-charge

Albert Perez is a progressive and visionary leader with over 23 years of experience in the water and wastewater business sector. Prior to joining BC, he served in the capacity of Utilities Director for the City of Hollywood. In his capacity, he developed a keen understanding of the City's needs, key stakeholders, and processes for prioritizing the delivery of improvements. This level of involvement provides a unique perspective that he will access to ensure Hollywood's needs are met. A selection of his project experience includes Broward County Water and Wastewater Master Plan, Ocean Outfall Legislation and Water and Sewer Capital Plan for City of Hollywood, Springtree Water Treatment Plant Expansion for City of Sunrise, and Water Plant Expansion Program for the City of North Miami Beach. In addition to his history with Hollywood, he is currently responsible for overseeing Brown and Caldwell's Florida Operations and in this capacity, is well positioned to ensure that appropriate resources are committed to the City's projects.

Celia Earle, PhD, BCEEM

Client Service Manager

Dr. Celia Earle brings more than 23 years of experience as an environmental engineer, environmental chemist, and microbiologist, and thus has a unique profile in the environmental arena. She has a breadth of knowledge that includes planning, design, and construction administration for water, wastewater and reclaimed water systems, non-revenue water reduction and management, energy efficiency assessments, condition assessments, compliance assessments, program management, design-build delivery and various feasibility studies and investigations. She has consistently served as the firm's client service manager and project manager for the City of Hollywood projects including water treatment plant expansions, buried infrastructure, ocean outfall-related studies, master planning, water supply planning, and billing system migration. Her client portfolio also includes, Broward County, Miami-Dade County, Palm Beach County, Sunrise, West Palm Beach and Seminole Tribe of Florida.

Nigel Grace, PE

Project Delivery Officer

Nigel Grace brings more than 28 years of experience serving in wide-ranging roles in the management and direction of complex multi-disciplinary projects that draw on diverse skill sets in areas of technology applications, regulatory negotiations, and operational/process optimization. Additionally, he currently serves as one of the firm's water technology leaders and through this experience brings broad insights on emerging issues of concern and the complex challenges faced by the utility community. For almost 20 years, he has served a wide array of engineering needs for the City of Hollywood, including master planning, water supply and water treatment system expansion, reclaimed water planning and regulatory advocacy, and ongoing distribution system water quality optimization. Through his efforts, he has played an instrumental role in supporting the development of the City's diverse portfolio of water supplies, as well as a modified plan for complying with the Ocean Outfall Legislation that resulted in concessions that saved the City an estimated $200 million.

Technical Expert Team

This team is nationally recognized as experts in their fields and is prepared to bring this industry expertise to the City of Hollywood on our projects.

You will have the perfect balance of technical advisors with previous City of Hollywood experience combined with new team members to support the delivery of trusted solutions. Our technical advisors bring well-grounded local as well as national experience to our team to provide valuable quality control (QC) and quality assurance (QA) on each project. Their primary responsibility is to review your goals and make sure our work meets strict QC requirements and integrates the latest industry thinking and standards.

Scott Hall, PE

Technical Advisor/QC (Purmping Systems)

Jose Jimenez, PhD, PE

Technical Advisor/QC

Kelly Comstock, PE, BCEE, DBIA

Technical Advisor/QC (*Water/Wastewater Reuse)*

John Willis, PhD, PE

Technical Advisor/QC

Experienced Project Management Team

Our project managers will be able to handle any assignment you give our team.

The City of Hollywood needs strong, proven project managers who bring experience with each project component, know how to lead multi-disciplined teams, and are available to start working right now. All our project managers meet the criteria perfectly. Their availability is over 50%, so they are ready to start working on your projects.

They were selected because of their successful track record of driving teams to project completion on schedule and within budget. Nigel and our senior leadership team will select the right project manager for the assignment based on scope, size, and timing. He will oversee the resources and overall delivery performance of our entire team's work to ensure your expectations are met.

Larry Vicars, PE, CGC

WATER SUPPLY AND TREATEMENT

19 years of professional experience in water treatment and pumping system processes. He has an excellent record in process control measures including development of control logic, circuit analysis, trouble shooting and acceptance testing initiatives. Experience includes process engineering capabilities with a thorough understanding of construction techniques, mechanical equipment, startup procedures and site acceptance testing.

Marie Burbano, PhD, PE

WASTEWATER TREATEMENT

Dr. Burbano has more than 20 years of experience in water, wastewater, and water reuse treatment for municipal, federal, and industrial applications. She will bring this experience to ensure each upgrade project meets your quality standards. Dr. Burbano has significant diverse global experience in treatment analysis, application, and design, with a specific focus on biological treatment processes.

Bill Eleazer, PE

WASTEWATER TREATEMENT

Over 25 years of experience in project management and design of all process elements of wastewater treatment plants including headworks, screening's and grit removal systems, chlorine and ultraviolet disinfection systems, advanced oxidation systems for groundwater recharge, and solid stream processes.

Victor Hurlburt, PE

INFRASTRUCTURE

Over 50 years experience designing buried infrastructure, pump stations, supply and treatment projects, reclaimed water transmission projects, wastewater collection. He has also managed the design of over 125 miles of pipelines (various applications) with sizes as small as 4-inch and up to 48-inches.

Diego Herrera, PE

INFRASTRUCTURE

Over 17 years of experience in the planning, assessment and design of wastewater collection and lift station improvement projects. He has complete over 100 collection system and pump station projects. He additionally brings experience in the design of water distribution infrastructure, as well as permitting and construction administration.

Jim Nissen, PE

QA/QC VALUE ENGINEERING
WASTEWATER TREATMENT

Over 40 years of experience in major water, wastewater and solid waste utilities and for regional planning agencies ranging in size from less than $100,000 to over $100M in construction cost. He routinely has responsibility for ensuring that QA/QC protocols are properly carried out by our project teams.

Rob Gaylord, PE

QA/QC VALUE ENGINEERING

Rob brings more than 10 years of experience of professional experience in planning, detailed design, and permitting for water and wastewater treatment, reclaimed water systems, conveyance, and distribution system, as well as utility policy review, construction phase engineering, feasibility and route studies, with specialties in utility finance, trenchless design, and piloting.

A reliable team with a history of delivery

Our experts are well positioned to provide successful project delivery to the City of Hollywood

Each member of our team was selected based on his/her availability, expertise, and connection to our relevant project experience. Individually, they bring specific experience relevant to performing these projects. Together, they provide a strong, cohesive unit with working knowledge of the City's processes and facilities. Our team has no learning curve and is ready to begin work immediately.

Team Member/Role	Relevant project experience
 Eli Tilen, PE WATER TREATMENT/ WATER QUALITY	Over 14 years of experience in the wastewater treatment field in South Florida. His diverse experience includes process optimization facilities planning, and detailed design of liquid and sludge management facilities at large and small wastewater treatment plants.
 Hisyam Mohsin WATER TREATMENT/ WATER QUALITY	As a project engineer, Hisyam brings more than 15 years of experience working in different areas of civil engineering including drinking water, wastewater, conveyance infrastructure, and water resources.
 Randy Krizmanich, PE R&R, CONDITION ASSESSMENT, AND ASSET MANAGEMENT	26 years of experience in sewer rehabilitation design, infrastructure renewal/replacement program management, project management, construction project management, development and management of sewer system evaluation studies and field programs, and pipeline design.
 Tonya Simmons, PE R&R, CONDITION ASSESSMENT, AND ASSET MANAGEMENT	25 years of experience with environmental\water-resources engineering and utility management consulting with a focus on asset management. Tonya has designed and implemented several utility planning and asset management tools ranging from spreadsheet models to robust ArcGIS geodatabases and sophisticated cloud-based systems.
 Gregg Jones, PhD, PE ENVIRONMENTAL AND WATER RESOURCES	38 years of experience in numerous water resource disciplines including hydrogeology, hydrology, water quality, geochemistry, and water supply and water conservation planning. He is a recognized expert in karst geology and spring systems of the southeastern U.S. and has extensive experience in groundwater-quality monitoring and analysis.
 Ann Redmond, CEP ENVIRONMENTAL AND WATER RESOURCES	Ann has over 43 years of experience as an environmental professional in natural resource consulting and regulation who specializes in managing complex projects relying on consensus-building approaches to maximize the end results.
 Anand Mody, PE MECHANICAL, ELECTRICAL, AND PLUMBING	Anand has over 20 years of experience in water, reclaimed water and wastewater treatment process and distribution/collection system engineering, specializing and having expertise in design engineering, hydraulic modeling (water and wastewater), and membrane processes.
 Gui DeReamer, PE MECHANICAL, ELECTRICAL, AND PLUMBING	Gui DeReamer has over 28 years of experience managing the planning, design, construction, and startup of various water and wastewater facilities. Gui has managed the planning and design of capital improvement programs in excess of $100 million for various clients through teamwork with oversight for as many as 50 professionals.

Team Member/Role	Relevant project experience
 **Todd Bosso, PE** CIVIL/SITE	Todd's 25 years of experience includes wastewater, reclaimed water and water utility system planning, modeling, design, permitting/regulatory assistance, operational protocols, and construction management. Todd brings to the project team practical cost-effective solutions given his depth and breadth of experience.
 **Robert Abordo, PE** ELECTRICAL ENGINEER	Robert has 43 years of electrical engineering design experience. Experience includes design of power systems and control components for water and wastewater treatment facilities, membrane and ozone generation facilities, emergency power generation and distribution, pumping stations, and water supply and distribution.
 **Hector Serrano, PE** ELECTRICAL ENGINEER	Hector brings over 17 years of electrical engineering/instrumentation and controls (I&C) experience. Areas of expertise include the design of power systems, control and security components for water and wastewater treatment facilities and pumping stations, emergency power generation and distribution, and water supply and distribution.
 **Robert Hrabovsky, PE** STRUCTURAL ENGINEER	Robert has over 30 years of experience includes management, structural design, and construction of public utility and public works facilities. He provided structural engineering and design for everything from water and wastewater treatment plants and infrastructure to solid waste facilities and roadway construction. He has served as the Structural Engineer of Record for many Florida projects.
 **Adarsh Shah, PE** STRUCTURAL ENGINEER	Mr. Shah is a licensed Professional Engineer with over fourteen years of experience. He is structural engineer with Master's degree in a variety of water and wastewater project for both municipal and private clients. His experience includes the design of concrete, steel and masonry structures with different types of foundations, along with the inspection and rehabilitation of existing structures.
 **Kimberly Nguyen, EIT** HYDRAULIC MODELING & GIS	Kimberly brings five years of experience working with project engineers to plan and design water and wastewater facilities and infrastructure projects. Her background includes the acquisition, organization, and analysis of spatial data from diverse sources using ESRI ArcGIS.
 **Gabe Retana, PhD, PE** HYDRAULIC MODELING & GIS	Dr. Gabriel Retana has 20 years of experience in the area of water resources, hydrodynamic modeling, and data processing. He is engaged in physical and computational fluid dynamic modeling of the transport and fate of water quality parameters, and he is familiar with post-processing and quality review of model output. He is engaged in engineering work in various engineering fields.
 **Jeff Theerman, PE** UTILITY MANAGEMENT/AUTOMATION	Mr. Theerman brings over 35 years of experience in municipal and private sector performance optimization, automation, and improvement. Jeff serves as the National Utility Performance leader for BC. His extensive hands-on management experience and in-depth knowledge of the management, operations and maintenance requirements of wastewater and storm water systems allows him to develop and support numerous related programs and projects.
 **Lance Salerno, PE** UTILITY MANAGEMENT/AUTOMATION	Lance has 27 years of O&M consulting experience, including conducting wastewater plant operability reviews, commissioning and startup leadership roles, staff training, municipal wastewater operations, industrial wastewater field operations, unit process operations, wastewater permitting and client service. As a startup manager and O&M expert he has led numerous construction contract startups at large municipal wastewater plants.

Team Member/Role	Relevant project experience
 **Brandon Gomez** INSTRUMENTATION AND CONTROLS	Brandon is an Architectural designer with over five years of practical project and client service experience. He is passionate about design, community planning, and sustainability.
 **Ryan Abrahiem, PE** INSTRUMENTATION AND CONTROLS	Ryan Abrahiem is an Instrumentation and Controls (I&C) Engineer with 19 years of experience in I&C / Electrical engineering and another four years in computers and networking. He has designed, developed, and delivered numerous projects with accurate and up-to-date knowledge in the water/wastewater industry.
 **Mark Harber, PE, CCM** CONSTRUCTION SERVICES	Mark is a certified construction manager and registered professional engineer with over 33 years of experience in construction management, engineering, and inspection. He has performed senior level construction management and administration on a variety of large heavy municipal wastewater treatment, water treatment, wastewater pumping stations, raw water pumping stations, dams, and a variety of water conveyance system projects and programs.
 **Harry Tomlison, PE** CONSTRUCTION SERVICE	Harry Tomlinson brings 29 years of experience in civil engineering experience with concentrations in geotechnical engineering and surface water management. Harry has been involved in all stages of design, permitting, and construction of surface water storage and treatment projects; landfill development expansion and closure projects; waste transfer stations; old landfill reuse projects; and site remediation projects.
 **Melissa Jauregui, PE** PERMITTING	Melissa has 8 years of experience in wastewater treatment including treatment plant design, project and design management as well as permitting activities. Melissa has extensive knowledge of the Miami Dade County regulations and permitting requirements.
 **Sydney Salit, EI** PERMITTING	Sydney has experience in wastewater treatment including municipal treatment plant design, drafting, permitting activities, and design management. She has worked on several projects for the City of Hollywood, the Miami-Dade Water and Sewer Department, Palm Beach County and more.
 **Breeze Walter** COST ESTIMATING	Breeze has 14 years of experience as a project estimator; estimating over $10 billion in construction projects for municipal and private clients. She is proficient in software programs including Timberline SQL, Etakeoff, Primavera P6, On-Screen, Paydirt, AutoCAD 2002 - 2018 and Microsoft Office products.
 **Stefani Couch, PE** COST ESTIMATING	Stefani brings over 6 years years of combined experience: 3 years as a construction project engineer on site and, recently, 3 years dedicated to project estimating and scheduling. She brings valuable hands on construction knowledge to the estimating team. She has experience in developing bid estimates for a variety of projects ranging from airports, stadiums, high rise residential buildings and wastewater treatment facilities.

Our committed team and key local management staff clearly and uniquely understand the City's vision, goals, and needs. The following page highlights our subconsultants.

Team Member/Role	Relevant project experience
 **Stephen K. Seeley, PE** GIBBS LAND SURVEYORS, INC. SURVEY, SUE, UC	Mr. Seeley has over 40 years of experience as a Land Surveyor in Florida. He has acquired most of his experience in Broward County and has over 30 years experience in the Hollywood area. He currently serves as a member of The Greater Hollywood Chamber of Commerce.
 **Jim Andersen , PG** JLA GEOSCIENCES, INC. HYDROGEOLOGIST	Mr. Andersen has over 30 years working experience in hydrogeology, groundwater water resource investigations, well field design, construction, development, well problem evaluations and well rehabilitation. He has been responsible for the construction of and completion of over 60 Upper Floridan aquifer supply wells and over 140 surficial aquifer wells since 1985.
 **Paul Stout, PhD, PG** JLA GEOSCIENCES, INC. HYDROGEOLOGIST	Dr. Stout has more than 30 years professional experience in the general areas of: water resource evaluation; soil, surface water, and groundwater investigations; and groundwater flow and geochemical modeling. Projects in Florida have concentrated on water resource development and water use permitting issues, primarily associated with the largest municipal public water suppliers and other large water users of the Floridan and Surficial Aquifers.
 **David McNabb, PG** MCNABB HYDROGEOLOGIC CONSULTING, INC. HYDROGEOLOGIST	Mr.McNabb brings more than 25 years of experience in hydrogeologic consulting, design, permitting, construction administration and reporting services.
 **Sarah “Sally” Durall** MCNABB HYDROGEOLOGIC CONSULTING, INC. HYDROGEOLOGIST	Sally has more than 20 years experience in hydrogeologic consulting and construction oversight services.
 **Stephen Mrachek, PE** NUTTING ENGINEERS OF FLORIDA, INC. GEOTECHNICAL ENGINEER	Mr. Mrachek has 18 years of experience in the field of geotechnical engineering and construction management throughout Florida via previous employers. Project experience includes deep foundation, major earthwork, roadway and high-rise construction projects.
 **Richard Wohlfarth, PE** NUTTING ENGINEERS OF FLORIDA,INC. GEOTECHNICAL ENGINEER	Mr. Wohlfarth has 35 years of experience (29 with NEF) in various aspects of geotechnical engineering determining feasibility of site development, foundation design analysis and recommendations, providing engineering evaluation for bridge and roadway construction, pavement design for roadways, roadway subgrade stabilization by geotextiles and other means. He has been directly involved for twenty-eight years in our existing qualification-based contract with Broward County Board of Commissioners.
 **Luis Rosario, PhD, PE** METCO HVAC	Mr. Rosario has over 35 years of experience as a Mechanical Engineer. His experience in bringing projects from design development stage to project completion including heating, ventilation, air conditioning, plumbing and fire protection layout and coordination with architectural, electrical and structural designs.
 **Satya Vangala, PE** METCO HVAC	Satya Vangala has over 8 years of experience in electrical engineering experience in design, construction assistance of Electrical, Power Systems, Control and Process Instrumentation Systems for Water and Wastewater pumping and treatment plant facilities.

Team Member/Role	Relevant project experience

Audra McCafferty, PE, LEED AP BD+C

MCCAFFERTY BRINSON CONSULTING, LLC.
GRANT APPLICATION AND GRANT MANAGEMENT/ WATER TREATMENT

As a licensed environmental engineer, Audra brings 30 years of experience in environmental consulting, environmental and utility permitting, regulatory compliance, grant and loan funding procurement, environmental assessments, and water, wastewater, and reuse facility design.

Frank Brinson, PE, CDT

MCCAFFERTY BRINSON CONSULTING, LLC.
GRANT APPLICATION AND GRANT MANAGEMENT/ WATER TREATMENT

As a licensed environmental engineer, Frank brings more than 25 years of experience in in both management and execution of projects with expertise in engineering analysis, modeling, utility master planning, design, permitting, preparation of bidding and construction documents, construction contract administration, and construction management.

Resumes are attached on the following pages for every team member listed on our organization chart. These individuals are available to serve the City of Hollywood immediately and bring successful experience in their proposed roles.

Albert Perez, PE

Principal-in-Charge

Mr. Perez has been intimately involved in various regional initiatives of importance within Broward County including his role as chair of the Broward County Water Task Force Technical Team, and also direct involvement with Broward County and Miami Dade County in a multi-year effort to address changes to Senate Bill (SB) 1302 also known as the ocean outfall legislation. In addition to his experience in the area of utility administration, he has also been involved in the delivery of various projects throughout South Florida.

Albert is a progressive leader with over 26 years of experience in water and wastewater industry. He has served in an executive management capacity to lead major regional water and wastewater utilities in the implementation of large capital improvements programs. He is an experienced consultant with keen business acumen and a proven track record in utility management consulting, program management, water and wastewater project delivery, and construction administration.

City of Hollywood, Florida

Director of Public Services. Executive management position responsible for the administration of a major regional water and wastewater utility and public works operations. Directed a 300-employee department comprised of four (4) enterprise funds (water, sewer, stormwater, and sanitation) and six (6) general fund public works operations with an annual operating budget of over $120-million.

Served as the regional purveyor of water and wastewater services for seven communities in Broward County, Florida. Responsible for implementing and successfully managing a citywide capital improvements program of over $500-million which included the design and construction of water and sewer infrastructure projects, public safety buildings, and recreational facilities. Accomplishments of significance include:

- Presided over the administration of the Southern Regional Wastewater System and set forth a business plan instrumental in gaining confidence and stakeholder support in key financial and technical decisions made on behalf of the system.
- Developed strategy to strengthen the organization's financial posture to enable the issuance of additional debt for water and sewer projects.
- Led negotiations and authored language for legislative changes to ocean outfall regulation during the 2006, 2009, and 2010 legislative sessions in the Florida State Capitol.
- Implemented various operational efficiency and performance initiatives to reduce annual operating costs and increase borrowing capacity for utility projects.
- Served as utility advisor to State representatives on various environmental issues affecting the utility industry.
- Presented funding program and financial proforma before rating agencies (Moody's and Fitch) to secure a three notch bond rating upgrade that allowed for funding of over $200-million of water and sewer infrastructure improvements and yielded a savings of over $400,000 in interest costs.
- Recipient of several Excellence Awards for Utility Management and Operations. [November 2005 – July 2011]

COMPANY:
BC

EDUCATION/TRAINING:
BS, Civil Engineering, Florida International University, 1994

LICENSES/ CERTIFICATIONS:
Professional Engineer, Florida

RELEVANT EXPERIENCE:
- **Utility Management Consulting**
- **Operations Performance Management and Optimization**
- **Capital Improvements Planning**
- **Alternative Project Funding Strategies**
- **Utility Master Planning**
- **Strategic Planning for Business Development**
- **Program Management**
- **Construction Management**

PERCENTAGE OF TIME TO BE ASSIGNED FULL TIME TO THIS PROJECT

50% total availability

EXPERIENCE BY THE NUMBERS

26
years of experience

8
years with firm

Albert Perez, PE // Principal In Charge

General Engineering Services, Hollywood Florida

Principal In Charge. BC currently has a General Engineering Contract with the City of Hollywood. Projects performed under this contract including water quality projects, projects at the SRWWTP, and infrastructure projects.

General Engineering Services, Sunrise, Florida

Principal in Charge. BC currently has a General Engineering Contract with the City of Sunrise. Projects performed under this contract include a comprehensive Reuse Plan that will allow the City to more efficiently use their existing Biscayne aquifer supply, and multiple projects at the Sawgrass WWTP, including: headworks improvements, high-level disinfection facilities, and an aeration system efficiency study.

Sawgrass Wastewater Treatment Plant (WWTP) Headworks Upgrades, Sunrise, Florida

Principal in Charge. Upgrade to the Headworks at the 15mgd (ADF), 42 mgd (PHF) Sawgrass WWTP. The upgrade consists of the replacement of existing screening systems with three perforated plates screens, new screenings compactors, replacement of mechanical equipment for the vortex degritting systems, new flow splitting systems for the aeration basins feed and new odor control collection and treatment systems for the headworks area.

Sawgrass WWTP High Level Disinfection Project, City of Sunrise, Florida

Principal in Charge. BC completed the detailed design and construction administration of the City's 4 mgd reclaimed water facilities which included the addition of new process systems to treat secondary effluent to meet high-level disinfection (HLD) standards, as well as the design of a portion of the reuse distribution system.

North Regional WWTP Reclaimed Water Plant Expansion, Broward County Water and Wastewater Services, Florida

Principal in Charge. BC is performing pre-design, detailed design, bidding and permitting services, and engineering services during construction for the expansion of the existing reclaimed facility to increase capacity from 10 mgd to approximately 26 mgd. The expansion will treat secondary effluent to meet High Level Disinfection (HLD) standards as defined by the Florida Department of Environmental Protection (FDEP). Major project elements include construction of a new filter feed pump station, additional filters, chemical storage and feed, chlorine contact basins, reclaimed water pump station, electrical power distribution and requisite back-up emergency power.

Wastewater Engineering at the East Central Regional Water Reclamation Facility, West Palm Beach, Florida

Principal In Charge. Professional Services Contract for wastewater engineering at the 70-MGD East Central Regional Water Reclamation Facility. Scope includes planning level studies and evaluations, permitting, design, construction phase services and other technical support services as needed.

Immokalee Reservation WTP Expansion, Seminole Tribe of Florida, Florida

Principal In Charge. BC completed the conceptual design report, final design and construction administration for the improvements to the Immokalee Water Treatment Plant (WTP). The Project included field investigations, review of record drawings, survey preparation, schematic design report, final design of the improvements (including structural, process, electrical, instrumentation and control (I&C), and civil), permitting assistance, schedule, and a construction estimate. This project will modify: the existing raw water by-pass line to increase and improve the finished water capacity, reverse osmosis (RO) skids to accommodate flushing of the RO skids using feed water as source and to better monitor and track membrane performance, existing RO clean-in-place system, existing chemical systems, existing degasifier system, addition of variable frequency drives to existing high demand pumps, interconnect the existing WTP generator to the existing wastewater treatment plant (WWTP) generator for redundancy, and addition of a new 8-inch watermain. These improvements will not only enhance the overall reliability and safety of the WTP, but also allow for operators to manage the different processes more efficiently.

Celia Earle, PhD, BCEEM

Client Service Manager

Dr. Celia Earle has consistently served as the firm's Client Service Manager and for the City of Hollywood projects including water treatment plant expansions, buried infrastructure. ocean outfall-related studies, master planning, water supply planning, and billing system migration.

Celia is degreed environmental engineer, environmental chemist, and microbiologist, and thus has a unique profile in the environmental arena. She has a breadth of knowledge and experience that includes planning, design, and construction administration for water, wastewater and reclaimed water systems, non-revenue water reduction and management, energy efficiency assessments, condition assessments, compliance assessments, program management, design-build delivery and RFQ development, vulnerability and emergency response assessments, public engagement programs, and various feasibility studies and investigations.

Ocean Outfall Legislation – Reuse Compliance Strategy, City of Hollywood, Florida

Project Manager. Responsible for the development of an integrated Ocean Outfall Legislation strategy that has resulted in agreement on a feasible reclaimed water compliance approach that leverages contracted reuse opportunities and maximizes the use of effluent that is not impacted by brackish groundwater influences. Working closely with the City and FDEP, the aquifer recharge element of the original plan was eliminated and the actual reuse to be implemented was limited only to the amount determined to be technically, environmentally and economically feasible. The City has realized an estimated cost savings of approximately $200 Million from its baseline plan of approximately $300 Million.

Deep Injection Wells Drilling and Deep Injection Wells Pump Station Design & Construction, City of Hollywood, Florida

Client Service Manager. Involved with the oversight of the development of the design of the two deep injection wells and the monitoring well and subsequent construction of said wells. Also, involved with the oversight of the design of the pump station and electrical building related to the newly constructed deep injection wells. The construction is the deep injection wells pump station and electrical building is currently underway.

Nanofiltration Element Replacement Project, City of Hollywood, Florida

Project Manager. Responsible for the selection and installation of new nanofiltration membrane elements (14 mgd production capacity) at the City of Hollywood Water Treatment Plant. Project included development of water quality targets, selected candidate membrane elements using manufacturers' software, designed and ran single-element pilot tests, prepared design documents, and administered the construction phase of the project.

Reverse Osmosis System Expansion: Trains C and D, City of Hollywood, Hollywood, Florida

Project Manager. Responsible for the design and construction administration services for two new 2.0 mgd capacity brackish water RO trains at the City of Hollywood water treatment plant.

COMPANY:
BC

EDUCATION/TRAINING:
BS Environmental Engineering University of Florida

BS Microbiology & Cell Sciences University of Florida

MS Environmental Engineering University of Florida

PhD Environmental Chemistry University of Florida

LICENSES/ CERTIFICATIONS:
BCEEM CDT RAM-WSM

RELEVANT EXPERIENCE:
- **Drinking Water**
- **Reclaimed Water**
- **Infrastructure**
- **Master Plans**
- **Feasibility Studies**

100% total availability

EXPERIENCE BY THE NUMBERS

28
years of experience

12
years with firm

Celia Earle, PhD, BCEEM // Client Service Manager

Potable Water Main Replacement Projects, City of Hollywood, Florida

Project Manager. responsible for the design, permitting, and construction management services for water distribution system improvements for approximately 29,000 linear feet of new potable water main. This project involved work within a busy Florida Department of Transportation (FDOT) right-of-way, advanced permitting requirements, complex maintenance of traffic (MOT) considerations, the use of trenchless construction methods such as horizontal directional drill (HDD), and work with existing large diameter pre-stressed concrete cylinder pipe (PCCP). A second project that is in process involves the surveying, geotechnical investigations, design, permitting, bidding, and limited construction administration services for the replacement of approximately 60,500 linear feet of water mains. Included is the replacement of all water mains located within the Hollywood Boulevard right-of-way including FDOT permit applications for Roadway Right-of-Way construction. It also includes the design of five horizontal directional drills (HDDs).

North Regional WWTP Reclaimed Water Plant Expansion, Broward County Water and Wastewater Services' (BCWWS), Broward County, Florida

Deputy Project Manager. Responsible for the BODR, detailed design, bidding and permitting services, and engineering services during construction for the expansion of BCWWS' existing reclaimed facility to increase its firm rated capacity from 10 mgd to approximately 26 mgd. This project is a result of the Ocean Outfall Legislation. The expansion will treat secondary effluent to meet High Level Disinfection (HLD) standards as defined by the Florida Department of Environmental Protection (FDEP). The proposed expansion is estimated at $53 million construction cost and includes construction of a new filter feed pump station, additional filters, chemical storage and feed, chlorine contact basins, reclaimed water pump station, electrical power distribution and requisite back-up emergency power. Additional elements include integration of existing/aging infrastructure with proposed infrastructure, maintenance of operations during extensive electrical/structural/process tie-in, design process to handle wide-ranging operating conditions from startup to buildout, and coordination between BCWWS operations and engineering teams and eight subconsultants working on various elements.

Alternative Water Supply Master Plan, Broward County Water and Wastewater Services, Florida

Project Manager. Development of a scenario-based alternative water supply master plan for the County. This included development of water demand forecasts, needs estimation, development of various scenarios based on specific criteria, assessment of alternative water supply sources, evaluation/development of potential regionalization options, and mapping of the alternatives via a "what-if-then" model.

North County Reuse Feasibility, Broward County Water and Wastewater Services' (BCWWS), Broward County, Florida

Project Manager. Responsible for assessing the feasibility of extending reclaimed water into Lighthouse Point utility service area. This project established reclaimed water demand and equalization recommendations; assessed water quality constraints and available source water for "scalping" applications; evaluated reclaimed water treatment alternatives; conceptually laid out transmission and distribution infrastructure; and developed conceptual cost estimates for the implementation alternative.

Twin Lakes Neighborhood Improvements, Broward County Water and Wastewater Services, Broward County, Florida

Project Manager. Responsible for the development of Contract Documents for the Twin Lakes Neighborhood. This included sewer, stormwater, sidewalks, landscaping; everything except for water, which is handled by another City. This also included permitting services.

Evaluation of Alternative Intracoastal Waterway Crossings, Broward County Water and Wastewater Services' (BCWWS), Broward County, Florida

Project Director. Responsible for evaluation of several conceptual routing alternatives to establish a feasible redundant force main (FM) transmission corridor. In the vicinity of the Hillsboro Mile area, BCWWS operates four retail lift stations discharge to a Master Pump Station (MPS 220). From there, the wastewater is re-pumped through a 16-inch FM that crosses the Intracoastal Waterway (IWW) to emerge in the City of Lighthouse Point. The FM is the only transmission main in place to cross the IWW. The County has concerns regarding the condition of the FM and potential environmental impacts that could occur should there be a failure that releases raw sewage to the IWW. Though the FM had been recently re-lined; the County's objective was to establish an alternative means of transmitting wastewater from the barrier island.

Nigel Grace, PE

Project Delivery Officer

For almost 20 years, Nigel has served a wide array engineering needs for the City of Hollywood inclusive of master planning, water supply and water treatment system expansion, reclaimed water planning and regulatory advocacy, and ongoing distribution system water quality optimization.

Nigel Grace brings more than 30 years of experience serving in wide-ranging roles in the management and direction of complex multi-disciplinary projects that draw on diverse skill sets in areas of technology applications, regulatory negotiations, and operational/process optimization. Having served as one of the firm's drinking water leads, he brings broad insights on emerging issues of concern and the complex challenges faced by the utility community. Through his efforts, he has played an instrumental role in supporting the development of the City's diverse portfolio of water supplies as well as a modified plan for complying with the Ocean Outfall Legislation that resulted in concessions that saved the City an estimated $200 Million.

Ocean Outfall Legislation – Reuse Compliance Strategy, Hollywood, Florida

Project Delivery Officer. The City of Hollywood's compliance plan (developed by others) and approved by the FDEP provided for the implementation of a Floridan Aquifer recharge program to meet the City's reuse requirement was estimated at approximately $300 Million originally. Nigel led the firm's efforts with working closely with the City, in conjunction with the FDEP, to develop an integrated strategy that has resulted in agreement on a feasible reclaimed water compliance approach that leverages contracted reuse opportunities and maximizes the use of effluent that is not impacted by brackish groundwater influences. Due to the realigned compliance plan, the City realized an estimated cost savings of approximately $200 Million from its baseline plan.

As-Needed Utility Support Services, City of Hollywood, Florida

Project Delivery Officer. Consulting support for wide-ranging as-needed services relating to utility compliance, performance and operation:

1. South Region WWTP and Compliance Support
    a. Assess options for reducing headworks overflow risk during peak wet weather events
    b. Reclaimed water treatment facility capacity management review
    c. FDEP Administrative Order for OOL compliance
    d. Contracted reuse – support ongoing exploration of expanded opportunities (PBCWUD, Wellington, Sunrise, Seminole Tribe)
2. Water Treatment and Quality
    a. Replacement approach for NF elements
    b. Distribution system water quality and WTP water quality profiling
    c. Cost of treatment study

COMPANY:
BC

EDUCATION/TRAINING:
BS, Civil Engineering, Florida International University, 1994

LICENSES/CERTIFICATIONS:
Professional Engineer, Florida

RELEVANT EXPERIENCE:
- **Utility Management Consulting**
- **Operations Performance Management and Optimization**
- **Capital Improvements Planning**
- **Alternative Project Funding Strategies**
- **Utility Master Planning**
- **Strategic Planning for Business Development**
- **Program Management**
- **Construction Management**

100% total availability

EXPERIENCE BY THE NUMBERS

30
years of experience

1
year with firm

Nigel Grace, PE // Project Delivery Officer

Water Supply and Reverse Osmosis (RO) Treatment Facility Expansion, Hollywood, Florida

Project Delivery Officer. Design, construction and startup of 4 mgd capacity expansion for City's existing RO treatment facility as well as upgrades and replacement of two 2 mgd RO skids. Separate phases of the project included the permitting, design and services during construction for four new wells completed into the Floridan aquifer, related well vault, wellhead pumping and appurtenant systems as well as the rehabilitation of existing Floridan wells that had experienced a decline in productivity.

Distribution System Water Quality Improvements, Hollywood, Florida

Project Delivery Officer. The City of Hollywood had observed declining chlorine residuals along the north part of the barrier island during its routine water sampling activities. Nigel led the efforts to rapidly mobilize the firm to identify the source of the issue, recommended actions that could be implemented immediately to begin addressing it, and proposed longer-term solutions that could enhance overall distribution system operations and reduce the risk of similar issues occurring in the future. Implemented recommendations have resulted in a significant improvement in chlorine residuals maintained in the distribution system, particularly in the area of the barrier island with a history of low chlorine residuals.

Potable Water Main Replacement Project, Hollywood, Florida

Project Delivery Officer. Design, permitting and bid phase engineering services for the upsizing and replacement of approximately 28,000 linear feet of potable water distribution main in the service area bounded by N. 22nd Avenue, N. 24th Avenue, Sheridan Street and Pershing Place.

Springtree WTP Expansion, Sunrise, Florida

Lead Design Engineer. Preliminary and detailed design of a 12/ 28-mgd plant expansion. Process components included lime softening, ozone (predesign level only), deep-bed high rate filtration, washwater recovery, sludge thickening, transfer and high-service pumping facilities, chemical feed systems (polymer, lime, chlorine, ammonia, fluorosilicic acid, phosphate) and comprehensive SCADA system upgrades.

Reverse Osmosis (RO) Expansion, Miramar, Florida

Project Delivery Officer. Completed detailed design of 2.5 mgd RO expansion utilizing the brackish Floridan Aquifer supply at the City's 9.25 mgd nanofiltration treatment facility. The project included the retrofit of a facility that was originally designed for nanofiltration to additionally provide for brackish water reverse osmosis as well as the renewal/ replacement as well as capacity expansion of key facility components. Project components include: equipping two Floridan wells with pumps, piping and appurtenances, yard piping, RO skid, feed pump and pretreatment systems; acid feed system upgrades, transfer and high service pumping expansion, replacement/updating of the concentrate injection pump station, a new degassifier, a new two-stage odor control system, and a 2000KW standby generator and appurtenant systems.

District 3A Storage/Repump Facility 4-Log Disinfection BODR, Broward County, Florida

Technical Director. Analysis of process alternatives for implementation and approval of 4-log disinfection credit at a repump station and prepared a Basis of Design Report for implementation of the recommended improvements. This repump station is a critical facility that serves economically sensitive areas of the County. Consequently, the County elected to implement 4-log disinfection at this storage tank in order to eliminate the potential for service disruption that could potentially result from a triggered boil water notice resulting from its wholesale supply whose WTP is not 4-log certified.

Lead and Copper Corrosion Control Investigations, Miami-Dade Water and Sewer Department, FL

Project Manager. Lead and copper corrosion control investigations and successful negotiation/advocacy of client's interests with USEPA, FDEP and local Department of Health. Negotiated agreement on mitigation of elevated lead levels in three consecutive systems that averted the need for USEPA enforcement action to compel a change in MDWASDs treatment strategy.

Corrosion Control Assessment and Optimization, West Palm Beach, Florida

Project Director. Served as Project Director for the optimization of corrosion control practices in response to lead excursions resulting from source water changes as well as increased failure of copper piping resulting from accelerated pitting believed to be the result of changes to finished water quality (separate investigations). Collaborated with nationally recognized experts from the Virginia Tech and the University of Texas to study and characterize the factors influencing accelerated copper pitting corrosion that leads to premature failure. Developed corrosion control optimization recommendations to mitigate pinhold corrosion of copper piping and established optimum corrosion control water quality parameters to minimize the leaching of lead in the system.

Jose Jimenez, PhD, PE, BCEE

Quality Control/ Technical Advisor *(Process)*

Dr. Jimenez currently serves as Director of Process Engineering and Water Technologies and National Nutrient Removal and Recovery Practice Leader.

Jose Jimenez is a Vice President and Senior Process and Technical Specialist, with 20 years of experience, who has been involved with the functional design of numerous wastewater treatment plants across the U.S. Dr. Jimenez has a wide-range of experience in research and development of innovative wastewater treatment technologies. His technical expertise includes nutrient removal and recovery, control and automation, development of data analytics-based approaches for process optimization, full-plant modeling, high-rate processes and renewable energy generation in wastewater treatment applications. Jose currently serves as chair of the Municipal Wastewater Treatment Symposium for WEFTEC and served as conference chair for the Water Environment Federation (WEF) 2016 Nutrient Removal Conference.

North District Wastewater Treatment Plant Ocean Outfall Legislation, Miami Dade Water Sewer District, Florida

Lead Process Engineer. Jose is leading the process design of the 120-mgd high purity oxygen activated sludge plant to increase capacity and to improve performance as part of the Ocean Legislation Program. Jose is overseeing a team of process engineers evaluating the capacity of existing oxygenation process and surface aerators and providing recommendation to optimize the performance of the HPO system.

South District Wastewater Treatment Plant Ocean Outfall Legislation, Miami Dade Water Sewer District, Florida

Lead Process Engineer. Jose is serving as lead process designer of the 131-mgd high purity oxygen activated sludge plant to meet high level disinfection requirements. The process design includes detailed process modeling, field testing and stress testing to increase the wet weather capacity to 320 MGD via step feed configuration.

Central Wastewater Treatment Plant Upgrades, Nashville, Tennessee

Process Engineer. Jose is currently leading the process design for the upgrades of the Central WWTP to increase the peak wet weather capacity to 350 MGD. The project includes improvements to primaries and secondary settling tanks, conversion of the extended aeration plant to AO process with new advanced ammonia-based aeration controls, a channel aeration system, hydraulic improvements and new UV disinfection.

Regulation 85 Upgrades for the James R. Dilorio Water Reclamation Facility (WRF), City of Pueblo, Colorado

Lead Process Engineer. Jose is currently leading the process design of liquid stream upgrades for the 15-MGD JR Dilorio WRF to meet Colorado's Regulation 85 (effluent limits of 1.0 mg TP/L and 10.0 mg TIN/L). The project includes the design and implementation of an advanced aeration and SRT control strategies to improve both biological phosphorus and nitrogen removal. Additionally, this project includes the addition of physical selectors using hydrocyclones for settling control and bio-P optimization by sludge granulation.

COMPANY:
BC

EDUCATION/TRAINING:
PhD, Environmental Engineering, University of New Orleans

LICENSES/ CERTIFICATIONS:
Professional Engineer, Florida

RELEVANT EXPERIENCE:

- **Nitrification-denitrification.**
- **Biological and chemical phosphorus removal.**
- **Process simulation modeling**
- **Primary and secondary clarifier testing and modeling**
- **Aeration systems**
- **Membrane technology**
- **Wet-weather treatment**
- **Biological contact process for wet weather treatment**
- **Bioflocculation**
- **Sidestream Treatment**

PERCENTAGE OF TIME TO BE ASSIGNED FULL TIME TO THIS PROJECT

40% total availability

EXPERIENCE BY THE NUMBERS

24
years of experience

21
years with firm

Jose Jimenez, PhD, PE, BCEE // Qaulity Control/ Technical Advisor

Clear Spring Ranch Solids Handling and Disposal Facility Master Plan, Colorado Springs, Colorado

Project Engineer. Developed a Master Plan for the Colorado Springs Utilities. Project evaluated the capacity of the existing system at the Clear Spring Ranch solids handling and disposal facility, evaluated current and future regulatory requirements, identified options for beneficial use, evaluated recommended alternatives for future facility improvements.

Bellevue Water Treatment Plant Residuals Handling, Greeley, Colorado

Project Engineer. Served as Process Engineer for the evaluation of solids disposal options for the Bellevue Water Treatment (WTP). The project included design of sludge flow equalization basins, clarifier-gravity thickeners and sludge drying beds.

Short-Cut Nitrogen Evaluation, City of St. Petersburg, Florida

Lead Process Technologist. Responsible for leading the research team evaluating the feasibility for implementing nitrite-shunt at the 20-MGD Southwest Water Reclamation Facility. Supervise team conducting bench and batch-scale experiments to determine the kinetics of nitritation and denitritation. Led detailed process modeling of the system to develop control strategies to implement nitrite-shunt and to predict performance and energy requirements.

Marcy Gulch Wastewater Treatment Plant Facilities Plans, Centennial, Colorado

Lead Process Engineer. Jose led the Facilities Plan of the 8.5-MGD MGWWTP to provide a road map to meet Colorado's future Regulation 85 (effluent limits of 1.0 mg TP/L and 10.0 mg TIN/L) and Regulation 31 (effluent limits of 0.17 mg TP/L and 2.01 mg TN/L). To meet Regulation 85, recommended improvements included expansion and conversion of the biological process to A2O configuration coupled with advanced aeration control strategies, sidestream treatment for N removal, and UV disinfection. For Regulation 31, conversion of the biological process to a 5-stage Bardenpho system was recommended followed by tertiary P removal using a tertiary ballasted-aided process. In addition, improvements to the sludge processing facilities were recommended including an additional anaerobic digester, new dewatering centrifuges and new cake storage and loadout facility.

Laguna Treatment Plant Nutrient Reduction Assessment Projects, City of Santa Rosa, California

Technical Adviser and QAQC Lead. The team evaluated and recommended optimization and upgrade alternatives to the Dry Creek WWTP that would help the City reliably meet an effluent nitrate discharge limit of 10 mg/L. The team conducted a site visit to characterize key facilities, including the primary clarifiers, aeration basins, and flow splitting structures, and met with City staff to discuss plant operations. The recommended improvements for Dry Creek WWTP include a new chemical addition facility to add carbon, increased Internal Mixed Liquor Recycle capacity, improved dissolved oxygen monitoring and control and conversion of the surface aeration basins with INVENT mixer/aerators.

Nitrate Reduction Study, City of Roseville, California

Technical Adviser and QAQC Lead. The team evaluated biological nutrient removal optimizations and improvements. The team evaluated historical data, helped the City collect special sampling data, calibrated the process model (BioWin), and simulated biological nutrient removal process configurations. In addition, the team simulated modified aeration basin control strategies with BioWin to improve removal of both nitrogen and phosphorus. ABAC showed reductions in effluent nitrogen, effluent phosphorus, and aeration demand without carbon addition.

Metropolitan Wastewater Treatment Plant Process Evaluation, Metropolitan Council Environmental Services, Saint Paul, Minnesota

Technical Advisor. Jose participated as technical advisor for the process evaluations for upgrading the existing 250 mgd Metropolitan Wastewater Treatment Plant (Metro Plant) to biological phosphorus removal. Facility evaluations included a full-scale demonstration test of the biological phosphorus removal system and side-by-side testing of three rectangular final settling tank configurations to maximize plant capacity and performance with subsequent design. The project also included a side stream chemical phosphorus removal evaluation. Jose also sever in an advisory role during the process evaluation for BNR and enhanced nutrient removal.

John Willis, PhD, PE, BCEE

Quality Control/ Technical Advisor *(Wastewater Solids)*

John L. Willis has over 31 years of professional experience passionately attacking inefficiency and waste and developing innovative solutions for municipal utilities.

He has served as principal investigator for WERF's Biogas Harvester, Barriers to Energy Efficiency, Barriers to Biogas Use, WaterWatts, Conveyance Asset Prediction System, and Undocumented Sources of Methane from Wastewater Treatment and Conveyance; and EPA's Evaluation of CHP Technologies for Wastewater Treatment Facilities. His ground-breaking biosolids work includes the USA's first Class-A thermophilic anaerobic digestion facilities at OWASA's Mason Farm WWTP; the Columbus Water Works' CBFT3 Class-A digestion and renewable power demonstration; St. Petersburg's Class-A digestion and biogas-to-vehicle-fuel upgrades; thermal hydrolysis projects for DC Water, HRSD, Raleigh, SFPUC, and WSSC; and life-cycle GHG lead for WRF's HYPOWERS hydrothermal liquefaction demonstration. He chaired WEF's Residuals and Biosolids Committee from 2019 to 2021 and recently completed 5 years of service on the Water Research Foundation's (WRF) Research Advisory Council. He completed his Ph.D. on wastewater-treatment and -conveyance GHG emissions at The University of Queensland's Advanced Water Management Center in 2017 and became a WEF Fellow in 2020.

Biogas Harvester Research – WRF – Demonstration

Principal Invesigator. BC is leading a demonstration of a new process called "Biogas Harvester" (patent pending) to extract dissolved gases from domestic sewage and other WWTP flow streams at pressures of less than 0.5-atm of vacuum. The research conducted at Miami-Dade WASD's Central District WWTP collects CH4, H2S, CO2, and other gases from Miami Beach sewage. The process is intended to reduce headwork's odor, corrosion, and safety issues; recover renewable energy; reduce fugitive GHG/CH4 emissions; and enable full-scale anaerobic sewage treatment by recovering most of saturated CH4 discharged by such processes.

Energy Recovery from Biosolids and Yard Waste Feasibility Study, City of St. Petersburg, FL

Technical Lead. Used a business case evaluation format to evaluate the feasibility to derive renewable energy from sludge generated at the City's four WWTPs and collected yard waste. Brown and Caldwell's Solids-Water-Energy Tool (SWET) to develop solids/energy balances and present worth analyses for over 30 options. Technologies considered included Class-A and phased anaerobic digestion, gasification, fluid bed incineration, screw-press dewatering, generation of electricity using either reciprocating engines or steam turbines, solar drying, and sewer conveyance of WAS to consolidate treatment at one of four, nominally 20-mgd WRFs. The recommended solution included Phase-1 project to convey WAS from the northern WRFs to the SWWRF for consolidated treatment. The digestion process at the SWWRF would be upgraded to a Class-A TPAD process and the digester gas used to fuel an engine and produce 1 to 1.4MW of power. Phase-2 would be deferred until such time as the recommended technology was better proven: gasification of yard waste solids (and possibly biosolids) to fuel syngas-fueled internal combustion engine(s) for added power production. The Phase-1 improvements are projected to save the City $30 million over the next 20 years.

COMPANY:
BC

EDUCATION/TRAINING:
PhD, Chemical Engineering, The University of Queensland

MS, Environmental Engineering, Duke University

BSE, Electrical Engineering, Duke University

LICENSES/ CERTIFICATIONS:
Professional Engineer, Florida

RELEVANT EXPERIENCE:
- **Wastewater Treatment Design**
- **Energy Conservation and Renewable Energy Production**
- **Biosolids Management**
- **Master Planning**
- **GHG**

PERCENTAGE OF TIME TO BE ASSIGNED FULL TIME TO THIS PROJECT

30% total availability

EXPERIENCE BY THE NUMBERS

26
years of experience

17
years with firm

John Willis, PhD, PE, BCEE // Qaulity Control/ Technical Advisor

Energy Recovery from Biosolids and Class-A TPAD Detailed Design, City of St. Petersburg, FL

Project Manager. BC developed the conceptual and then detailed design for consolidated treatment of the City's three WWTP's sludge production at the Southwest Water Reclamation Facility. The project included new primary treatment; contact stabilization for increased liquid treatment capacity; replacement TPAD digestion with Class-A batch tanks; odor control; FOG receiving; and digester gas upgrading to remove carbon dioxide and all traditional contaminates and produce renewable-compressed-natural gas (rCNG) vehicle fuel for use in the City's sanitation truck fleet. The project was constructed using Construction Manager at Risk delivery method. Three other consultants designed the 1) thickening upgrades; 2) a new dewatering building; 3) natural-gas-fueled engines and a new plant 12kV distribution system.

Biosolids Master Plan and Technology Evaluation, Reedy Creek Improvement District, Orlando, Florida

Technical Resource. The Reedy Creek Improvement District provides water and sewer services for the Walt Disney Corporation in Orlando, Florida. Reviewed and planned the best option for disposal of the WWTP sludges, residual food wastes from eating establishments, collection system FOG, and manures from the Animal Kingdom and other parks. Historically, these materials had been composted and beneficially reused for sod farming. Due to odor concerns from park visitors, alternatives were to be considered to improve the sustainability of Reedy Creek's solids disposal. Technologies considered included: advanced anaerobic digestion with CHP, gasification, landfilling, fluid bed incineration, and continued or modified composting. Drivers for the study included a desire to reduce odors from the existing composting facilities, renewable energy generation, and the need for a long-term, sustainable solution.

Solids-Water-Energy Evaluation Tool (SWEET) Development and Re-Invention of Solids Master-Planning, Brown and Caldwell

Technical Lead. John led the development of BC's re-invigorated approach to biosolids and energy master-planning. Conventional (predominantly solids) master plans have resulted in soft recommendations for very large capital expenditures without clear identification of the resulting benefits; these plans often "sit on the shelf" as they fail to motivate implementation. John developed an approach, and the SWET tool to enable cost-effective development of many options, that allows options to be optimized and results in recommended solutions that can save 15-25% off a program's 20-year present worth. Key approach fundamentals include: 1) calibration of a baseline mass and energy balance that is also calibrated to the utility's actual annual costs; 2) iterative development, evaluation, and optimization of options (often 30 to 50 options) in at least three workshops; 3) possible inclusion of triple-bottom-line (TBL) metrics; and 3) "live" testing of recommended solutions and their sensitivities to assumed unit-cost and TBL valuations. The results create broad consensus on the developed option; save considerable costs; and provide recommendations with readily quantified and understood benefits – often accelerating these normally "discretionary"/non-core-business projects.

Biosolids Master Plan, City of North Port, Florida

Senior Technical Advisor. Master Plan evaluated over 30 options for consolidated treatment of sludge produced from the City's three wastewater treatment plants. Options considered included solar and thermal drying and various thickening and dewatering technologies. Trucked and pumped conveyance were also considered.

Biosolids Blue Ribbon Panel, Jacksonville Electrical Authority, Jacksonville, Florida

Sludge Treatment/Biosolids Expert. Participated in three-person Blue Ribbon Panel to identify the best approach to handling the sludge produced by JEA's 80 mgd of raw sewage that is treated at 12 plants. Panel has addressed optimized anaerobic digestion, grease trap waste handling, heat drying, dewatering, transportation, land application, green power generation, production of biodiesel, and use of sludge in coal-fired power plants, among other options.

Kelly Comstock, PE, BCEE, DBIA

Quality Control/ Technical Advisor *(Water/Wastewater Reuse)*

Kelly has 26 years of experience in the planning, design, and construction of municipal water and wastewater treatment, conveyance, and storage facilities. He has extensive experience with assisting utilities in facility optimization, technology evaluation and implementation, and capital improvements.

Kelly has led multidisciplined design teams on projects with a combined capital value of over $1 billion. He has experience with traditional design-bid-build as well alternate delivery. Kelly has extensive experience in conducting pilot studies and testing for filtration plants as well as in the design of disinfection systems. He conducted pilot testing, predesign, and final design for several of the largest drinking water systems in the Southeast. Kelly is also active in AWWA, where he is former Section Chair and National Director.

Richland Creek Water Supply Program, Paulding County, Georgia

Program Manager. BC performed program management services for all phases of this $215 million water supply program including design and construction of a reservoir, river intake and raw water pipeline, water treatment plant, and distribution system improvements. In addition, BC is provided utility performance services including asset management, stakeholder engagement and communication, organizational alignment, data management and usage, workforce development, and additional funding development and justification.

Myrtle Beach Water Treatment Plant Capacity Analysis, Pilot Testing and Expansion, Grand Strand Water & Sewer Authority, South Carolina

Program Manager. Comprehensive hydraulic and process capacity analysis, high rate pilot test, and design for expansion of the 40 mgd Myrtle Beach Water Treatment Plant to a capacity of 45 mgd. Also developed alternatives to cost-effectively expand the facility to 60 mgd, implementing innovative technologies including ozone disinfection and membrane filtration.

Bull Creek Water Treatment Plant Capacity Analysis Study, Grand Strand Water & Sewer Authority, South Carolina

Program Manager. Hydraulic and process capacity analysis for the 45 mgd Bull Creek Water Treatment Plant. Developed alternatives to cost-effectively expand the facility to 60 mgd, addressing current limitations in hydraulic performance and plant optimization.

Scott Candler Water Filter Plant Clearwell Header Replacement, DeKalb County Department of Watershed Management, Georgia

Program Manager. Design and construction services for a new clearwell header and piping replacement project for the 150 mgd Scott Candler Filter Plant. Project included innovative construction approaches to maintain existing facilities online while replacing approximately 500 LF of 60- to 84-inch steel piping, isolation and pump control valves. Project replaced failed piping while providing much-needed redundancy and ability to isolate the header system. Since the plant was the only facility serving 500,000 people, the design was completed in such a way as to allow for a maximum shutdown of 8 hours during implementation of this new system.

COMPANY:
BC

EDUCATION/TRAINING:
PhD, Environmental Engineering, University of New Orleans

LICENSES/ CERTIFICATIONS:
Professional Engineer, Florida

RELEVANT EXPERIENCE:
- **Water and Wastewater Treatment**
- **Water and Wastewater Conveyance**
- **Water and Wastewater Storage Facilities**
- **Facility Optimization, Technology Evaluation and Implementation**
- **Pilot Studies and Testing**
- **Advanced Disinfection Selection and System Design**

PERCENTAGE OF TIME TO BE ASSIGNED FULL TIME TO THIS PROJECT

40% total availability

EXPERIENCE BY THE NUMBERS

26
years of experience

17
years with firm

Kelly Comstock, PE, BCEE, DBIA // Qaulity Control/ Technical Advisor

Lake Moultrie Regional WTP Expansion, Moncks Corner, South Carolina

Lead Engineer. Designed a 12 mgd expansion for the 30 mgd Lake Moultrie Water Treatment Plant. Design components included a new intake, new raw water pump station, new superpulsator clarifiers and filters, new finished water pumping capacity, new chemical systems, including alum, PAC, sodium hypochlorite, liquid ammonium sulfate, fluoride, liquid slurry lime, corrosion inhibitor, and a new belt filter press for dewatering.

Lanier Filter Plant New Chemical Facility, Gwinnett County Department of Water Resources, Georgia

Project Manager. Serving as project manager for a new chemical storage and feed building for the 150 mgd Lanier Filter Plant. Indoor storage for Ferric chloride, polymer, corrosion inhibitor, fluoride, onsite sodium hypochlorite generation, liquid slurry lime, and calcium thiosulfate. State of the art facility includes containment and waste holding systems, protected delivery areas and a laboratory and control room area. Construction value of $30 million.

Sustainable Water Plan; Philadelphia Water, Philadelphia, PA

Lead Engineer. This project included the development of a 25-year water supply and distribution master plan and a framework for future defensible decision-making and a sustainable planning methodology. This includes working collaboratively with utility staff to develop and evaluate solutions for oversized water treatment plants, buried infrastructure condition, and other deficiencies. Responsibilities included leading facility evaluation, evaluating infrastructure alternatives and developing a phased capital improvement plan that meets the performance criteria.

Big Creek WRF Expansion, Fulton County, Georgia

Project Manager. Managing the design of a progressive design build project for the expansion of the Fulton County WRF from a capacity of 24 to 38 mgd. Project will include a complete new facility that upgrades the facility to membrane treatment. The design will include coarse screens, vortex-type grit removal systems, fine screens, biological nutrient removal, membrane bioreactors, and UV disinfection. Solids handling includes aerated holding and dewatering using screw presses. The Big Creek WRF facility will be able to meet strict treatment goals including low total phosphorus and total nitrogen limits. Improvements included new chemical storage and feed facilities as well as a new control and laboratory building. Construction value of the project is $250 million.

Little River WRF Design, Fulton County, Georgia

Project Manager. Managed the design of a new 1.5 mgd membrane bioreactor (MBR) water reclamation retrofit within an existing facility. The design included a new influent pump station, multi-rake coarse screens, vortex-type grit removal systems, Drum-type fine screens, biological nutrient removal, membrane bioreactors, and UV disinfection. Solids handling included membrane thickening and facilities for transport to a central residuals processing facility. The Little River WRF facility can meet strict reuse standards including low total phosphorus and total nitrogen limits. Improvements included new chemical storage and feed facilities as well as a new control and laboratory building. Construction value of the project is $40 million.

Reuse Feasibility Study, DeKalb County Department of Watershed Management, Georgia

Project Manager. Managed a comprehensive reuse feasibility study to determine the feasibility of developing a reuse program for DeKalb County. This study evaluated options for water reuse, including direct potable, indirect potable and nonpotable reuse options. Drivers for the project were the need for cost–effective ideas to reduce interbasin transfer and development of a reliable alternative water supply source.

Johns Creek Environmental Campus (JCEC), Fulton County, Georgia

Project Manager. Managed the design of a first-in-the-state-of-Georgia, state-of-the-art, 15 mgd membrane bioreactor (MBR) water reclamation facility. This project was procured using a design-build approach. The design included an influent pump station, bar screens, vortex-type grit removal systems, double entry-type fine screens, primary clarification basins, biological nutrient removal, membrane bioreactors, UV disinfection, and post-aeration. Solids handling included aerobic digesters and centrifuge dewatering. The JCEC facility meets strict reuse standards. The facility is designed to serve as an educational campus complete with teaching laboratories, an educational nature walk, complete with a reuse feed pond and stream system, and a minimal impact design. Project requirements included covering all basins of zero noticeable odor and noise impacts to neighboring properties beyond current ambient conditions. The facility was designed to be architecturally pleasing and resemble an 1800s-era mill. Construction value of the project is $137 million.

Scott Hall, PE

Quality Control/ Technical Advisor *(Pumping Systems)*

Mr. Hall has 25 years of experience in the planning, design and construction of both water and wastewater facilities. This experience includes water and wastewater treatment plant and pumping station design, hydraulic modeling, master planning, operations support, and construction management projects.

He specializes in the hydraulic analysis and hydraulic design of pumping station and treatment plant systems, including hydraulic transient (water hammer) analysis of pipelines to evaluate and design surge control strategies. In addition to his design and management experience, Mr. Hall provides technical guidance and QA/QC for pump stations and other treatment system hydraulic designs across the company. His experience includes work on over 50 pumping stations projects in a variety of design, management, and quality assurance and technical oversight roles.

Deep Injection Well Pump Station Improvements, Miami-Dade Water and Sewer, Florida

Program Engineer. Lead process engineer for the evaluation and design of capacity improvements at the existing deep injection well pump station at the North District WWTP. Project involved the analysis of multiple alternatives involving reuse and replacement of existing pumps along with control system improvements to regulate flow between four existing wells. Final recommendation included replacement of four existing and addition of two new 1,250 HP vertical turbine pumps and discharge valves along with well head control valve improvements. Project also involved a physical model study to evaluate improvements to the existing pump inlets inside the wet well.

Sewer Lift Station Assessment and Evaluations, MDWASD, Florida

Lead Process Engineer. Project involved physical condition assessments, hydraulic analyses, alternatives evaluations and preparation of basis of design reports for improvements to five existing lift stations (PSs-301, 414, 415, 416 and 417) ranging in size from 6 to 20MGD. For each station, the improvements considered included increased station capacity; structural rehabilitation; new equipment including pumps, motors, piping and valves; new electrical and drive equipment; odor control improvements, etc.

Lift Station 107 Improvements, City of Sunrise, Florida

Design Engineer. Provided preliminary and final design support for the design of improvements to the existing wet-pit/dry-pit sewer pump station that was nearing the end of its useful life and presenting significant maintenance challenges for City staff. Improvements included reconfiguring the site to provide new submersible pumping equipment (500 GPM firm capacity) along with other piping modifications and site access improvements.

Florida Boulevard Pump Station Improvements, City/Parish of Baton Rouge, Louisiana

Design Manager. for the design of nine new or replacement wastewater pumping stations as part of the owner's Consent Order Program to address sanitary sewer overflows in the collection system. The stations ranged in size from <1-MGD to 31-MGD and included coordination with related sanitary sewer and force main projects being designed under separate contracts and multiple subconsultants. For the larger pumping stations, CFD modeling was performed to support the design of the wet wells.

COMPANY:
BC

EDUCATION/TRAINING:
BS, Civil Engineering, Georgia Institute of Technology

LICENSES/ CERTIFICATIONS:
Professional Engineer, Florida

RELEVANT EXPERIENCE:
- **Project & Design Management**
- **Civil, mechanical and hydraulic design for pumping stations**
- **Treatment Facility Hydraulics**
- **Hydraulic analysis and modeling of pumping systems**

PERCENTAGE OF TIME TO BE ASSIGNED FULL TIME TO THIS PROJECT

40% total availability

EXPERIENCE BY THE NUMBERS

25
years of experience

24
years with firm

Scott Hall, PE // Qaulity Control/ Technical Advisor

West Columbia Pumping Station Improvements, City of Columbia, South Carolina

Project Engineer. Served as lead pumping system engineer for the evaluation and design to refurbish or replace the existing West Columbia Pumping Station. The pumping station was inundated with wastewater on October 14, 2009, resulting in extensive damage to equipment. This project included analysis of the wastewater system hydraulic capacity upstream and down–stream of the West Columbia Pumping Station, development of an overall plan for wastewater conveyance in the system, and design of improvements at the pumping station in order to return it to service. Improvements included the conversion of the existing wet pit/dry pit pumping station to a submersible, trench wetwell pumping station with a capacity of approximately 24 MGD. The project also included the design of approximately 22,000 linear feet of new 42-inch DIP force main.

West Columbia Pump Station Upgrades, Columbia, South Carolina

Design Manager. Currently leading the evaluation of improvements to an existing 24-MGD sewage pumping station including forensic evaluation of operational issues for the pump station/force main system. The project includes assessment of options for immediate capacity increases to 27-MGD through simple interim measures including evaluation of discharge modifications at the downstream WWTP. Long term planning includes potential design improvements to achieve 30-MGD and 40-MGD capacity capabilities.

North Columbia Pump Station Upgrades, Columbia, South Carolina

Design Manager. Currently leading the evaluation of improvements to the City of Columbia's largest sewage pumping station. Rated at 38 MGD, the existing station is undersized for the growing service area and suffers from maintenance challenges. Project involves the evaluation of alternatives to increase the rated pumping capacity to 49 MGD now and expandable to 60 MGD in the future. The preliminary analysis will include CFD modeling of the existing and proposed wet well modifications. Based upon the recommendations of the alternative analysis, the project includes design and construction of the proposed improvements.

Mill Creek WWTP Influent Pump Station Evaluation, Metropolitan Sewer District, Cincinnati, Ohio

Project Engineer. Detail evaluation of the WWTP's existing influent pumping station (360- MGD) to address solids accumulation and ongoing operational issues. Conducted a detailed hydraulic evaluation of the existing pumping system including physical modeling of the existing station and proposed improvements to validate proposed solutions.

Steele Creek Pumping Station Replacement, Charlotte-Mecklenburg Utilities (CMU), Charlotte, North Carolina

Senior Technical Review. Provided senior oversight and calculation review for the design and development of bidding documents for construction of a replacement 30-million-gallon wastewater pumping station. The pumping station consisted of a wet pit/dry pit configuration with three dry pit centrifugal wastewater pumps and a trench-type, self-cleaning wetwell design.

Kitt Creek Pumping Station Phase II Expansion, Town of Cary, North Carolina

Lead Engineer. Served as lead project engineer for interim capacity improvements at the Kitt Creek Pumping Station to increase capacity from 8 MGD to approximately 12 MGD peak flow capacity. Improvements included the addition of two trailer-mounted diesel engine driven pumps with sound attenuating enclosures (to meet the strict 50 dBA noise requirement imposed by the Town of Cary) along with other site and piping modifications. These improvements were intended to provide needed interim capacity pending completion of Cary's ongoing capacity management planning effort for the overall system.

North Chattahoochee Interceptor Pumping Station, Gwinnett County, Georgia

Project Manager. For the design of improvements to an existing 15 MGD submersible wastewater pumping station on tight project site in dense residential area. Evaluated replacement of existing pump discharge control valves along with implementation of new surge control strategy and odor control improvements. Improvements included a number of rehabilitation and operational upgrades including new flow metering, RVSS motor starter replacement, surge tank installation and other structural and piping modifications to restore reliability.

Lary Vicars, PE, CGC

Project Management and Key Resources

Mr. Vicars has managed approximately $235M worth of construction services for the South Florida Water Management District (SFWMD) since 2009.

Larry brings more than 24 years of professional experience in engineering sophisticated water treatment and pumping system processes. He has an excellent record in process control measures including development of control logic, circuit analysis, trouble shooting and acceptance testing initiatives. Larry's experience includes strong project management skills and process engineering capabilities with a thorough understanding of construction techniques, mechanical equipment, startup procedures and site acceptance testing. He possesses keen analytical and problem-solving skills associated with instrumentation and control, ladder logic drawings and electrical schematics. Larry has addressed and met head-on the challenge of expanding engineering treatment processes for multiple water plant systems including permitting, negotiating, and coordinating owner furnished equipment and project closeout.

C-43 Reservoir S-470 Pump Station Construction Management, South Florida Water Management District, West Palm Beach, Florida

Construction Management Services. Providing support and augmenting staff in the construction management of the S-470 Pump Station for the C-43 Reservoir. The project includes the construction of a 23,000 square foot, fully operational, two-story pump station building with four 375 cubic feet per second (cfs), 2,500 hp electric pump systems. The project also includes the construction of a Microwave Communication Shelter including a 300' self-standing tower. Construction value $60M. Completion date scheduled for May 2022.

C-44 Reservoir S-401 Pump Station Construction Management, South Florida Water Management District, West Palm Beach, Florida

Construction Management Services. Provide support and augment staff in the construction management of the S-401 Pump Station for the C-44 Reservoir/STA Project. The project includes the construction of a 21,000 square foot, fully operational, three-story pump station building with four 275 cubic feet per second (cfs) electric pump systems and the remaining 600 feet of the C-44 Intake Canal.

A2-Stormwater Treatment Area, SFWMD, Palm Beach County, Florida

Construction Management Services. Project scope includes design of three pump stations for control of water at a stormwater treatment area in Palm Beach County, FL. The pump stations range from 150 cfs to 650 cfs. Responsible for leading process mechanical design including hydraulic calculations, specifications, and drawings.

L-8 Reservoir, South Florida Water Management District, West Palm Beach, Florida

Construction Management Services. Provided support on the L-8 Reservoir Modifications, Pump Station and Inflow Structure project. The L-8 project is a $63 million Design-Build project that consist of a 46,000 acre-feet reservoir storage with perimeter embankment improvements, reservoir cell modifications, a new boat ramp facility, a new 450 cfs, a 2-stage outfall pumping station, a three gate inflow gate structure with a maximum capacity of 3,000 cfs from L-8 Canal to the L-8 Reservoir and a new road bridge across the new inflow canal.

COMPANY:
BC

EDUCATION/TRAINING:
BS, Chemical Engineering, University of Florida

LICENSES/ CERTIFICATIONS:
Professional Engineer, Florida

Certified General Contractor

RELEVANT EXPERIENCE:
- **Treatment**
- **Pumping Systems**
- **Project Management**
- **Construction Management**
- **Permitting**

PERCENTAGE OF TIME TO BE ASSIGNED FULL TIME TO THIS PROJECT

60% total availability

EXPERIENCE BY THE NUMBERS

24
years of experience

12
years with firm

Compartment B Stormwater Treatment Area G-434, G-435 and G-436 Pump Stations, South Florida Water Management District, West Palm Beach, Florida

Lead Project Engineer. Lead Project Engineer responsible for simultaneously overseeing three stormwater pump stations G434, G-435 and G-436, for the South Florida Water Management District. The pump stations had pumping capacities of 1120 cfs, 480 cfs and 1,600 cfs, with a combined Contractor's cost of approximately $60 million dollars. Coordinated the purchase and delivery of owner furnished equipment valued at nearly $30 million dollars. Engaged in every aspect of construction engineering from blasting cap-rock to final acceptance testing.

Various Projects, Florida

Process Engineer. Process Engineer on Water and Wastewater treatment projects with expert knowledge of the following technologies: Reverse Osmosis, Pretreatment Filtration, Ion Exchange, Chemicals, Stripping Tower (degasification) process, Absorption (odor control) process, product storage, and pumping systems.

Project accomplishments include:

- Provided membrane analysis and selection, coordinated membrane replacement, and provided startup services for Indian River County's four existing RO treatment trains.
- Provided membrane analysis and selection, coordinated membrane replacement, and provided startup services for Indian River County's four existing RO treatment trains.
- Participated in pilot testing and design engineering for the removal of color and organics from membrane softening plant's concentrate and raw water.
- Design Engineer responsible for engineering treatment processes associated with the expansion of various Martin County Utilities' Water Treatment Plants.
- Design Engineer responsible for the iron removal pretreatment process, the existing 1.5 MGD Nanofiltration treatment process, and for providing 0.75 MGD of raw water blend.
- Design and Project Engineer responsible for permit, design, and construction phase services of a 345,000 gallon gravity-filter backwash recovery basin, modifications to the lime sludge blowdown lines, and construction of a sludge pumping pit.
- Design and application of digital and analog control systems for regulatory and Supervisory Control and Data Acquisition (SCADA), development of control strategies and coordination of work between the electrical engineering and the mechanical engineering disciplines.
- Development of process flow diagrams (PFD), piping and instrumentation (P&I) diagrams, systems design, and control philosophy for the programmable logic controllers (PLC) and SCADA systems.
- Strong technical skills in treatment plant start-up, control loop verification, operational readiness testing which includes electrical and ladder logic schematic analysis, troubleshooting and adjusting the control strategies to meet the specific process requirements.
- Design Engineer responsible for all treatment processes associated with the expansion of Martin County Utility Tropical Farms Water Treatment Plant. Project Engineer and Site Engineer for the construction phase.
- Design Engineer responsible for obtaining permits from the governing Health Department. Design engineering for the expansion of the Village of Royal Palm Beach Water Treatment Plant.

Various Project, LVI, Florida

Owner and Operator Founded State Certified General Contracting Corporation.

- Fostered business growth while serving commercial and residential accounts.
- Stellar record of customer satisfaction. Customer satisfaction testimonials and word of mouth led to higher sales.
- Excellent record of progressive business growth with multiple years of revenue in $750K–$950K.
- Interior subcontractor on a 10-story office building, (Radisson) hotel, restaurant and conference rooms. (Contract values ± $500K.)
- Interior build out of 10,000 square foot United Postal Service distribution facility in Boca Raton, Florida.

Marie Burbano, PE

Wastewater Treatment

Dr. Burbano has more than 23 years of experience in water, wastewater, and water reuse treatment for municipal, federal, and industrial applications.

Her experience includes treatment plant design, project and design management, wastewater process analysis and modeling, solids processing design, computational fluid dynamics, membrane design, and pilot studies. Dr. Burbano has significant diverse global experience in treatment analysis, application, and design, with a specific focus on biological treatment processes.

Deep Injection Well Pump Station, City of Hollywood, Florida

Project Manager. Dr. Burbano served as the Project Manager for the design of a new deep injection well pump station at the Southern Regional Wastewater Treatment Plant (SRWWTP). The SRWWTP treats an average annual daily flow of 55.5-MGD and currently discharges to two deep injection wells and an ocean outfall. As part of the Ocean Outfall Legislation, the SRWWTP will be upgraded to discharge most of the flow to injection wells, with two new wells under construction. The new pump station is sized with three 1250hp pumps and Tier 4 emergency generators to discharge effluent to the deep injection wells. The design of this project was completed and the construction is currently underway.

Ocean Outfall Legislation, North District WWTP Expansion, WASD, Miami-Dade County, Florida

Project Manager. Dr. Burbano is serving as the Project Manager for the design of improvements to the Miami Water and Sewer Division's (WASD) 100-MGD North District WWTP. The WWTP must comply with Florida's Ocean Outfall Legislation (OOL), which dictates a large plant upgrade program. As part of the program, BC is completing an updated Stormwater Master Plan, Preliminary Design for the overall OOL site, and a Site Improvements bid package for the OOL site. BC is also assisting with permitting for the mitigation of wetlands that will be removed as part of the project for the new OOL facilities. The Stormwater Master Plan and Preliminary Design were completed in August 2021. The bid package design is complete and under permit review.

Ocean Outfall Legislation, South District WWTP Expansion, WASD, Miami-Dade County, Florida

Project Director. Upgrades to the headworks, oxygenation trains and influent equalization systems to increase the wet weather treatment processing capacity from 112.5 mgd ADF and 285 mgd PHF to 131 mgd ADF and 368 mgd PHF as part of the Miami Ocean Outfall Legislation (OOL) Program. Project includes construction of a new influent conveyance pipe into the plant, modifications to existing Headworks 2, construction of a third 86 mgd headworks structure, modifications of 7 oxygenation trains to employ step-feed, construction of two new oxygenation trains, two new electrical buildings, new electrical substation building, two new 20 mg influent equalization tanks, equalization feed pump station/drain pump station, and a new filter backwash treatment system including lamella settling system and associated treated effluent and sludge pumping stations. Dr. Burbano serves as the Project Director for this OOL project.

COMPANY:
BC

EDUCATION/TRAINING:
PhD & MS, Environmental Engineering, University of Cincinnati

BS, Civil Engineering, Engineering Systems, University of Pennsylvania

LICENSES/ CERTIFICATIONS:
Professional Engineer, Florida

RELEVANT EXPERIENCE:
- **Water Treatment**
- **Project Management**

PERCENTAGE OF TIME TO BE ASSIGNED FULL TIME TO THIS PROJECT

60% total availability

EXPERIENCE BY THE NUMBERS

23
years of experience

4
years with firm

Ocean Outfall Legislation, Central District WWTP Expansion, WASD, Miami-Dade County, Florida

Lead Project Engineer. Dr. Burbano is serving as the Project Manager for the design of improvements to the Miami Water and Sewer Division's (WASD) 120-MGD Central District WWTP. The WWTP must comply with Florida's Ocean Outfall Legislation (OOL), which dictates a large plant upgrade program. As part of the program, BC is designing two new electrical distribution buildings to replace the existing electrical distribution building and to support the new processes needed for OOL compliance. The design of this project is underway and is scheduled for completion in 2021.

Ocean Outfall Legislation, Central District WWTP, WASD, Miami-Dade County, Florida

Design Manager. Dr. Burbano served as the Design Manager for the design of improvements to the Miami Water and Sewer Division's (WASD) 120-MGD Central District WWTP. The WWTP must comply with Florida's Ocean Outfall Legislation (OOL), which dictates a large plant upgrade program. As part of the program, CDM Smith is designing expansions to the plant's headworks, high purity oxygen trains, rectangular secondary clarifiers and return activated sludge (RAS) systems, and effluent pumping system that discharges treated effluent into a system of groundwater recharge wells. The design of this project is underway and is scheduled for completion in 2020.

Ocean Outfall Legislation, South District WWTP Contracts ST-2B and ST-2C, WASD, Miami-Dade County, Florida

Design Manager. Dr. Burbano served as the Design Manager for the design of improvements to the Miami Water and Sewer Division's (WASD) 112.5-MGD South District WWTP. The WWTP must comply with Florida's Ocean Outfall Legislation (OOL), which dictates a large plant upgrade program. As part of the program, WASD is proceeding with expansions to the plant's secondary clarifier and return activated sludge (RAS) systems, effluent filters, disinfection process and effluent pumping system that discharges treated effluent into a system of groundwater recharge wells. The design of this project, which will upgrade the plant capacity to 131 MGD is underway and was completed in 2018. The new effluent pumping system consisted of a new Effluent Pump Station 3 with three 900 HP pumps to inject water into deep injection wells.

Design Services for Wastewater Treatment Plants Related to Consent Decree (CD) Projects, WASD, Miami-Dade County, Florida

Process Lead. Dr. Burbano served as process engineer for CDM Smith's provision of services to WASD for design services related to CD projects. As part of this work, CDM Smith is serving as a subconsultant for the preliminary design, design development, construction documents, permitting and bidding services, and design services during construction for upgrades all three of WASD's wastewater treatment plants (South District, Central District, and North District) for capital improvement projects specified by the Environmental Protection Agency (EPA) and Florida Department of Environmental Protection (FDEP). In this role, Dr. Burbano lead the technical design for the individual projects by coordinating with process-mechanical designers and other disciplines including electrical, I&C, etc. For technical tasks, Dr. Burbano completed process modeling and design calculations for the oxygen production sizing project. She has also evaluated hydraulics for the fats, oils, and grease facility.

Design Services for CD 2.27 – Oxygen Production, WASD, Miami-Dade County, Florida

Process Engineer. Dr. Burbano served as the process engineer for the replacement of the oxygen production facilities at the 143-mgd Central District WWTP (CDWWTP). Dr. Burbano performed initial assessments to evaluate the best replacement for the existing cryogenic units at the CDWWTP. WASD decided to proceed with new facilities for oxygen production using two new VPSA units and procuring the upgrades using a design-build method. Dr. Burbano completed the bridging documents for the design-build procurement for the design of the oxygen production facilities.

George T. Lohmeyer Regional WWTP Permit Renewal Application, City of Fort Lauderdale, Florida

Technical Review. Dr. Burbano reviewed the FDEP Domestic Wastewater Facility Permit Renewal Application for the GTL Regional WWTP. This plant, with a rated capacity of 56.6 mgd, has major liquid treatment processes including influent screening, grit removal, pure-oxygen activated biological reactors, and clarification. Chlorine is applied to the treated effluent for disinfection along with impairment of biological growth in the injection wells prior to discharge.

Bill Ealezer, PE

Wastewater Treatment

Mr. Eleazer is the technical leader of BC's Headworks Community of Practice and in this role is a national resource for all Headworks projects within BC. He is the author of Chapter 11 – Preliminary Treatment of the WEF design manual, Wet Weather Design and Operation in Water Resource Recovery Facilities.

Bill Eleazer has 27 years of experience in municipal wastewater treatment engineering. He is the chief engineer for the southeastern business unit of Brown and Caldwell. His experience includes project engineering and project management for conceptual, preliminary and detailed design of wastewater treatment plants including all process elements with specialty design experience with headwork's screenings and grit removal systems, chlorine and ultraviolet disinfection systems, advanced oxidation systems for groundwater recharge, and solid stream processes including thickening, anaerobic digestion and dewatering systems.

Mr. Eleazer's municipal planning experience includes masterplan development, water distribution network modeling, water need projections, and wastewater return planning. He has also performed preliminary and detailed design of industrial wastewater treatment systems for the pulp and paper, chemical, petro-chemical, food and beverage, pharmaceutical and metal finishing industries.

North District WWTP, Miami-Dade Water and Sewer Department (WASD), Miami, Florida

Project Manager. Initial phases of this long term rehabilitation and replacement project at the 85 mgd (ADF), 240 mgd (PHF) North District WWTP. This was a comprehensive planning, design and construction management project for the $150+ million infrastructure re-investment program at one of the three Miami-Dade Water and Sewer District's wastewater treatment plants. The project included more than 30 individual task orders

South District WWTP Expansion – ST2A, WASD, Miami, Florida

Project Manager. Plant upgrades for a new 72-inch influent forcemain tie-in and connection to the plant, a third 86 mgd headworks consisting of dual screening facilities with three multi-rake screens followed by three perforated plate screens and a new aerated grit removal tank, two new pure oxygen oxygenation trains with an anaerobic selector first-stage followed by 4 pure oxygen stages and an atmospheric carbon dioxide stripping final-stage with each train rated for 43 mgd, electrical support building, and electrical substation. This project consists of the upgrades to the front portion of the plant to support the increase in treatment capacity from 112.5 mgd ADF and 285 mgd PHF to 131 mgd ADF and 329 mgd PHF.

South District WWTP Expansion – ST1B, WASD, Miami, Florida

Project Manager. Plant upgrades for the rehabilitation of 7 pure oxygen oxygenation trains and replacement of 84 surface aerators/mixers with each train being outfitted with an anaerobic selector first-stage followed by 4 pure oxygen stages and an atmospheric carbon dioxide stripping final-stage with each train rated for 43 mgd and decommissioning of two existing and construction of two new electrical support buildings. This project consists of the upgrades to the existing middle portion of the plant to support the increase in treatment capacity from 112.5 mgd ADF and 285 mgd PHF to 131 mgd ADF and 329 mgd PHF.

COMPANY:
BC

EDUCATION/TRAINING:
MS, Civil Engineering, North Carolina State University

BS, Civil Engineering, North Carolina State University

LICENSES/ CERTIFICATIONS:
Professional Engineer, Florida

RELEVANT EXPERIENCE:
- **Water Treatment**
- **Headworks**
- **Project Management**

PERCENTAGE OF TIME TO BE ASSIGNED FULL TIME TO THIS PROJECT

50% total availability

EXPERIENCE BY THE NUMBERS

27
years of experience

27
years with firm

Bill Eleazer, PE // Wastewater Treatement

Sawgrass WWTP Headworks Upgrades, City of Sunrise Utilities Department, Sunrise, Florida

Project Manager. Upgrade to the headworks at the 15mgd (ADF), 42 mgd (PHF) Sawgrass WWTP. The upgrade consisted of the replacement of the existing screening systems with three perforated plates screens, new screenings compactors, replacement of mechanical equipment for the vortex degritting systems, new flow splitting systems for the aeration basins feed and new odor control collection and treatment systems using a bio-scrubber process for the headworks area.

Sawgrass WWTP Reuse Plant, City of Sunrise Utilities Department, Sunrise, Florida

Process Area Lead. Disinfection systems and chemical support facilities for a 4 mgd reuse facility at the Sawgrass WWTP. The disinfection system consisted of sodium hypochlorite unloading, storage and feed facilities, and chlorine contact tanks. The entire facility was a $12 million green-field 4 mgd (expandable to 16 mgd) reuse water plant to serve irrigation needs for the City of Sunrise. The plant consisted of a filter lift feed pumping station, deep bed sand filtration, chlorine disinfection, low lift pumps to storage, a 2.5 mg storage tank and high-service lift pumps to feed the distribution system.

Central District WWTP Expansion, WASD, Miami, Florida

Senior Process-Mechanical Reviewer. Design upgrades to the electrical distribution systems to support the expansion of the wet weather treatment capacity to 368 mgd including decommissioning of the existing electrical distribution building and construction of two new electrical distribution buildings which will include 16 generators, and replacement of the electrical distribution systems to each of 27 substations located throughout the plant.

East Central Regional WWTP, West Palm Beach, FL

Senior Process-Mechanical Reviewer. The complete renovation of the biosolids facilities for this 70 mgd wastewater treatment plant which service the City of West Palm Beach and 4 other adjacent communities. The project consists of demolition of most of the existing biosolids facilities and construction of new thickening, anaerobic digestion and dewatering systems.

North District WWTP, Miami, FL.

Senior Mechanical Reviewer. design for the upgrades and replacement of all screenings and degritting systems at the 240 mgd (PWWF) wastewater treatment plant. Project is currently in construction.

Southwest Water Reclamation Facility Wet Weather Liquid Treatment Improvements, City of St. Petersburg, Florida

Design Manager. Emergency wet weather liquid treatment upgrades to increase the wet weather treatment processing capacity from 40 mgd to 70 mgd. Project included emergency retrofits to the headworks, aeration basins, secondary clarifiers, filtration and disinfection systems with new chlorine contact tanks and chemical feed systems. The project included a cyclone selective wasting system to improve and stabilize the plant's secondary treatment process, a new secondary clarifier, and a new interim high-rate disinfection process while the construction of the new chlorine contact tank was completed.

Southwest Water Reclamation Facility Biosolids Upgrades, City of St. Petersburg, Florida

Design Manager. Solids processing upgrades at the 20 mgd (ADF) Southwest Water Reclamation Facility. The upgrade consisted of construction of two new primary clarifiers, modifications to the aeration basins for biological stabilization deploying step feed and contact stabilization, two new 1.8 mg concrete fixed covered anaerobic digesters (one thermophilic digester and one mesophilic digester), a set of 6 batch hold-tanks between the thermophilic digester and the mesophilic digester to obtain Class A digested biosolids, digester support building, gas cleaning and upgrade systems using a pressure swing absorption process to produce pipeline quality gas, odor control systems utilizing bio-scrubbers followed by carbon treatment and FOG/supplemental feedstock receiving facilities. This represented BC's portion which was part of the larger Biosolids Upgrade Program at the SWWRF. BC's design responsibilities consisted of approximately $40 million of the estimated $60 million of upgrades at the facility. The remainder consisted of a new combined heat and power (CHP system) and thickening and dewatering improvements which were designed by others but coordinated by BC.

Victor Hurlburt, PE

Infrastructure

Mr. Hurlburt brings over 51 years of experience in the study, design, permitting, construction administration, and resident engineering of various potable water transmission, distribution, and raw water supply projects, reclaimed water transmission projects, and wastewater collection, and transmission projects.

Mr. Hurlburt has also designed open cut, micro-tunnel, jack and bore and horizontal directional drilling installations. He has completed numerous water and wastewater projects as well as plant startup and pilot plant operations in the U.S. and Puerto Rico. His water treatment experience includes conventional lime softening as well as membrane softening, reverse osmosis and ozone technologies.

Raw Water Transmission Main from Floridan Aquifer Wells, City of Hollywood, FL

Project Manager/Design Manager. Project manager for design and permitting of 20-inch diameter raw water main from the raw water wellfield (Floridan Wells F-6 and F-7) to convey raw water to the City's water treatment plant. The construction (open cut) was performed by City staff and a separate specialty subcontractor was hired to perform the construction of the directional drilled segment crossing NW 35th Avenue.

Raw Water Pipe Replacement Project, City of Hollywood, FL

Project Manager/ Design Manager. Project manager for the design and construction phase services for the replacement of the exposed, above ground segment of 24-inch and 36-inch diameter stainless steel raw water supply piping, valves and flow meter supported on existing pipe support system located on the water treatment plant property. The project also included improvements to the sulfuric acid storage and delivery system.

Water Supply and Transmission System Improvements, City of Hollywood, FL

Project Manager/ Design Manager. Responsible for construction administration and resident engineering for installation of three raw-water supply wells and the associated raw-water transmission mains to the City's water treatment plant.

Potable Water Main Replacement Project, City of Hollywood, FL

Project Manager. Responsible for the design, permitting and project management of the potable water main replacement project area bounded by Sheridan Street, Pershing Street, N. 22nd Avenue, and N. 24th Avenue. The length of new potable water main is approximately 29,000 linear feet of 4-inch, 6-inch and 8-inch diameter PVC piping, with the purpose of this project being replacement of existing undersized water mains.

Potable Water Main Replacement Project, City of Hollywood, FL

Project Manager. Responsible for the design, permitting and project management of the potable water main replacement project area bounded by Hollywood Boulevard, Johnson Street, State Road 7, and 52nd Avenue. The length of new potable water main is approximately 60,500 linear feet of 4-inch, 6-inch, 8-inch, 12-inch and 16-inch diameter PVC piping, with the purpose of this project being replacement of existing undersized water mains.

COMPANY:
BC

EDUCATION/TRAINING:
BS, Civil Engineering, University of Vermont, Burlington, Vermont

LICENSES/ CERTIFICATIONS:
Professional Engineer, Florida

RELEVANT EXPERIENCE:
- **Project Management**
- **Design and Permitting**
- **Construction Administration**
- **Marketing/Business Development**

PERCENTAGE OF TIME TO BE ASSIGNED FULL TIME TO THIS PROJECT

60% total availability

EXPERIENCE BY THE NUMBERS

51
years of experience

11
years with firm

Victor Hurlburt, PE // Infrastructure

Potable Water Main Replacement Project, City of Hollywood, FL

Project Manager/ Design Manager. Responsible for the design, permitting and project management of the potable water main replacement project area bounded by Taft Street, Sheridan Street, North 26th Avenue, and North 28th Avenue. The length of new potable water main is approximately 19,400 linear feet of 4-inch, 6-inch, and 8-inch diameter PVC piping, and an aerial segment of steel pipe on the Sherman Street bridge over the C10 Canal, with the purpose of this project being replacement of existing undersized water mains.

Basis of Design Report - Twin Lakes South Neighborhood Improvement Program (NIP) - Wastewater Collection System, Broward County Water and Wastewater Services, Pompano Beach, FL

Project Manager/ Design Manager. Responsible for the development of the Basis of Design Report for the neighborhood improvement project specific to the Twin Lakes South residential subdivision. Included preliminary design of gravity sewer system, miscellaneous water main and fire hydrant spacing improvements, stormwater improvements, and sidewalk improvements. Final design was to be performed by Client.

Broadview Estates Bid Package 2 Design for Wastewater Collection Systems, Broward County Water and Wastewater Services, Pompano Beach, FL

Project Manager/ Design Manager. Responsible for miscellaneous modification and expansion design projects including permitting for the wastewater treatment plant and associated sewage pump stations to include an odor control system, clarifier replacement equipment, sludge thickening modifications and polymer system installation.

Re-development Water Transmission and Distribution Main Improvements - Area No. 1 and 2, City of Miramar, FL

Project Manager/ Design Manager. Project manager for the design and permitting of new water mains in the City's Eastern Service Area consisting of approximately 18,000 linear feet of 6-inch diameter, 1,000 linear feet of 8-inch diameter, and 3,420 linear feet of 12-inch diameter water mains, including valves, tapping sleeves, water services, abandonment of existing water mains and restoration of roadways and grassed areas.

Sewage Force Main Improvements, City of Miramar, FL

Project Manager/ Design Manager. Project manager for design and permitting (FDEP and Broward County agencies) of extensions for existing sewage force main system segments in two areas of the City's service area to remedy an overflow situation.

Sewage Force Main, City of Miramar, FL

Project Manager/ Design Manager. Responsible for design and permitting (FDOT, FDEP, and Broward County agencies) of five miles of combined 24-inch and 30-inch diameter sewage force main along major roadways in Miramar.

Potable Water System Improvements, City of Pompano Beach, FL

Project Manager/ Design Manager. Responsible for design and permitting of potable water main by directional drilling segments under three canals to replace exposed piping supported on bridges.

Reclaimed Water Distribution System, City of Pompano Beach, FL

Project Manager/ Design Manager. Responsible for design and permitting (FDEP, Broward County and SFWMD) of phased implementation of reclaimed water infrastructure project for residential and commercial areas of Pompano Beach east of Federal Highway to the Intracoastal Waterway. Design includes approximately 14,000 linear feet of PVC and ductile iron piping for the reclaimed water system ranging from 6-inch to 24-inch diameter.

Continuing Water Consultant Services, City of Daytona Beach, FL

Project Manager. Provided complete portfolio of planning, study, design, and construction phase services as the project manager as the City's general water consultant. Projects included pipeline (ranging from 6-inch diameter to 30-inch diameter piping) extensions, and pipeline replacement projects to include construction methods using jack and bore, micro-tunneling, and open cut, as well as river crossing installations. Other water discipline projects included design for refurbishing of elevated potable water storage tanks, potable water booster pumping stations, and ground storage tanks. All water distribution system projects included clearance permitting through FDEP and local health department.

Diego Herrera, PE

Infrastructure

Mr. Herrera has successfully completed over 100 wastewater collection systems, pumping stations, and existing wastewater systems evaluations; over 50 raw water collection and water treatment plant processes evaluations, and water distribution systems; and over 20 projects involving reuse water study and analysis, reuse water treatment plant evaluations and upgrades, and reuse water distribution systems.

Diego Herrera has over 18 years of experience in project management, and civil and environmental design for water and wastewater projects in the public and private sector. Projects involved contract preparation for study and analysis, design, QA/QC, value engineering, permitting, bidding, construction administration, startup, and operation and maintenance.disciplines of water and wastewater.

Water Main Replacement, City of Hollywood, FL

Design and Construction Manager. The City of Hollywood's water distribution system consists of over 600 miles of pipe with diameters ranging from 2-inch to 36-inch. The vast majority of these facilities are over 35 years old. BC provided professional engineering design permitting and construction management services for implementation of the water distribution system improvements at various locations throughout the City. The primary purpose of the project is to replace inadequate existing undersized water mains within the project area. The replacement of the currently undersized water mains will increase existing water pressure and provide additional fire hydrants to provide for increased fire protection coverage.

Deep Injection Well Pump Station, City of Hollywood, Florida

Civil Lead and Deputy Project Manager. Design of multiple pressurized and gravity feed systems for the conveyance of different fluids. The project redirects secondary effluent to mix it with concentrate reject from nearby RO WTPs to be injected into deep injection wells specially drilled with this objective. Additionally, design of storm drainage systems and roadways to comply with the local licenses and permits granted to the City by local and State agencies. Construction is currently underway.

Immokalee Water Treatment Plant, Seminole Tribe of Florida, Florida

Design and Construction Manager. The Tribe identified a number of improvements their WTP in Immokalee needed. BC's task included the design and installation of a potable water distribution system installed via horizontal direction drill and other piping modification throughout the plant, degasifier system modifications, reverse osmosis improvements, and overall electrical medications to the plant.

Design and Construction of LS160, City of Sunrise, Florida

Project and Construction Manager. The LS 160 occupies the front area of the newly constructed City of Sunrise City Hall. This is needed to be rehabilitated and become invisible to the public due to its location. The station serves over 3,000 residences and provides the city with an upgraded capacity to pump wastewater to the nearby Springtree WWTP. Additional manhole rehabilitation and sewer lining tasks were included in this project for help with the aging infrastructure.

COMPANY:
BC

EDUCATION/TRAINING:
BS, Civil Engineering, Military School of Engineering AJS La Paz, Bolivia

LICENSES/ CERTIFICATIONS:
Professional Engineer, Florida

RELEVANT EXPERIENCE:
- **Water/Wastewater/ Reuse Systems**
- **Drinking Water**
- **Pumping Systems**

PERCENTAGE OF TIME TO BE ASSIGNED FULL TIME TO THIS PROJECT

50% total availability

EXPERIENCE BY THE NUMBERS

18
years of experience

6
years with firm

Diego Herrera, PE // Infrastructure

3BC Septic Tank Elimination Analysis, Broward Water and Wastewater Services, Pompano Beach, Florida

Project Manager. The 3BC area consists of pockets of unsewered areas that are served by septic tanks that the County has identified to be eliminated. The County previously conducted a study to assess the feasibility of eliminating the remaining septic tanks in the 3BC service area. Consistently with priority placed on eliminating the remaining septic tank areas, the County requested that BC prepare a Basis of Design Review (BODR) based on the recommended proposed sanitary sewer improvements outlined in the 3BC Sanitary Sewer Feasibility Study (also developed by BC).

Rehabilitation of Lift Stations 14E, 17A, 17C, and 18C, Coral Springs, Florida

Design Engineer. Design of 4 lift stations totaling a combined pumping rate of approximately 2,000 GPM. The new pump stations were equipped with telemetry units and SCADA systems. The project also included the modeling of proposed pumping rate impacts on the existing sewer system and proposed upgrades to different locations in the City's system to allow for the increase of pumping flow.

Southwest Quadrant Downtown Water and Sewer Improvements, Coral Springs, Florida

Design Engineer. Design of a gravity sewer system, water mains, force mains, and one lift station for the new City of Coral Springs Downtown Redevelopment Area. The associated sewer system will be able to provide service to approximately 900 multifamily units and about 82,00 SF of new retail buildings. The water main was designed to be 12-inched in diameter with a total length of 1,200 LF.

Sewer Area 2 Water Works 2011 Program, Fort Lauderdale, Florida

Design Engineer. Evaluation and design of conventional gravity sewer mains and a lift station. The total length of pipe was over 80,000 LF of piping ranging from 8 to 12 inches in diameter. Also, project included design of new water mains to supply the residents of the area.

Sewer Area 4 Water Works 2011 Program, Fort Lauderdale, Florida

Design Engineer. Design of conventional gravity sewer mains, a lift station, and water mains. The total length of pipe was over 70,000 LF of piping ranging from 8 to 10 inches in diameter of wastewater main and 45,000 FL of water mains.

Sewer Area 8 Water Works 2011 Program, Fort Lauderdale, Florida

Design Engineer. Modeling, Evaluation, and Design of over 80,000 LF of gravity sewer lines piping from 8 to 10 inches in diameter. Design of a lift station and water mains was included as part of this project.

Donald Road Gravity Sewer System, Village of Palm Springs, Florida

Design Engineer. Design of a gravity sewer system comprised of approximately 15,000 LF of sanitary sewer pipes, one pump station, and 1,500 LF of sewer force main. A total of 180 residential units, with a total of 900 residents, were provided with sewer service and much needed road restoration. The new pump station was equipped with telemetry units and SCADA systems.

Strawberry Fields, Marlboro Court, and States of Lake Clarke Shores Pump Stations Rehabilitation, Village of Palm Springs, Florida

Project Manager. Planning and design of 3 sanitary sewer pump stations. A total of 450 residential units and 80 business benefited from this project. The rehabilitated pump stations were equipped with telemetry units and SCADA systems. Project included services during construction.

Monica, Davis Road, and Professional Plaza Pump Stations Rehabilitation, Village of Palm Springs, Florida

Project Manager. Evaluation, planning, and design of 3 sanitary sewer pump stations. Approximately 650 residential units and 40 business benefited from this project. The rehabilitated pump stations were equipped with telemetry units and SCADA systems. Project included services during construction.

Jim Nissen, PE

QA/QC Value Engineering

Mr. Nissen has prepared operation and maintenance manuals for water and wastewater treatment plants and has provided field operations assistance at wastewater and solid waste management facilities. He has also managed major water resources projects associated with Everglades restoration in South Florida.

Jim Nissen has over 45 years of engineering experience on a broad range of environmental planning and design projects. He has served as project manager for master plans and feasibility studies for major water, wastewater and solid waste utilities and has served as project manager or project engineer for permitting and design of wastewater treatment and solid waste
disposal facilities.

Headworks Improvement Project, East Central Regional Wastewater Reclamation Facility (ECRWRF), West Palm Beach, Florida

Project Manager. Planning, permitting, design and construction phase services for improvements to the preliminary treatment facilities at the 70-mgd ECRWRF. Primary project elements included (1) replacement of existing 36-inch, 48-inch and 54-inch venturi flow meters with new short-body venturi flow meters, (2) replacement of the five existing 6-mm bar screens with new 6-mm center flow, perforated plate influent screens, including a process water booster pumping station, (3) replacement of the two existing grit cyclone-classifiers with similar units, (4) replacement of existing grit pumps and modification of grit piping layout, (5) structural modifications and upgrades where needed, (6) recoating of all interior structural concrete surfaces and (7) electrical and I/C improvements where needed to improve reliability and control. Project included a Basis of Design Report (BODR), preparation of permitting and construction contract documents, and construction administration support to the Owner and Owners Representative during construction.

EAA A-2 Stormwater Treatment Area, South Florida Water Management District, West Palm Beach, Florida

Project Manager. Design of improvements to convey up to 3,000 cfs of Lake Okeechobee releases from the Miami Canal to the EAA A-2 Reservoir (being designed by the U.S Army Corps of Engineers) and to treat 650 cfs of flow from the reservoir in a new EAA A-2 Stormwater Treatment Area (STA). The project included 6,500 acres of constructed wetland treatment area in three parallel flow-through treatment cells, approximately 23 miles of canal and associated levees, 3 pumping stations, 2 large roller-gate spillway structures, 11 gated STA inflow/outflow structures, and a 330-foot long, triple barrel, 10' x 10' box culvert discharge structure to carry treated water From the A-2 STA under the existing STA 3/4 Inflow Canal for conveyance south to the Central Everglades, Everglades National Park and Florida Bay. Work included topographic mapping of the entire 7,000-acre site, geotechnical site investigations, comprehensive surface and ground water modeling to optimize internal hydraulics and to minimize off-site seepage impacts, permitting support, and cost estimating. Two separate sets of contract documents were developed for bidding and award, one for approximately 4.5 miles of inflow/outflow canal to convey up to 3,000 cfs of flow from the Miami Canal to the EAA A-2 Reservoir and a second for construction of the EAA A-2 STA and associated infrastructure. The combined bid price for the two projects was $188 million. Project design was begun in June 2019 and was completed in December 2020, approximately 18 months from Notice to Proceed. Construction is scheduled to be completed by December 2023.

COMPANY:
BC

EDUCATION/TRAINING:
BS, Civil Engineering, Military School of Engineering AJS La Paz, Bolivia

LICENSES/ CERTIFICATIONS:
Professional Engineer, Florida

RELEVANT EXPERIENCE:
- **Water/Wastewater/ Reuse Systems**
- **Drinking Water**
- **Pumping Systems**

PERCENTAGE OF TIME TO BE ASSIGNED FULL TIME TO THIS PROJECT

60% total availability

EXPERIENCE BY THE NUMBERS

45+
years of experience

6
years with firm

Jim Nissen, PE // QA/QC Value Engineering

Headworks Improvement Project, Springtree Wastewater Treatment Plant, City of Sunrise, Florida

Project Manager. Planning, permitting and design of improvements to the Headworks Structure at the 10-mgd Springtree WWTP. Improvements included new flow metering, influent screening, grit removal and odor control equipment; associated electrical and I/C upgrades; recoating of interior concrete surfaces in the Headworks Structure; addition of a Headworks overflow structure; and modification of plant influent piping to allow for complete bypassing of the Headworks Structure, if needed. Project included a Basis of Design Report (BODR), preparation of permit applications to FDEP and City of Sunrise permitting agencies, and preparation of contract bid documents for advertisement by the City.

Biosolids Improvement Project Owner's Representative Services, East Central Regional Wastewater Reclamation Facility (ECRWRF), West Palm Beach, Florida

Project Manager. Planning, permitting and design of improvements to the Headworks Structure at the 10-mgd Springtree WWTP. Improvements included new flow metering, influent screening, grit removal and odor control equipment; associated electrical and I/C upgrades; recoating of interior concrete surfaces in the Headworks Structure; addition of a Headworks overflow structure; and modification of plant influent piping to allow for complete bypassing of the Headworks Structure, if needed. Project included a Basis of Design Report (BODR), preparation of permit applications to FDEP and City of Sunrise permitting agencies, and preparation of contract bid documents for advertisement by the City.

Pumping Station S-5A Refurbishment, Repowering and Automation, South Florida Water Management District, West Palm Beach, Florida

Prpject Manager. Design of improvements for refurbishment, repowering and automation of Pumping Station S-5A, a 4,800-cfs pump station that is critical to the South Florida Water Management District's mission of providing flood control in South Florida. Project included a Pre-Design Technical Evaluation to identify the best alternatives for replacing or refurbishing the six 1600-HP diesel engines, double chain drive speed reduction units, and 116-inch diameter horizontal axial flow pumps at the 50-year old pump station. Based upon this evaluation, a decision was made to refurbish the existing engines, chain drives and pumps rather than replace them. Project also included mechanical, structural, architectural, civil/site, electrical, and instrumentation and control improvements to modernize the pump station and bring it up to current District standards in all areas.

C-51 West Basin Investigations, South Florida Water Management District, West Palm Beach, Florida

Project Manager. Assisted in investigations related to the management of water in the C-51 West Basin, including the L-8 Borrow Canal and the C-18 Canal, for the purpose of improving flood protection and water supply. The project also provided additional environmental enhancements such as restoration of the Loxahatchee Slough, reduction in fresh water lost to tide, and satisfaction of applicable water quality standards for all discharges from the study area. The majority of project components were subsequently integrated into the water resources plan mandated by the Everglades Forever Act. Project components dealing with the southern L-8 and C-19 basins were being implemented by local agencies, in cooperation with the South Florida Water Management District.

C-111 Spreader Canal Project Basis of Design Report, South Florida Water Management District, West Palm Beach, Florida

Technical Reviewer. Planning, conceptual design and preparation of a Basis of Design Report (BODR) for the C-111 Spreader Canal Project as part of the South Florida Water Management District's Acceler8 Program. The project was part of the District's efforts to reduce the quantity of fresh water discharged to Florida Bay at the mouth of the C-111 Canal by diverting it into a spreader canal running eastward toward U.S. 1 to hydrate wetlands. The work involved developing conceptual designs for various spreader canal concepts as well as a multi-compartment storage reservoir to act as a flow equalization basin.

Basin 3A/3B Stormwater Management Basis of Design Report and Preliminary Design, South Florida Water Management District, West Palm Beach, Florida

Task Manager and Technical Reviewer. Planning and preliminary design for conveyance of stormwater in Basin 3A/3B in Broward County as part of the South Florida Water Management District's Acceler8 Program. Work involved collection and routing of stormwater to new storage and treatment sites, including location and modeling of new canals and control structures. A Basis of Design Report (BODR) was prepared documenting the recommended improvements, which included conceptual design for closure/remediation of an old landfill and Broward County Sheriff's Department shooting range. In addition to canal improvements, preliminary design included a new stormwater pumping station to protect the Holly Lakes Subdivision.

Stephen H. Gibbs, P.S.M.
Project Surveyor

Education:
Associate Degree in Architectural Design, Greenville, S.C. - 1973

Registration:
Professional Surveyor and Mapper No. LS4054
State of Florida, 1988

Professional Surveyor No. L3700
State of North Carolina 1994

Areas of Expertise:
Survey-Grade GPS
High Precision Control
Subdivision Surveying
Boundary & Topographic Surveying

Years Total: 35

Professional References:

1. Richard D. Pryce P.S.M. 954-739-6400

2. Robert Wertz, P.E. 954-921-3900

3. Chuck Buckalew, P.E. 954-558-2289

Mr. Gibbs has over 35 years of experience in the field of Land Surveying, including boundary and topographic surveying, subdivision construction layout, survey project management, field and office team management. He has acquired most of his experience in Broward County and has 35 years experience in the Hollywood area. Having a command of current technologies, he is well qualified in the use of survey-grade GPS, Digital Data Collection and Autocad Automated Drafting.

Relevant Experience:

City of Hollywood – Project Surveyor for various municipal And special projects – providing to the City and esign/civil engineers survey data, (topographic and as-built formats) for water and sewer infrastructure and treatment plants. Providing to the City, as needed, Specific Purpose Surveys in various forms: As-built and Topographic Surveys of streets and alleys for utility and drainage improvements. (Currently providing horizontal and vertical as-built survey data for the Hollywood Beach Beautification Project.) Specific Purpose Surveys for beach improvements, meeting the requirements of Florida Department of Environmental Protection, prepared as Coastal Construction Line Surveys or Mean High Water Line surveys, utilizing topographic and hydrographic survey disciplines.

City of Hallandale Beach – Project Surveyor for various municipal and special projects – providing to the City and design/civil engineers survey data, (topographic and as-built formats) for water and sewer infrastructure and treatment plants. Providing to the City, as needed, Specific Purpose Surveys in various forms: As-built and Topographic Surveys of streets and alleys for utility and drainage improvements. Prepared the City of Hallandale Beach G.I.S. map of the entire city as well as monumenting and establishing boundaries of the entire city for aerial photography.

STEPHEN K. SEELEY

PRESIDENT
GIBBS LAND SURVEYORS

EDUCATION

University of Miami
B.A., 1974

REGISTRATION

Professional Surveyor & Mapper
Florida License No. LS4574

YEARS OF EXPERIENCE

45

YEARS WITH GLS

15

VITALS

2131 Hollywood Blvd. Suite 204
Hollywood, FL 33020

T 954-923-7666

E sseeley@gibbslandsurveyors.com

STEPHEN K. SEELEY

PRESIDENT, GIBBS LAND SURVEYORS

BENEFITS TO THE CITY

- Mr. Seeley has over 40 years' experience as a Land Surveyor in Florida
- His 30-year-old company is the "go-to" Land Survey Service for historic records.
- Chosen #1 for the City of Hollywood

EXPERIENCE

- CITY OF HOLLYWOOD
- BOGGS FIELD
- DAVID PARK
- STAN GOLDMAN PARK
- ROTARY PARK
- YOUNG CIRCLE
- CITY OF HALLANDALE BEACH
- SOUTH BEACH PARK
- BF JAMES PARK
- OB JOHNSON PARK
- SCAVO PARK
- GOLDEN ISLES PARK & TENNIS CLUB
- CITY OF MIAMI LAKES
- MIAMI LAKES DOG PARK
- MIAMI LAKES OPTIMIST PARK

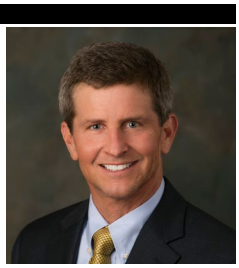
PROFESSIONAL AFFILIATIONS

- Member of The Greater Hollywood Chamber of Commerce
- Member of The Florida Surveying and Mapping Society

RESUME

JAMES L. ANDERSEN, P.G.

Principal Hydrogeologist, JLA Geosciences, Inc.



QUALIFICATIONS AND EXPERIENCE

President of JLA Geosciences, Inc., Jupiter, Florida and is responsible for company operations, project management, technical oversight, well design and construction phase services team leader. Mr. Andersen has over 30 years working experience in hydrogeology, groundwater water resource investigations, well field design, construction, development, well problem evaluations and well rehabilitation. He has been responsible for the construction of and completion of over 60 Upper Floridan aquifer supply wells and over 140 surficial aquifer wells since 1985. He has an extensive background in the state of Florida, working with coastal plain aquifer systems; well design; groundwater monitoring, geophysical well logging and interpretation; reverse osmosis (RO) raw water supply investigations and RO concentrate disposal by injection well; aquifer performance testing, analysis and computer modeling; wellfield contamination investigations, collection and analysis of water quality data; rehabilitation of old wells, and supervising various types of drilling. Mr. Andersen has served as a short course instructor at the biannual environmental permitting school given by the Florida Chamber of Commerce, has been an invited speaker at a Florida Department of Environmental Protection Workshop on contamination cleanup, an AWRA conference speaker on Aquifer Storage and Recovery, and a well design, permitting and well construction speaker for the Southeastern Desalting Association and American Membrane Technology Association.

SELECTED PROJECT EXPERIENCE

Principal Hydrogeologist, Private Client, Miami Hydrogeologic Consulting Services (2021-ongoing) Project scope includes the investigation and delineation (horizontal and vertical) of brackish water observed in the Biscayne Aquifer, completion of a Site Assessment Report (SAR), and turnkey design and construction of up to eleven (11) monitor wells.

Principal Hydrogeologist, PBCWUD, Green Cay Phase II (2021-ongoing) Project includes services for design bid build of PBCWUD Green Cay Phase II Project including Surficial Aquifer System (SAS) groundwater flow model updates; groundwater flow model simulations to support design; permitting assistance; and technical specifications for well design.

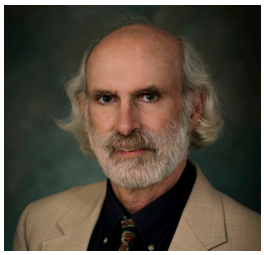
Principal Hydrogeologist, PBCWUD, Integrated Master Plan (2020-ongoing) Project included assistance with raw water master plan evaluation including AWIA risk and resiliency assessments, raw water planning considerations for WTPs 2, 3, 8, 9 and 11, associated three-dimensional variable-density groundwater flow and transport (SEAWAT) modeling, and raw water supply risks.

Principal Hydrogeologist/Project Hydrogeologist, Private Client Upper Floridan Aquifer Wellfield Expansion, Homestead, Dade County, FL(2016-2017) Project design, construction and testing of four (4) new 2,000 gpm, 20-inch diameter FRP Upper Floridan aquifer wells.

RESUME

PAUL M. STOUT, PH.D, P.G.

Principal Hydrogeologist, JLA Geosciences, Inc.



QUALIFICATIONS AND EXPERIENCE

Dr. Stout has more than 30 years professional experience in the general areas of: water resource evaluation; soil, surface water, and groundwater investigations; and groundwater flow and geochemical modeling. His work experiences have involved positions in teaching, research, government, and technical consulting. Projects in Florida have concentrated on water resource development and water use permitting issues, primarily associated with the largest municipal public water suppliers and other large water users of the Floridan and Surficial Aquifers. Work on these projects has involved groundwater modeling, aquifer performance testing, wellfield design and well construction. Dr. Stout has provided expert witness testimony and support for projects involving landfills, former manufactured gas plants, and water use permitting issues. While employed in academia, he received funding from state and federal agencies such as the US Environmental Protection Agency and the National Science Foundation to conduct research in the areas of hydrogeology and geochemistry. He also served as director of a state-certified analytical laboratory in Florida specializing in the chemical analysis of drinking water and environmental soil and water samples.

SELECTED KEY EXPERIENCE

- Senior Hydrogeologist – Provided City of Pompano Beach with hydrogeologic services for wellfield testing of their existing western wellfield and groundwater modeling modifications and updates and recalibration of the existing groundwater model to simulate the City's Eastern and Western wellfield in response to proposed new well locations and individual well pumping scenarios.
- Senior Hydrogeologist – Provided hydrogeologic consulting services to City of Delray Beach for groundwater model simulations and impact evaluations to support modifications of the City's existing SFWMD consumptive use permit.
- Senior Hydrogeologist – Assist City of West Palm Beach in groundwater modeling and permit renewal to Evaluate Long-Term Water Supplies. Modified existing WPB MODFLOW Model including creating numerous scenarios followed by simulations assuming extreme drought rainfall conditions and development and application of WEAP modeling. Obtained 20-year permit renewal
- Senior Hydrogeologist – Assist the City of Lake Worth to evaluate the influence of future sea level rise on groundwater conditions through calibrated SEAWAT modeling of past, present, and future withdrawals from the City and ELUs and through the evaluation of technical literature.
- Senior Hydrogeologist – Assist Palm Beach County Water Utilities Department in evaluating climate change and sea level rise issues relevant to the County's water supply.

Project Related Experience

McNabb Hydrogeologic Consulting, Inc., Jupiter, Florida - (February 2008-present)
Project Geologist/Project Manager- Provide hydrogeologic consulting services with emphasis on deep injection well design, permitting, construction resident observation, and mechanical integrity testing services.

City of Hollywood SRWWTP Injection Well System – Provided construction oversight services for construction of 2 deep injection wells and 1 dual-zone monitor well. The injection wells were drilled to a depth of 3,500 feet, completed with 36-inch diameter final casing, 24-inch FRP liner and each well has a capacity of 19.92 mgd.

Florida Power & Light Okeechobee Clean Energy Center Injection Well System – Provided construction oversight services for construction of 2 deep injection wells and 1 dual-zone monitor well. The injection wells were drilled to a depth of 3,200 feet and each have a capacity of 9.6 mgd.

Florida Power & Light Turkey Point Injection Well System – Provided construction oversight services for construction of a 3,230-foot deep injection well and associated dual-zone monitor well. The injection well has a permitted disposal capacity of 18.65 mgd.

Florida Power & Light West County Energy Center Injection Well System – Provided construction oversight services for the construction of Class I deep injection well IW-1, IW-2 and dual-zone monitor well DZMW-1. The wells were constructed to a total depth of 3,250 feet, with a 20-inch diameter final casing and 16-inch diameter FRP injection liner.

Okeechobee Utility Authority Cemetery Road WWTP Class I Deep Injection Well System – Provided construction oversight services for construction of a 3,200-foot Class I deep injection well and associated dual-zone monitor well at the Cemetery Road Wastewater Treatment Plant.

Martin County Utilities North W/WWTP Dual-Zone Monitor Well – Provided construction oversight services for construction of one 2,300-foot deep dual-zone monitor well associated with the Class I deep injection well system at the County's North Water and Wastewater Treatment Plant. The project also included the oversight of the plugging and abandonment of the original dual-zone monitor well.

City of West Palm Beach East Central Regional WRF Dual-Zone Monitor Wells – Provided construction oversight services for construction of three 2,300-foot deep dual-zone monitor wells associated with the Class I deep injection well system at the East Central Water Reclamation Facility. The project included the plugging and abandonment of three monitoring tubes that were no longer in service.

Palm Beach County Water Utilities Western Region WWTP Deep Injection Well Rehabilitation – Provided resident observation and consulting services for well rehabilitation of a Class I deep well at the County's Western Region WWTP. The project included chlorinating, acidization and development of the injection well and injectivity testing.

City of Port St. Lucie Northport WWTP Deep Injection Well MIT – Provided field services for mechanical integrity testing of a Class I deep injection well at the City's Northport Wastewater Treatment Plant.

ARCADIS, Inc. (1999 – 2008)
Hydrogeologist
Staff hydrogeologist focused primarily on deep injection well and Floridan production well design, permitting and construction management. Responsibilities included design of deep injection and water supply wells, preparation of Florida Department of Environmental Protection (FDEP) injection well and Water Management District production well permit applications, responses to requests for information, development and interpretation of deep injection well and production well construction and testing programs, preparation of construction contract documents and management of well construction contracts. Other responsibilities included providing resident observation services during well construction and testing, and preparation of well construction completion reports.

Education
1999, B.S. Geology, University of Tennessee at Knoxville

David McNabb, P.G.

McNabb Hydrogeologic Consulting, Inc.

Project Related Experience

McNabb Hydrogeologic Consulting, Inc. (2006-present)
President/Senior Hydrogeologist- Provide hydrogeologic consulting services exclusively for deep injection well systems design, permitting, testing and construction administration services.

City of Hollywood Southern Regional WWTP Deep Injection Wells Design and Permitting – Provided design, permitting and construction administration services for the deep injection well system at the City's Southern Regional WWTP. The design includes two 3,500-foot-deep Class I deep injection wells with a 36-inch diameter final casing and 24-inch diameter FRP injection tubing. Each injection well has an injection capacity of 19.92 million gallons per day.

Martin County Utilities North W/WWTF Dual-Zone Monitor Well – Provided design, permitting and construction administration services for construction of one 2,229-foot deep dual-zone monitor well associated with the Class I deep injection well at the North Water/Wastewater Treatment Facility. The project included the plugging and abandonment of two monitoring tubes that are no longer in service.

Fort Pierce Utilities Authority Water Treatment Facility Industrial Deep Injection Well IW-2 – Provided consulting services for design and permitting of Class I Industrial deep injection well IW-2 at the Authority's Water Treatment Facility.

Port St. Lucie Injection Well Systems – Provided regulatory compliance assistance for each of the City's deep injection well systems. Services provided included operating permit renewals and mechanical integrity testing of the City injection well systems. Additional services included plugging and abandonment of the Northport WWTP injection well system, acidization of the Glades WWTP injection well, and repair of the JEA WTP injection well.

Florida Power & Light Okeechobee Clean Energy Center Deep Injection Well System – Provided design, permitting, construction administration and reporting services for the deep injection well system at the FPL Okeechobee Clean Energy Center. The system consists of two Class I deep injection wells constructed to a depth of 3,200 feet and a dual zone monitor well. The wells were completed with a 24-inch diameter final casing and 18-inch diameter FRP injection tubing.

LBFH, Inc. (2003 – 2006)
Hydrogeology Manager
Hydrogeology manager focused primarily on deep injection well, Aquifer Storage and Recovery (ASR) well, and production well design, permitting and construction management projects. Duties included groundwater-related project business development and project management for deep injection well projects.

Arcadis, Inc. (2002 – 2003)
Deep Injection Well Services Program Manager
Served as the firm's program manager for deep injection well design, permitting, and construction oversight projects. Duties included project business development for deep injection well projects.

CH2M HILL, Inc. (1995 – 2002)
Project Manager and Hydrogeologist
Was responsible for managing projects involving siting, design, construction oversight, testing, and obtaining permits for deep injection wells and ASR wells.

Florida Department of Environmental Protection, Underground Injection Control (1992-1995)
Professional Geologist
Responsibilities included the review and evaluation of Class I and Class V injection well and ASR well permit applications and proposed well construction and testing plans. Also responsible for reviewing well construction and testing engineering reports, weekly construction progress reports, monthly operating reports, and performing annual inspections of Class I injection well facilities. Interaction with consultants and key utility staff were instrumental in resolving regulatory issues.

Education
1985, B.S. Geology, Indiana University
1991, M.S. Geology, University of Texas at Arlington

METCO Southeast CONSULTING ENGINEERS

EDUCATION

B.S, M.S, PhD. Mechanical Engineering, USA

LICENSES/ REGISTRATIONS

Professional Engineer, Florida, Ohio, Michigan, Pennsylvania.

YEARS OF EXPERIENCE

Total Years – 35 years

Current Firm – 6 years

PERCENTAGE OF TIME

15-20%

LUIS ROSARIO, PE, PHD.

SR. PROJECT ENGINEER (MECHANICAL/HVAC)

Mr. Rosario has over 35 years of experience as a Mechanical Engineer. His experience in bringing projects from design development stage to project completion including heating, ventilation, air conditioning, plumbing and fire protection layout and coordination with architectural, electrical and structural designs.

Relevant Project Experience

Sr. Project Engineer - Deep Injection Wells No. 3 and 4 Pump Station Project No. 18-9119A - City of Hollywood, Broward County

METCO was tasked to develop preliminary design task memorandum and detailed design documents for major HVAC, plumbing and fire protection system associated with two major facilities namely: new Injection Well Electrical Service Center (IWESC) Building and Injection Well Pump Station No.2 (IWPS2) Building. The IWESC is the main switchgear and standby power generation building which also receives power from utility company. This building also has the utility metering and automatic throw-over switch (ATO) vault that will be owned, operated and maintained by FPL. The IWPS2 is the pump station that has the medium voltage variable speed controllers and associated switchgear for the operation of the injection well pumps. The electrical system for the new Injection Well Pump Station and related facility will require new dual 13.2 kV primary service from FPL and standalone standby power generation system to match the design principles of the existing Plant and the electrical design requirements as mandated by EPA for such facility. Due to relatively high horsepower rating of the pump motors at 1250HP, the IWESC and the IWPS2 buildings are large to house all the electrical and mechanical equipment required for the current and future pump operations. His responsibilities include providing basic design parameters such as equipment sizing, building mechanical parameters, and process performance requirements for these two buildings.

Sr. Project Engineer-Broward County Water and Wastewater Services NRWWTP Facility Improvements Phase II Effluent

Inspections about progress on installation of HVAC Chilled Water system for the Injection Well Pump HVAC Improvements located in Broward County Water/Wastewater Plant. Verify all systems are being installed properly and according to permit drawings and specifications. Prepared technical reports on shop drawings submittals.

Sr. Project Engineer - Broward County Reclaimed Water Plant Expansion - Engineer of Record responsible for providing Engineering Services to design and develop construction documents for Heating, Ventilation and Air Conditioning and Plumbing systems for a new filter compressor building and a new concrete building to house new electrical transformer associated with this expansion. Reviewed final documents and drawings on HVAC and Plumbing systems, signed and sealed final permit set. Review and respond to City/Owner comments. Signed and sealed revised set.

METCO Southeast CONSULTING ENGINEERS

SATYA VANGALA, PE

SR. PROJECT ENGINEER (ELECTRICAL)

Satya Vangala has over 8 years of experience in electrical engineering experience in design, construction assistance of Electrical, Power Systems, Control and Process Instrumentation Systems for Water and Wastewater pumping and treatment plant facilities.

EDUCATION

B.Tech., 2012, Electrical and Electronics Engineering, JNT University, Hyderabad, India

M.S., 2014, Electrical Engineering, University of Toledo at Toledo, Ohio

LICENSES/ REGISTRATIONS

Professional Engineer, Florida, Michigan

YEARS OF EXPERIENCE

Total Years – 8 years

Current Firm – 8 years

PERCENTAGE OF TIME

15-20%

Relevant Project Experience

Sr. Project Engineer – Engineering Services During Construction for Broward County North Regional Wastewater Treatment Plant Fine Bubble Aeration Project

Provided Engineering Services during Construction for the electrical improvements at the Broward County North Regional Wastewater Treatment Plant - Fine Bubble Aeration Project. In the existing electrical distribution system, the existing Electrical Distribution building feeds (Thru 4160V Switchgear) existing Module A/B Transformer (4160V-480/277V) Building and Module C (4160V-480/277V) Electrical Building feeding D &E Aeration Blowers. Primary objective of this task is to build a New Module A/B Electrical Room with Medium Voltage Soft Starters (4160V) to feed Module A/B Blowers along with upgrades to A &B Aeration Basins. This task also includes upgrades to Load Centers (Sub stations) that will be powered from new Mod A/B Electrical Building at 480/277V level. The improvements were designed to facilitate the upgrades for Broward County NRWWTP A, B, D&E Aeration Blowers by removing the existing mechanical surface aerators and replacement with a fine bubble diffused membrane aeration system. This Project is currently under 2nd phase of Construction (Module D/E Aeration Blowers).

Sr. Project Engineer – Engineering Services During Construction for Broward County Master Pump Station 454 & 221

Provided Engineering Services during Construction for the electrical improvements at the Broward County Master Pump Stations 454 &221. The project includes upgrades to existing Electrical Distribution system as well as provision of a standby 350KW, 480V, 60HZ, Diesel generator along with Day tank, associated Manual and Automatic Transfer Switches to achieve redundancy and reliability of the Electrical system for the 150HP, 480V Rated Pumps and 40HP,480V Rated Jockey Pumps along with the House service loads such as HVAC, Lighting, Instruments etc., Construction for both Projects are Completed.

Sr. Project Engineer - Design Services for Alexander Orr Jr Water Treatment Plant – Southwest Wellfield Electrical Improvements for Raw Water Well

Provided design services for the electrical distribution improvements at the Alexander Orr Water Treatment Plant - Southwest Wellfield. In the existing electrical distribution system, the wells are divided into two (2) groups. A 225-kVA transformer at each Well House steps down the voltage from 4160-volts to 480- volts to supply the motor and other miscellaneous loads. In normal operating conditions, both feeders supplying the West group are energized.

Stephen Mrachek, PE
Senior Project Engineering

FORMAL EDUCATION:
University of Florida, Gainesville, Bachelor of Science, Civil Engineering

PROFESSIONAL REGISTRATIONS:
Professional Engineer

State of Florida #70784

Qualified Stormwater Management Inspector #36236

USACE Quality Management for Contractors Certification

10 Hour OSHA Construction Safety and Health

PROFESSIONAL EXPERIENCE:

Mr. Mrachek joined the team in February 2017 and serves as a Project Manager/Engineer. His responsibilities include preliminary site studies, geotechnical explorations to determine site preparation, feasibility studies for land development, foundation design analysis and recommendations, workload analysis, observation of piling installations, pile load tests, classification of in-situ soils and field/laboratory materials testing. Mr. Mrachek's experience includes construction layout, prepare surveys and as-builts for approval from clients, contractors and the county, collection of field data, layout of structures, buildings and roads and ensuring quality of work being performed in the field by maintaining correspondence between the office and the contractor.

Mr. Mrachek has 18 years of experience in the field of geotechnical engineering and construction management throughout Florida via previous employers. Project experience includes deep foundation, major earthwork, roadway and high-rise construction projects.

PROJECT EXPERIENCE:

- City of Dania Beach (c/o consultants), projects include but are not limited to:
  - Dania Beach Watermain Replacement
  - SW 43rd Terrace Stormwater Improvements
- City of Hollywood:
  - Proposed installation of ~64,000 lf of water main in the boundary areas of Johnson Street to Hollywood Boulevard and North 60th Avenue and North 53rd Avenue
  - Proposed Installation of ~60,000 lf of water main and sewer replacement in the boundary areas of Hollywood Boulevard, north of Pembroke Road, west of South Federal Highway and east of South Dixie
- School Board of Broward County, Qualification Based Contract, hundreds of projects including:
  - Falcon Cove Middle School, Weston: Relocation of the existing bus loop and the construction of a new three-story, ~60,000 square foot classroom building
  - Cypress Bay High School, Weston: Proposed three story 80,000 square foot classroom building with covered open space
  - Beacon ITV School/TV Station, Davie: New generator
  - SBBC International Welcome Center, Pines Lakes Elementary School Campus: Parking lot addition
- Mills Pond Improvements, Fort Lauderdale: Improvements include the construction of new soccer and lacrosse fields, parking areas, associated light standards, and a 4-foot high retaining wall

Richard C. Wohlfarth, PE
Principal/ Director of Engineering

FORMAL EDUCATION:
University of Florida,

Gainesville, Bachelor of Science, Civil Engineering

PROFESSIONAL REGISTRATIONS:
Registered Engineer- State of Florida #50858

Registered Building Inspector- State of Florida BN #3580

SBCCI #6528

ACI Level 1 #991175

UBCI

PROFESSIONAL AFFILIATIONS:
Florida Engineering Society *Past Chapter President

National Society of Professional Engineers

Deep Foundation Institute

American Society of Civil Engineers

Building Officials Association of Florida

International Code Council

PROFESSIONAL EXPERIENCE:

Mr. Wohlfarth, P.E. is the Director of the Engineering Department which includes ~50 professional and technical personnel. He also has overall responsibility for the Special Inspection, Construction Materials Testing and Geotechnical Engineering Divisions where he directs training, quality system review and personnel evaluations. His responsibilities include report review, signing and sealing geotechnical engineering, structural inspection and laboratory testing reports for the company, providing contract negotiation and administration, budget estimating and project management.

Mr. Wohlfarth has 35 years of experience (29 with NEF) in various aspects of geotechnical engineering which include determining feasibility of site development, foundation design analysis and recommendations, providing engineering evaluation for bridge and roadway construction, pavement design for roadways, roadway subgrade stabilization by geotextiles and other means, design of shoring systems for utility trenches and other deep excavations, dewatering methodology, backfill procedures, setting up and monitoring pile load tests, and providing value engineering for foundations.

Mr. Wohlfarth has been directly involved for twenty-eight years in our existing qualification-based contract with Broward County Board of Commissioners.

Mr. Wohlfarth is also the signatory authority for NEF personnel relevant to the Miami International Airport which has one of the highest level security badging processes and requirements in the Nation. Mr. Wohlfarth undergoes yearly review and attends yearly required meetings to maintain this status.

PROJECT EXPERIENCE:

- Various projects for the City of Dania Beach (c/o consultants), projects include but are not limited to:
  - Dania Beach Ocean Park
  - City of Dania Beach Nanofiltration Water Treatment Plant
  - City of Dania Beach Transmission Main Improvements
  - City of Dania Beach Waste Water Treatment Plant
- Various projects for the City of Sunrise (c/o consultants), projects include but are not limited to:
  - NW 44th St Bikeway, between Pine Island Road and Hiatus Road
  - Flamingo Park Improvements
  - Fire Station No. 92
  - Sunrise Public Safety Building Addition
  - Sawgrass Wastewater Treatment Plant
  - Springtree Water Treatment Plant

Audra McCafferty, P.E., ENV SP, LEED AP BD+C
President

McCafferty Brinson consulting

Experience Highlights
Ms. McCafferty has more than 30 years of experience in general environmental consulting and is co-founder of McCafferty Brinson Consulting, LLC.

Specialties include water and wastewater facilities design, environmental related projects, regulatory compliance strategies, permitting, cost estimating and scheduling.

Education
B.S. – Environmental Engineering, University of Florida, 1991

Professional Registration
State of Florida
Professional Engineer No. 54737

Professional Certifications
ENV SP-ISI Envision Sustainability Professional

LEED BD+C Accredited Professional

Professional Society Memberships
Institute for Sustainable Infrastructure Member

Southeast Florida Utility Council (SEFLUC)

SRF Funds Allocated
$30 million

Professional Experience

Ms. McCafferty is an environmental engineer with over thirty years of experience. Ms. McCafferty has a major role in the day-to-day operation of the company while maintaining her technical role as Project Manager and Principal Engineer. Her experience includes environmental consulting, environmental and utility permitting, regulatory compliance, grant and loan funding procurement, environmental assessments, and water, wastewater, and reuse facility design.

Ms. McCafferty has a broad range of professional experience, including work execution in the Principal Engineer role, project management and project delivery, including cost estimating, scheduling, senior technical review, quality assurance/quality control (QA/QC) management, staffing/resource management, and business development. The following are some representative technical projects in which Ms. McCafferty has been involved.

Project Experience

Project Manager, Clean Water State Revolving Fund Program, City of Pompano Beach. The project provides professional engineering assistance to prepare and submit documentation to the State of Florida to procure loan funding for select projects and for assistance in complying with SRF funding requirements during construction. The City applied for and received funding assistance on eight construction phase stormwater projects, three design phase stormwater projects, and one construction phase sewer project. The City intends to seek funding for one additional construction phase stormwater project in accordance with the City's current Capital Improvement Plan.

Project Manager, Drinking Water State Revolving Fund Program, City of Pompano Beach. The project provides professional engineering assistance to prepare and submit documentation to the State of Florida to procure loan funding and for assistance in complying with SRF funding requirements during construction. The City has requested and received funding for one drinking water project included in the City's 2018-2022 Capital Improvement Plan.

Water System Interconnect Upgrades Design and Construction, SRF Funding and, Services During Construction, Pompano Beach. This project included the upgrade of four potable water system interconnects within the City's service area. Ms. McCafferty served as Project Manager and procured SRF funding for the construction phase of the project and provided SRF compliance services during construction. The project received grant funding in the form of partial loan forgiveness from the DWSRF program. Additional grant funding for this project was received FDEP appropriations program under Ms. McCafferty's oversight.

Senior Engineer, Broward County North Regional Wastewater Treatment Plant Upgrade, Broward County. Permitting and design services for the reclaimed water treatment plant expansion including filter feed pumping, filters, chlorine contact basins, distribution pumping, chemical storage and feed systems. Ms. McCafferty facilitated permitting efforts on the state and local levels associated with the additional reclaimed water treatment capacity.

Frank Brinson, P.E., CDT
Vice President

McCafferty Brinson consulting

Experience Highlights
Mr. Brinson has more than 30 years of experience in a wide range of environmental engineering projects.

Specialties include water and wastewater treatment facilities, membrane treatment, pumping and hydraulic systems, and utility infrastructure.

Education
B.S. – Environmental Engineering, University of Florida, 1991

Professional Registration
State of Florida
Professional Engineer
License No. 51313

State of Texas - Professional Environmental Engineer
License No. 145102

Professional Certifications
CDT - Construction Document Technologist, Construction Specifications Institute

Professional Experience

Mr. Brinson is an environmental engineer with over thirty years of experience. He is experienced in both management and execution of projects with expertise in engineering analysis, modeling, utility master planning, design, permitting, preparation of bidding and construction documents, construction contract administration, and construction management. Specialties include water and wastewater treatment facilities, membrane treatment systems, pumping and hydraulic systems, and utility infrastructure. The following are some representative projects in which Mr. Brinson has been involved.

Project Experience

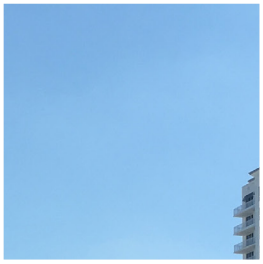
Project Manager / Engineer of Record, Membrane Element Replacement Pompano Beach. This project included the replacement of the 1,820 nanofiltration (NF) membrane elements in the 10 million gallon per day (mgd) capacity NF process at the City's water treatment plant. Pilot testing of membrane element selections from membrane element manufactures for prequalification for bidding and to optimize the chemical pretreatment protocol. Mr. Brinson was responsible for the design, technical specifications, permitting and installation, he also oversaw, start-up, analysis of membrane element performance for a full-scale pilot unit and provided services during membrane element replacement by administrating the construction contract, coordinating membrane loading and start-up, and reviewing performance testing results. This project reached final completion in May 2020.

Project Manager / Engineer of Record, Glades Road Water Treatment Plant, 40 mgd Nanofiltration (NF) Membrane Element Replacement, City of Boca Raton, Florida. After commissioning of the new Membrane Softening Process Addition to the Glades Road Water Treatment Plant (see below), the City operated the process successfully (with no chemical pretreatment) for approximately nine years. In 2014, the City elected to proceed with a scheduled replacement of the membrane elements for the NF process and hired McCafferty Brinson Consulting, LLC to assist with the project. The project included pilot testing, development of technical specifications and bidding documents for the replacement membrane elements as well as the membrane loading contract, permitting, engineering services during membrane loading, and engineering supervision of membrane performance testing. Mr. Brinson served as project manager during both the design- and replacement-phases of the project. The project was completed in July 2015.

Project Manager / Engineer of Record, Glades Road Water Treatment Plant, 40 mgd Membrane Softening Process Addition, City of Boca Raton, Florida. This project included design and construction administration for a 40 mgd membrane softening process addition to the City's 70 mgd conventional lime softening plant. Mr. Brinson was engineer of record and was involved in engineering planning, preliminary and final design, permitting, financing, bidding, construction administration, electronic operation and maintenance manual preparation, operator training, and start-up of the facility. Bids for the project were received on May 16, 2001, and the low bid ($47.2 million) was approximately 10 percent below the original engineer's estimate. The plant was brought online in August of 2004. This project included raw water source evaluation and rehabilitation, evaluating pre- and post-treatment technologies, membrane pilot testing, preparation of construction documents for competitive bidding, and construction management.

Approach to Scope of Work

TAB E



Brown AND Caldwell

Approach to Scope of Workload

Effective Project Management is a time-tested repeatable process for weaving together all the key ingredients that are essential to a successful project outcome.

The utility operating environment is a dynamic and complex interaction of physical assets, operating staff, performance enabling systems/protocols and changing external influencing factors. A well planned and executed project that meets or exceeds your expectations must apply consistent and proven management methods with an understanding of the dynamic environment, uncertainties that can impact project success, and the flexibility to adapt to changing conditions. The BC team has consistently proven to Hollywood its ability to competently deliver effective results in wide-ranging situations, examples of which are presented on the following page. Our long-standing presence in the South Florida community delivering impactful results also gives us the credibility with key stakeholders to effectively support the advancement of the City's technical interests.

Our project management function is an essential framework that connects and coordinates the application of appropriately aligned and committed resources to clearly understood needs, to consistently deliver the quality of service and impactful results that you've come to expect. To work as intended, it requires a clear understanding of the City's priorities, leadership that can commit the appropriate resources of the firm, project managers who are not only skilled at their primary responsibilities, but possess a solid grasp of technical nuance, and discipline specialists who have the experience to consistently develop and deliver appropriate solutions to each challenge.

To this end, we have created a multi-disciplined team that is uniquely qualified to take on any assignment under this contract. Our team offers exceptional professional capabilities in the four defined service areas – wastewater treatment plant projects; water supply and treatment projects; infrastructure projects; and quality assurance, quality control and value engineering services. Within these areas, we have committed the necessary resources to meet your expectations for quality while completing assignments on schedule and within budget.

Keys to our consistent success lie in getting the right expertise involved in the project at the very onset and consistently applying our proven project delivery protocols that are managed through our internally-developed WorkSmart System (See page E-5 for more information).

This section includes a narrative of BC's Approach to the Scope of Work and schedule for accomplishing work tasks.

Evaluation Criteria

- ✓ Firm Qualifications & Experience
- ✓ Organization Profile and Team Qualifications
- ✓ Approach to Scope of Work
- ✓ Past Performance & References
- ✓ Ability to Complete Project on Time
- ✓ Value of Past Contract Awards

Our project leadership team offers:

- No learning curve with several decades of Hollywood experience
- Expertise delivering some of the most complex wastewater projects in Florida
- Unparalleled knowledge of Hollywood's most critical water quality and compliance needs
- Nearly 200 years of combined project management experience
- Availability and commitment to the City of Hollywood
- Credibility to be trusted with your most important priorities and the respect of key stakeholders

Proven Partnership. Trusted Solutions.

BC is a Proven Partner to the City of Hollywood

To meet the dynamic needs that may emerge in a general consulting environment, your consultant should truly serve as an extension of your staff with a demonstrated commitment to the best long-term interest of the City of Hollywood. In this capacity, we view your utility from your perspective, but with the additional benefit of a broader portfolio of situations derived from other local and national experiences to be able to help you effectively anticipate and respond to both opportunities and risk.

Simply stated – your general consultant should be flexible and committed. Over the years that Brown and Caldwell and our Leadership Team have served the City, we have proven ourselves to be a Trusted Partner of Hollywood in diverse situations. Examples of situations that reflect the diverse ways in which the Brown and Caldwell team has supported the City of Hollywood as a trusted partner include:

1. BC guided the risk assessment of the City's original FDEP-approved Reuse Compliance Plan, engaged FDEP to negotiate plan modifications, secured challenging permit approvals, and ongoing implementation of the modified plan to mitigate significant risks while realizing an estimated savings of $200 million (2010 cost basis).
2. Identified and facilitated ongoing discussions with prospective utility partners for the City to develop Contracted Reuse agreements that align with the City's compliance obligation. Given our credibility with key agencies and municipalities, BC is often engaged by the City to support dialogue and resolution of wide-ranging technical matters.
3. Providing staff augmentation support with embedded project engineering/management staff in the Utility's Engineering Division.
4. Leveraging 25-year history with the City by providing rapid response to address wide-ranging needs including developing and implementing strategies to enhance drinking water quality, assessment of headworks overflow risk mitigation measures, developing strategies to expedite the replacement of water treatment nanofiltration membranes, and improving the control/management of effluent flows utilized for reclaimed water production, implementing replacement of water mains, and planning the migration of customer service/billing functions.
5. Monitoring and advising on potential impacts of proposed legislation and preparing status updates and clarifications to regulatory agencies (FDEP and SFWMD) and other stakeholders on important compliance initiatives (water supply and wastewater).

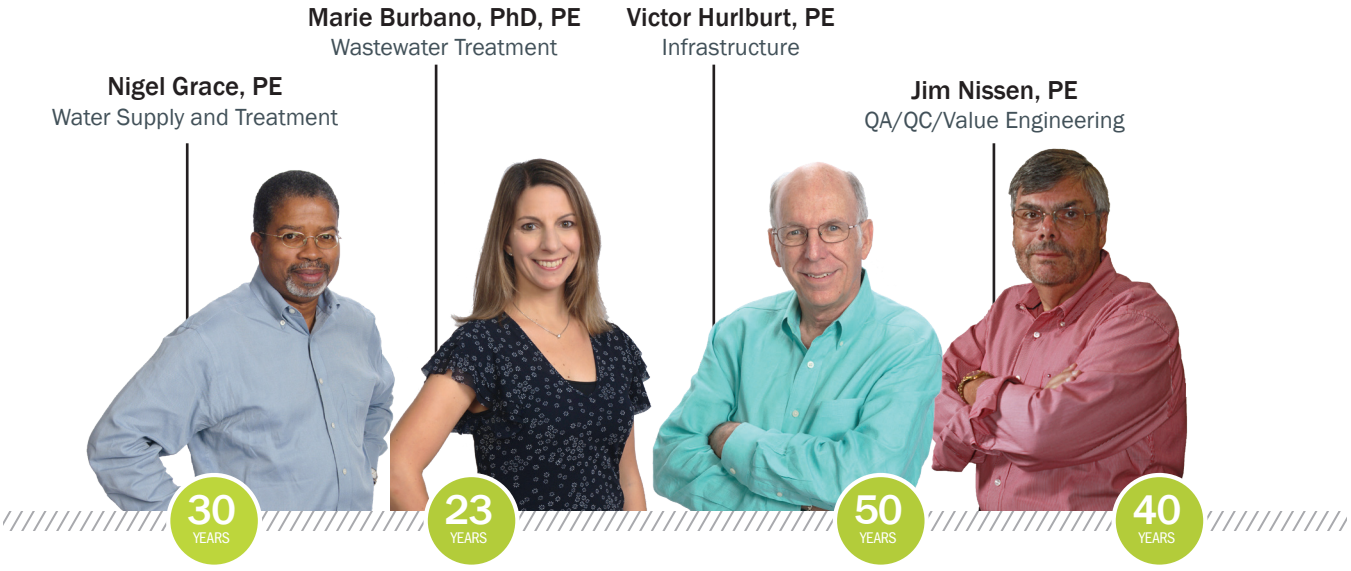
These examples illustrate our range of capabilities and the impactful results delivered to Hollywood as well as the flexible approaches taken to adapt our management and delivery efforts to the specific needs of each assignment.

Project Management and Team Controls

BC considers current and projected future workload when selecting the right team for each work order assignment. You have our commitment that each work order will have the best technical resources to meet your expectations within the agreed-upon schedule.

Delivering on General Engineering Work Order Based Contracts

Professional Services work order based contracts require a broad range of technical experience and capability; availability of staff resources; responsiveness to the client's needs; ability to perform multiple, simultaneous projects; and a "can-do" attitude. The BC team has a local multidisciplinary staff and firm wide resources to handle virtually any size, type, or complexity of assignment. BC has a proven delivery approach to work order contracts that is defined and methodical. This approach has been demonstrated in our successful delivery of projects locally and around the state. Our "listen first" philosophy ensures that each project meets the City's goals and objectives. Delivery begins with our Project Delivery Officer, Nigel Grace, responding to your needs and engaging the applicable project manager and discipline lead. From that point forward, every task under each work order will undergo the same delivery approach. This consistency of approach is extremely beneficial when managing multiple tasks because it adds accountability and is time-tested and proven to deliver effective results. The project managers for the four service areas under this contract are presented below.



Five-Step Work Order Management Approach

BC's work order management approach has been proven on hundreds of successful contracts. It is designed to ease schedule and budget management and build in consistency and accountability. BC will manage through knowledge of the City's priorities and expectations, clear reporting of budget & schedule performance, complete accountability, financial & resource balancing,

1. Listen

BC leadership confirms understanding of project scope, goals, key stakeholders, and critical success factors with the City.

2. Engage

Nigel engages the appropriate Project Manager and discipline lead to commit the optimum delivery team to align with the City's project goals, objectives, and critical success factors.

3. Prepare

Project leadership guides development of scope of services, Project Management Plan, QA/QC Plan, Health & Safety Plan, and Risk Management Plan

4. Execute

BC discipline lead uses WorkSmart to assist in the execution of the project, achieving stakeholder buy-in on critical design decisions and delivery.

5. Closeout

Leadership and team measure and celebrate success. Honest feedback and performance evaluation improve future project delivery.

1. Listen

The first step in our work order management approach is simple: once a new work order is identified, BC will conduct a meeting with the City's team to review work order details to fully understand the assignment before taking action. For example: why was the project created, the purpose, what are the desired results, who are the stakeholders, and what are the expectations of the finished project?

Our leadership team will work with City staff to gain a clear understanding of drivers and desired outcomes, develop a collaborative mission, and reaffirm the critical success factors (CSFs) that are important to the stakeholders.

Development of the work order- specific CSFs at the onset of each work order assignment allows the BC team to work with the City to identify the most pressing issues and concerns— and the City's desired results beyond the scope of work. The CSFs become a part of the preliminary scope statement so that the hand-off to the appropriate project manager and team is seamless. Typically, if we focus our solutions on meeting the CSFs, the project is a success.

2. Engage

Step two involves engaging the right team—from assigning the most fitting project manager, to drawing from the best technical expertise early in the project when it can make the most impact, to collaborating with the right stakeholders throughout the course of the project. Once BC has committed a project team, the team will remain intact for the life of the project. We have found that having a committed team from beginning to end results in all team members having a clear understanding of the objectives and allows BC to deliver the work order assignment in the most cost-effective manner. After initial mobilization, BC will continue to engage all team stakeholders to ensure effective communication and responsiveness through the different phases of the project.

from the scope of client service, project team communications, document sharing and resource allocating, to evaluating risk, managing schedule, and monitoring budget.

After our project team has developed the work plan, BC conducts multiple reviews for consistency, accuracy, and adequacy. We first conduct discipline reviews to garner strong buy-in by key staff that will be leading or working on portions of the work order assignment. Principal-In-Charge, Albert Perez will then check the alignment of the budget with the scope to promote the financial success of the work order assignment. These reviews will happen before presenting the fee estimate to the City.

Completing these reviews is more than just a requirement; it is the way BC proactively keeps focus on your priority, balance resources, and avoids preventable scope creep and change orders.

Implementing World-Class Controls

Once the scope, schedule, and budget are submitted to the City for baseline approval and the work order assignment is authorized, the assignment's selected project manager will complete the launch internal project controls by creating a profile in our project delivery system, WorkSmart. This profile will include critical milestones, work task/staff loaded budgets, quality control accountability measures, communication plan, health and safety plan, risk management controls, and other requirements that are necessary to promote a successful delivery.

3. Prepare

Creating a Rock-Solid Scope, Schedule, and Budget

Our assigned project manager will utilize our internal project management system, called WorkSmart, to access financial and schedule information each week (or daily for small, rapid burn projects) to monitor actual expenditures and progress against what was planned. WorkSmart is based on the Project Management Institute's Project Management Body of Knowledge, and is fully integrated with our company's accounting system. WorkSmart tracks a job—from before the proposal is submitted to the client—through project close-out. This multi-faceted tool integrates everything in one place, from the scope of client service, project team communications, document sharing and resource allocating, to evaluating risk, managing schedule, and monitoring budget.

Proven Partnership. Trusted Solutions.

- Well planned and organized progress meetings with timely follow-up
- Monthly reports that concisely and accurately communicate progress and status
- Accurate monitoring and forecasting of the contract scope, schedule and budget
- Excellent document management and tracking
- Timely and accurate invoices that allow prompt payment

Our WorkSmart platform is the system, used by al our project managers, that ties all the elements of our Project Management program together to yield consistent results that will surpass your expectations.

WorkSmart simplifies, automates and coordinates project financials, schedule, the QA/QC process and invoicing. By integrating planning and tracking tools with relevant project requirements, WorkSmart helps project teams deliver projects on time, on budget and helps apply project management principles consistently across all projects.

BC's WorkSmartTM System Provides Project Controls

BC invested in and implemented a fully-integrated project delivery system called WorkSmart to simplify, automate, and coordinate project financials, schedules, QA/QC processes, and invoicing.

This system serves as a dashboard control tool, allowing our team to run queries and present data to the City of Hollywood on a real-time basis for any task at any time. Accessed via BC's company intranet, WorkSmart is a proprietary project management platform that integrates with our firm's accounting, staffing, and resource scheduling systems. This system is used by all BC project managers to implement the firm's best processes and practices across projects nationwide.

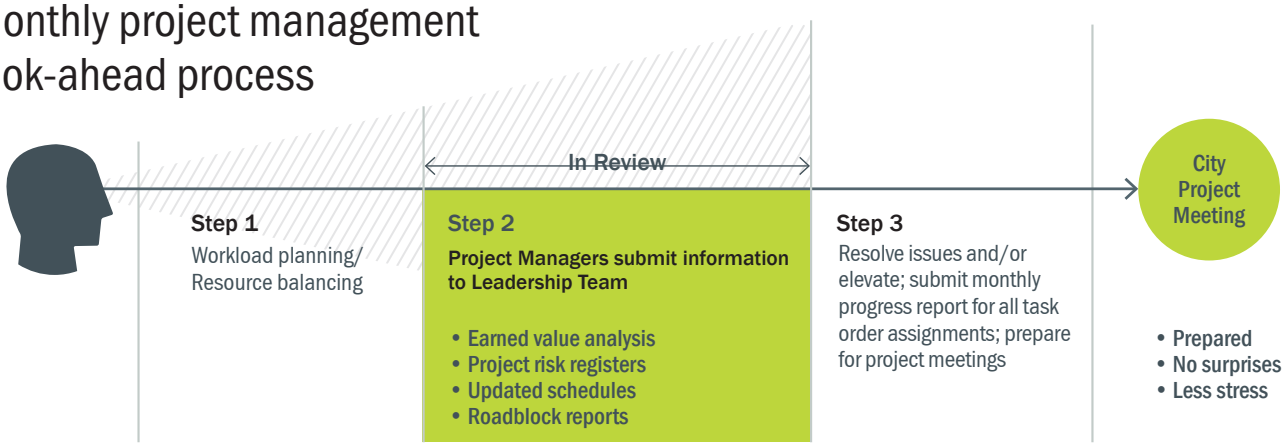
A single gateway through which all project attributes are entered and updated, WorkSmart employs an interactive web-based question and answer tool to identify requirements for independent reviews, QC checks, applicable BC standards, expert involvement, and more. Our project managers use this tool to document each project's characteristics, requirements, and critical success factors.

This system additionally provides a single location for reviewers to coordinate and collaborate with the project manager and team. Quality reviewers and other internal stakeholders have full access to create, submit, and modify new project-specific requirements throughout the life of the project. A notification system keeps the entire team up-to-date on changes and new requirements related to each project, providing an easy means to communication, which ensures a cohesive and successfully delivered project.

BC's integration of planning and tracking tools with relevant project requirements through the WorkSmart platform allows BC project managers to deliver projects on time, within budget, and at a level of quality that exceeds client and industry standards.

4. Execute

Monthly project management look-ahead process



Many collaboration tools, such as our risk register, are used to proactively anticipate and mitigate potential impacts to each project. Risk management discussions are included in meeting and workshops, especially constructability reviews and studies that incorporate significant uncertainties. This standardized approach, a key element of our ability to consistently deliver impactful results, is discussed below.

Overall Contract Administration

Responsible for the management of the overall Continuing Services Contract, Dr. Celia Earle, will lead the ongoing contract administration effort, which includes reporting of budget and schedule performance up to the City and internal financial and resource balancing to confirm that every work order assignment is on track.

Project Management Plan (PMP), Quality Management Plan (QMP), Risk Register (RR), and Health and Safety Plan (HSP)

BC will follow applicable BC procedures to develop a PMP, QMP, RR, and HSP that will facilitate development of successful, quality City projects that proactively anticipates and mitigate surprises before they impact budget and schedule.

Forecasting, Monitoring, and Reporting

Tactics to monitor all concurrent work order assignments and forecast scope, schedule, budget, and risk factors include holding well-run weekly and month-end close meetings with key input by the task managers. This allows our leadership team to proactively anticipate and resolve issues. BC's monthly progress reports will follow the City's outline and include all information needed for monthly reports, including scope, schedule, and budget data.

Accountability

Clear performance expectations will be set to define clear roles and responsibilities, coach task managers on City's priorities, and motivate project teams to accomplish the work. Nigel will keep his finger on the pulse of all work order assignments, keeping each project manager focused and supported with the appropriate resources, and each team moving forward efficiently. Periodic project delivery officer briefings, roadblock reports, and month end close meetings with monthly progress reports are all accountability touch points. He will hold project managers accountable for executing the planning, design, and/ or construction phase work.

Scalability

Our approach is completely scalable and flexible. For example, depending on forecasted work order assignments, Nigel may lead individual work orders on his own. The scalability of our local project team is illustrated by our delivery of small consulting assignments (under $10,000) as well as the design and implementation of large complex projects with construction cost up to $112 Million for the City.

Weekly project delivery officer briefings, roadblock reports, and month-end close meetings with monthly progress reports are all accountability touch points.

5. Closeout

In the closeout phase, the leadership team, project team, and stakeholders will measure and share feedback to improve future project delivery as well as celebrate success. BC believes that proper project closeout will provide information and data for use in future pursuits and projects, allowing all stakeholders to further benefit from a project long after its completion.

Contract and administrative closeout

BC will complete internal closeout procedures including:

- Prepare a complete set of indexed project records for archiving by the appropriate parties
- Archive final project deliverables
- Meet with the project team to capture lessons learned
- Update project-specific or program-wide historical databases
- Notify the accounting department to close the project from all time and expense charges and submit a final invoice

Final project documentation, closeout, and follow-up is initiated 1 to 4 weeks after final project deliverables are submitted.

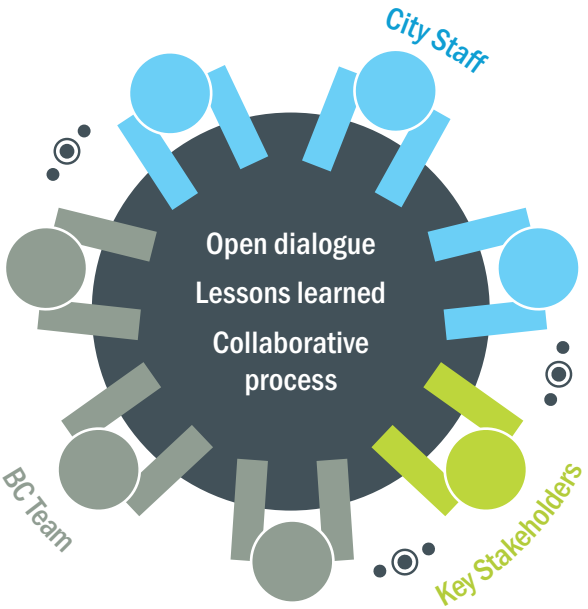
Feedback and knowledge transfer for continual improvement

BC will maximize the value we deliver to the City by holding ourselves accountable and monitoring our own performance. We will share and document lessons learned for all stakeholders so that the close of each assignment brings knowledge gained on proven business practices, technical information, and management tools for continued use on future assignments.

Celebrating success with you

When an assignment has been successfully delivered, our leadership team will identify noteworthy accomplishments to-celebrate with the City to recognize key contributions and recognize the furtherance of the City's goals achieved. Pausing to celebrate success is not only an important activity to refresh and reinvigorate project teams, but it also reinforces direction and helps to build commitment to the City's long-term vision.

The BC team will establish and maintain open communication throughout each project to ensure the City and key stakeholders are well informed.

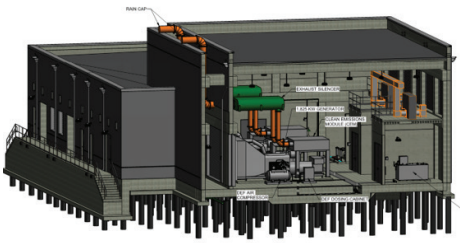


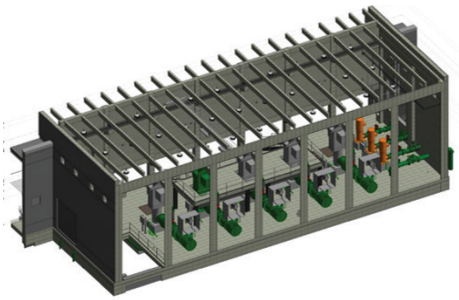
Innovative Concepts to Enhance Value, Quality and Meet Budget/Schedule

Innovation design tools

Our design teams incorporate 3D processes on all projects to help reduce costs, schedules, and risks while enhancing collaboration during the design development. The 3D environment is ideal for facilitating design, review, scheduling, and construction of your projects.

BC uses both 3D computer-aided design (CAD) and building information modeling (BIM) for 3D design. Key benefits of 3D design include cost and schedule savings (e.g., cross- discipline communication, clash detection/ interference checking, reduced requests for information [RFIs] and change orders, value engineering, etc.), better visualization (e.g., virtual facility walkthroughs, analysis of complex designs, etc.) and operations support (e.g., maintenance management system applications). Recent application of our BIM capabilities on the design of the City's proposed injection well pump station highlighted the visualization capabilities that made it possible to conduct productive virtual reviews that engaged all stakeholders at a time when in- person meetings were not allowed.





Delivering Quality

THE ESSENTIALS AT BC

FOCUS
Our practice is exclusively environmental; we keep our business focused on what we know, and do best.

PERSONAL RESPONSIBILITY
BC project managers are personally responsible for the quality of their work and for the success of project teams on which they collaborate.

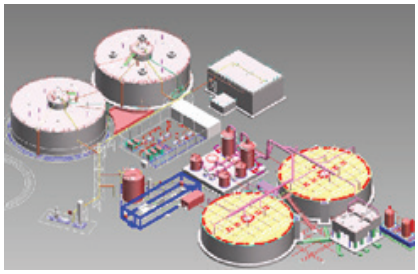
UNDERSTANDING OUR OBLIGATIONS
Quality begins with a clear understanding, and clear statement, of client needs and expectations, and of our specific contractual obligations.

STANDARDS
Quality depends on sound application of industry and client standards, aligned with our own best practices

SAFETY
Our commitment to the safety of clients, employees and the public is an indispensable aspect of our quality program.

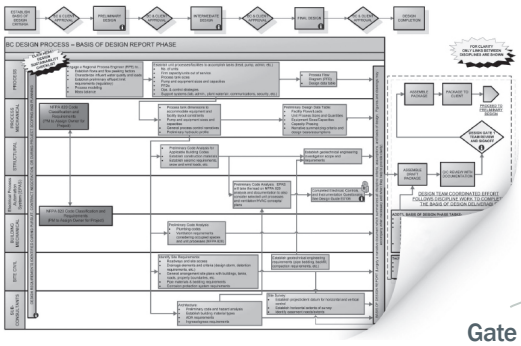
THE QUALITY PROCESS
Understand and apply our project management system, WorkSmart. It addresses planning, budgeting, mobilizing technical resources, applicable tools and processes, key calculations and milestones, essential reviews and coordination checks, and team communications.

TAKE INITIATIVE FOR IMPROVEMENT
Advance continuous improvement in the quality of our work. Encourage and ask questions, engage and leverage the expertise and guidance of senior staff across the company, pursue training opportunities, seek feedback from clients and share the positive and negative lessons learned from experience.



BC uses 3D scanning and modeling on many designs, such as the City of Hollywood as well as other utilities, which provides a "walk-through" of the upgrade and saves on the QA/QC process and minimizes field conflicts.

BC completed the design and permitting of the City's $112 Million Pump Station on schedule with the use of BIM capabilities that allowed for enhanced visualization, coordination and buy-in to design concepts.



Task managers coordinate detailed QC reviews of design documents before each gate is passed and locked to help maintain quaity for the City.

QC Design Gates

Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
10% BODR	30% DESIGN	60% DESIGN	90% DESIGN	FINAL DESIGN

Rigorous Quality Control to Meet your Expectations

The backbone of our firm's design approach and philosophy are "design gates." In our Design Gateway system, key decisions are mapped with project milestones in a way that obviates the ability to revisit fixed decisions.

Each design gate template document provides a checklist of those items expected and their intended level of completion for each gate milestone. Design gates and workflow diagrams are used together, with the workflow diagram providing a more detailed "roadmap" to be used in conjunction with the review and approval process and to ensure efficient project development and regular QA/QC reviews.

All tasks under the work orders managed for the City will undergo multiple tiers of quality assurance beginning with the assignment of task managers and project discipline leads. Ultimately, all tasks will undergo an independent review by the quality control team assigned to the specific work order. This approach will allow the City's project team to focus on key design elements and decisions. A quality management plan (QMP) is developed for each work order, which promotes early identification of project- specific risks. We tailor the QMP, team, processes, and tools to design out (quality assurance) and verify that risks (quality control) are mitigated throughout the project. The QMP will be part of the planning and execution of each task.

Managing risk between all elements of the project will be integral to achieving project success.

Risk Management for Project Success

Throughout project delivery, the BC team will closely collaborate with the City's project team to proactively identify and mitigate risk that might adversely impact the schedule, budget, and quality of projects or the operation of the City's facilities.

Key to this activity is the use of a risk register that was previously mentioned. A risk register is a living document that is continually reviewed and updated to reduce the risks for the City, stakeholders, community, and the environment throughout the project's life cycle.

The risk register is a unique document in that it creates an opportunity to discuss potentially adverse situations from occurring and/or minimizes the impact. For example, a pipeline route could potentially impact a school zone. A mitigation strategy would include limiting construction activity to a time-period that poses little or minimal impact such as during a school holiday or during certain periods of the day. The risk registers will be updated for different phases of the project as well – the risks pertaining to the design will not be the same as the risks associated with construction. Key components of a risk register include:

- **Risk Identification.** Collaboratively identify risks and impacts throughout your project.
- **Mitigation Measures.** Define the BC team's strategy for mitigating the risks.
- **Risk Register Maintenance.** Update and maintain the risk register throughout all phases of your project, clearly identifying which BC, City and Construction team member will be accountable for each risk.
- **Integration with the Construction Team.** Establish strong lines of communication with the Contractor and construction management team, where applicable.

Risk management discussions are generally included in key-design meetings and workshops, specifically constructability review meetings, to identify construction risks early. BC will help reduce risks during project delivery, drawing on our past work with the City, as well as our experience with similar projects.

BC has proven that the benefits of having and using a risk register throughout the project often includes: adherence to schedule and budget, improved communication amongst team members and the City, reduction in change orders, increased collaboration amongst the City, design team, and construction team. Being proactive through the development of a project-specific risk register helps avoid unwanted cost surprises and delays in project delivery.

Project Success is enhanced by our proven method of defining and controlling risks.

Commitment to Meet Schedule and Budget Requirements

BC maintains an outstanding record of delivering high-quality projects on or ahead of schedule and within your budget.

We can consistently meet our schedules and budgets by following a proven approach that uses 1) certified (PM)/ highly qualified staff, 2) advanced tracking tools, 3) control processes, and 4) proactive risk mitigation. Our approach allows us to keep projects on track while enabling the project team members to focus their technical expertise to the best advantage. Our experience consistently has shown that the key to meeting schedules and budgets is careful planning combined with closely monitoring execution. Our team also recognizes the importance and value of problem prevention. BC has successfully integrated several internal systems into our firm's culture that simplify, automate, and coordinate the project delivery process to reduce the risks associated with our projects. The team's successful system usage has proven to result in fewer mistakes and less manual, time-consuming reviews, and build quality into the project. The graphic on the following page depicts BC's unique approach to scheduling

Project Cost Management

Early detection and mitigation of issues through scope, schedule, budget, and risk management leads to successful project delivery.

Our project management staff specializes in improving project value and reducing your risk by controlling the project's time, cost, and quality. We have developed proven project management methods over many years of conducting complex design and construction projects. These methods include initial project planning, project management information systems, value engineering assessments, cost estimating, regular construction inspections, on-site construction supervision, and continuous change order and claims management activities.

Our project cost ratio is less than 1 on all our projects presented in Tab C - Firm Qualifications and Experience

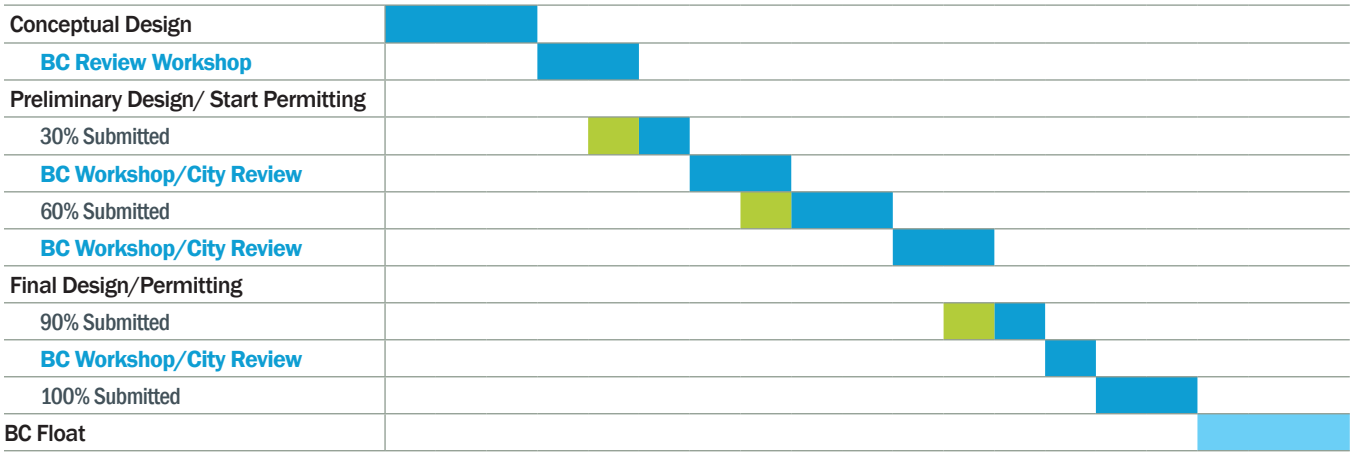
Proven Partnership. Trusted Solutions.

BC reduced review time and streamlined the approvals process through workshops with Miami-Dade Water and Sewer Department (MDWASD) for the fast-track South District WWTP (SDWWTP) Cogeneration Facility. With our contractor partner, we delivered the $25M project on time and on budget.

For the recent $23M MDWASD North District WWTP (NDWWTP) Headworks Upgrades project, BC delivered on time, on budget, and with an engineer's estimate that accurately predicted the construction bids opened in late 2015 (construction underway).

BC helped the City of St. Petersburg significantly reduce fuel consumption, carbon footprint and realize forecasted savings of $20M over 20 years.

BC's Unique Approach to Scheduling Will Ensure that We Meet Each of Our City Project Schedules



BC's float allows schedule to be met even with some unforseen delays

Ongoing rolling reviews.
No interruption in work flow.
Expedited completion without impacting client input.

Proven Partnership. Trusted Solutions.

William Eleazer, PE
Project Manager

Fast Track Wastewater Improvements Design - Two months from beginning to end!

BC was called upon by the City of St. Petersburg, to implement on a fast track basis, the design of critical process improvements on an emergency basis to provide expanded wastewater treatment capacity. Under the leadership of our Wastewater Project Manager, Bill Eleazer, a firm record was established with the completion of the $10 million project in two months! This highlights the resourcefulness and capacity of our firm to quickly mobilize to achieve even the seemingly impossible task. This is just one of a number of examples where we have risen to meet the urgent needs of our clients to significantly compress schedule. In light of this and other experience, the BC team has the local capacity and experience to effectively manage our delivery effort to meet virtually any schedule required to meet the critical deadlines faced by our clients.

Internal Package No	Contents	Actual Internal QC	Actual Final Delivery
0	Start Date	2/1/2017	4/10/2017
1	General Specs/Drawings	3/9/2017	3/17/2017
1	LS-2 Headworks Bypass	3/17/2017	3/24/2017
2	Influent EQ/Storage/Piping	3/17/2017	3/24/2017
3	RAS Motors/VFDs	3/17/2017	3/24/2017
4	Coagulant Storage and Feed	3/24/2017	3/29/2017
5	CCT Gates and Chlorine Feed	3/27/2017	4/3/2017
6	Secondary Clarifier SB	3/31/2017	4/7/2017
7	Cyclones	4/3/2017	4/10/2017
8	Secondary Clarifier 1, 2, 3 Upgrades	4/3/2017	4/10/2017

Current and Anticipated Workload

The BC team has the required staff availability to support any project assignment, large or small - complex or routine, within any reasonable time frame established by the City of Hollywood.

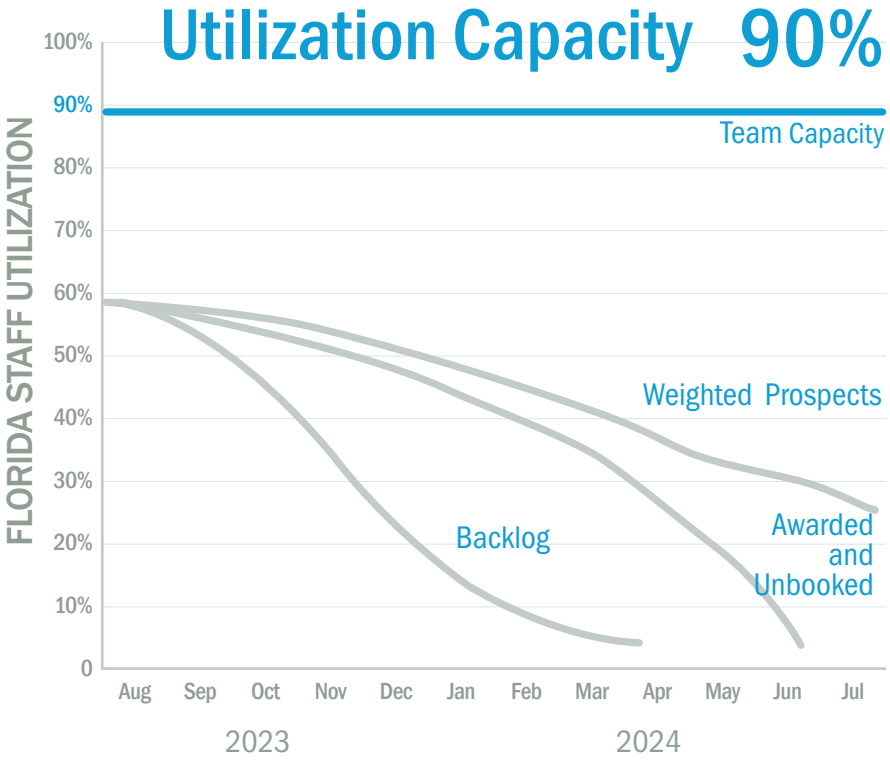
BC's past performance record with our clients demonstrates that we can successfully complete multiple work orders simultaneously. It is not unusual for us to manage multiple simultaneous work orders with similar performance schedules. We have achieved this high level of performance with dedicated project managers and project teams committed to each assignment, allowing us to handle all efficiently and effectively.

BC carefully considered current and projected workload when selecting the right team for this contract. As part of the BC team development, each team member's workload was reviewed to ensure availability and commitment for the duration of the City's contract. In summary, our team has advanced tools, established processes, discipline, and strong as commitment to the City to meet the daily scope of services required for the dynamic workload expected through this contract. You have our commitment that they we will be available to support City projects at the necessary time. Our best proof is demonstrated by our past experience with the City and project delivery achievements.

The Projected Florida Staff Utilization Graph, shown on this page, shows BC's overall commitment/availability as a function of time. Our anticipated workload (i.e. backlog for currently authorized projects) is the lowest line of the three.

In preparing this proposal, we projected the availability of the BC staff who will likely contribute to the work effort on City projects over the first 12 months following approval of the contract. We are providing committed capacity to accommodate any size or type assignment from the City.

Leveraging the depth of our available resources, BC has committed a highly-qualified backup project manager for each service area (refer to Team Organization Chart in Tab D), which further positions us to be very responsive to the City's needs. **As demonstrated throughout this section and the graphic below, BC has more than adequate staffing capacity to complete any of the required services on schedule.**



The BC team proposed for this contract maximizes the use of locally available staff. BC has over 1,900 personnel on staff that can augment our local team as needed for backup staffing capability to meet fast-track schedules. The graphic at left highlights BC's Florida staff (i.e. backlog) commitment for one year after the estimated contract NTP.

References

TAB G

Brown AND Caldwell

References

Although Brown and Caldwell is often known for (and takes great pride in) the technical expertise that we bring to each project, our greatest satisfaction comes from hearing from our clients regarding the reliability and pragmatic solutions that our services provide. Our ultimate goal is to see our projects integrated seamlessly into existing systems and to know that we have successfully helped a client resolve a challenge, optimize a system, or comply with a regulatory mandate. Below are four references that exemplify our expertise.

Mark Darmanin

Director of Operations
Broward County Water and Wastewater Services

Referenced Project: Reclaimed Water Plant Expansion

2555 W Copans Rd
Pompano Beach, FL 33069

(954) 831-3250 (General)
(954) 831-0960 (Phone)

mdarmanin@broward.org

Rolando Nigaglioni,

DBA, PE, BCEE, PMP

Director of Engineering
Broward County Water and Wastewater Services

Referenced Project: Prof. Engineering Studies for Studies & Report

2555 W Copans Rd
Pompano Beach, FL 33069

(954) 831-3250 (General)
(954) 831-0903 (Phone)

migaglioni@broward.org

Emran Rahaman

Director of Seminole Tribe of Florida Public Works Department

Referenced Project: Immokalee Water Treatment Plant

Seminole Tribe of Florida

6401 Harney Rd
Tampa, FL 33610

(813) 246-3100 (General)
(954) 347-9163 (Phone)

emranrahaman@semtribe.com

Ali Bayat

Director of Utilities
Palm Beach County Water Utilites Department

Referenced Project: Integrated Master Plan - Wastewater & Reclaimed Water

8100 Forest Hill Blvd, West Palm Beach, FL 33413

(561) 493-6000 (General)
(561) 493-6128 (Phone)

abayat@pbcwater.com

We are proud to delivery top-quality service to our clients and invite you to contact the client references.

Sub Consultants Information

TAB H

Brown AND Caldwell

Brown and Caldwell and its Subconsultants

Brown and Caldwell is prepared to continue serving the City of Hollywood by offering best value solutions for this contract.

BC will serve as the prime consultant for this contract. As the lead firm, BC will be responsible for managing and coordinating our self-performed services and the work of our subconsultants team members.

BC has carefully assembled a team of subconsultants that bring a solid body of local knowledge and skill. Our subconsultants have worked with BC and we place a high degree of confidence in their ability and dedication to providing high quality services in a timely and cost-effective manner. These firms, and their primary roles for this contract, are as follows. These firms, and their primary roles for this contract, are as follows.

- **Gibbs Land Surveyors** - Survey, SUE, and Easements
- **Surveyor JLA Geosciences, Inc.** - Hydrogeology
- **McNabb Hydrogeologic Consulting, Inc.** – Hydrogeology (specifically Deep Injection Wells)
- **Nutting Engineers of Florida, Inc.** – Geotechnical
- **Metco Southeast, LLC** – HVAC
- **McCafferty Brinson Consulting, LLC** – Grant Application and Grant Management/Water Treatment
- In unique instances, BC will utilize more specialized subconsultants, if required. All subconsultants will be reviewed with the City prior to authorization.

An organizational chart depicting the functional relationships with BC and its subconsultants is presented below. This graphic shows the composition of the team by firm, and the areas of expertise and responsibilities for the various firms to be used for the assignments expected.

CITY OF Hollywood FLORIDA

Prime Consultant

Brown and Caldwell

- Project Management Coordination, and Oversight
- Project Types:
  - Wastewater Treatment Plant
  - Water Supply and Water Treatment Plant
  - Infrastructure
  - QA/QC and Value Engineering
  - Reuse & Residuals Management
  - Asset Management & Automation

Subconsultants

Gibbs Land Surveyors, Inc.
- Land Surveying and Easements

JLA Geosciences, Inc. / McNabb Hydrogeologic Consulting, Inc.
- Hydreology

Nutting Engineers of Florida, Inc.
- Geotechnical Engineering

Metco Southeast, LLC
- HVAC

McCafferty Brinson Consulting, LLC
- Grant Application and Grant Management/ Water Treatment

Successful History with our Subconsultants

We have worked successfully with all our teaming partners to deliver projects in South Florida, including several projects with the City of Hollywood.

BC will serve as the prime consultant for this contract and utilize subconsultants in support services as necessary to supplement our engineering efforts. BC believes strongly in providing opportunities for small businesses.

Such services include survey, subsurface utility engineering, geotechnical, civil, hydrogeological services, and financial services. BC has carefully assembled a team of subconsultants that bring a solid body of local knowledge and skill. As the Prime, we will ensure that all subconsultant work products are completed to the satisfaction of the City.

In unique instances, BC will utilize more specialized subconsultants, if required. All subconsultants will be reviewed with the City prior to authorization.

Our subconsultants have worked with BC and place a high degree of confidence in their ability and dedication to providing high quality services in a timely and cost-effective manner.

Nigel and the respective project managers are responsible for initiating, coordinating and controlling the on-time delivery of subconsultants' deliverables. They will meet with each subconsultant and review their internal QA/QC procedures and make recommendations, as necessary, to ensure that subconsultant deliverable products adhere to BC standards.

As necessary, our subconsultants will coordinate with our technical team to coordinate critical decisions and the potential impact to the final recommendations.

BC utilizes experienced staff We develop strong working relationships and effective communication with our subconsulting team members to provide outstanding results to the City.

Proven Partnership. Trusted Solutions.

Our subconsultant partners include:

Gibbs Land Surveyors, Inc.
2131 Hollywood Boulevard, Suite 204
Hollywood, FL 33020

JLA Geosciences, Inc.
1931 Commerce Lane, Suite #3
Jupiter, FL 33458

Nutting Engineers of Florida
1310 Neptune Drive
Boynton Beach, FL 33426

McNabb Hydrogeologic Consulting, Inc.
1310 Neptune Drive
Boynton Beach, FL 33458

Metco Southeast, LLC
100 S Dixie Highway, Suite #305
West Palm Beach, FL 33401

McCafferty Brinson Consulting, LLC
633 South Andrews Avenue
Fort Lauderdale, FL 33301

Proven successful history with our subconsultants provides value-added resources and key support.

We develop strong working relationships and effective communication with our subconsulting team members to provide outstanding results to the City.

Gibbs Land Surveyors // Land Surveying and Easements

Gibbs Land Surveyors (GLS) has been doing business from the same location within the City of Hollywood for over 30 years. From this office, we have provided a wide range of services related to this discipline: Boundary, Topographic, Hydrographic, As-Built and Utility locations, Construction Staking, Vertical and Horizontal Control Surveys, ALTA/NSPS Land Title Surveys, Plat Recordation, Condominium Document preparation, Legal Descriptions and Expert Witness Testimony. Hollywood Experience: Extensive throughout the City for water and sewer infrastructure and within the water and wastewater treatment plants.

JLA // Hydrogeology

Since 2003, JLA Geosciences has provided clear solutions for our clients based on our in-depth knowledge of hydrogeology, water supply development, environmental evaluation, and wastewater disposal. Our firm's twenty-year success has been largely due to our absolute "hands on" data driven approach we take to every project. The principal and senior hydrogeologists have the experience to make the right choices when and where it is needed: on site, because hydrogeology is primarily a field science. JLA brings highly experienced staff to every project, including registered Professional Geologists with nationwide experience in geology, geochemistry, hydrogeology, environmental assessment, contamination modeling and ground-water flow modeling.

McNabb Hydrogeologic Consulting, Inc. // Hydrogeology

McNabb Hydrogeologic Consulting, Inc. (MHC) is a Southeast Florida-based hydrogeologic consulting firm specializing in deep injection well, aquifer storage and recovery well, and production well design, permitting, resident construction observation, and reporting services. Their focus is to provide efficient, value-oriented services to every one of their clients. The staff at MHC offer over 35 years of Florida hydrogeology consulting experience, most of which has been focused on deep injection well systems. testing, construction and operation allow them to minimize permitting time and capital costs for their clients. Hollywood Experience: Backup Concentrate Injection Well Disposal Study and Deep Injection Wells design and construction oversight with Brown and Caldwell.

Nutting Engineers of Florida, Inc. // Geotechnical Engineering

Nutting Engineers of Florida, Inc. (NEF) has been one of the premier geotechnical engineering firms in South Florida since its inception in 1967. NEF's comprehensive range of services include geotechnical exploration and engineering including monitoring of pile installation, groundwork modification and chemical grounding procedures, quality control/ quality assurance testing of construction materials, structural inspections (special/ threshold) of structures, indoor air quality, phase I and phase II environmental property assessments, contamination assessments and remedial action designs. Hollywood Experience: Extensive.

Metco Southeast, LLC. // HVAC

Metco Southeast, LLC is a minority owned firm established in 2008 to provide multi-disciplined Consulting Engineering Services to meet the needs of the communities located in the State of Florida in the areas of Water and Wastewater Systems. Since its inception, Metco Southeast has established a well-earned reputation for the delivery of complex design engineering solutions in addressing the needs of the most challenging engineering projects.Metco Southeast is a dynamic organization, evolving constantly to keep abreast with the emerging technology to develop unique and cost-efficient solutions to serve the demands of the Clients. Hollywood Experience: HVAC design for the Deep Injection Wells Pump Station with Brown and Caldwell.

McCafferty Brinson Consulting, LLC. // Grant Application and Grant Management/Water Treatment

McCafferty Brinson Consulting, LLC (MBC) is an engineering consulting firm founded in South Florida in 2006. MBC offers environmental consulting, engineering design, and construction administration services related to potable water, reclaimed water, and wastewater treatment systems, pumping and transmission systems, and utility infrastructure, as well as permitting and regulatory compliance consulting, and grant management. MBC's suite of services is supported by a highly qualified team. Hollywood Experience: SRF management for the Deep Injection Wells Pump Station Construction Services with Brown and Caldwell.

Legal Proceedings and Performance

TAB J

Brown AND Caldwell

Legal Proceedings and Performance

1580 Sawgrass Corporate Parkway, Suite 400
Sunrise, Florida 33323
T: 954.200.7611
F: 954.200.7612
www.brownandcaldwell.com

Provide a list of legal proceedings against your firm in the last five years. This shall include legal proceedings for the entire company.

As a national firm with over 70 offices, Brown and Caldwell, in the course of our business, occasionally becomes involved as a party in claims, disputes or litigation. Information about specific claims, disputes, or litigation in which Brown and Caldwell is involved is considered confidential to the company and its clients. The following responses are considered highly confidential, and we are providing this information on the understanding that you will protect its confidentiality accordingly and restrict distribution solely to the extent required to review Brown and Caldwell's qualifications. There is no pending claim, litigation or dispute involving Brown and Caldwell which could be anticipated to adversely impact Brown and Caldwell's financial or professional ability to render services requested in this RFQ. Brown and Caldwell has been a party in the following litigation in the past 5 years immediately preceding the date of our response to this RFQ. Any additional questions should be directed to Robert D. Goodson, Senior Vice President and General Counsel.

J.1. Arbitrations; List all construction arbitration demands filed by or against your firm in the last five years, and identify the nature of the claim, the amount in dispute, the parties, and the ultimate resolution of the proceeding.

In the five (5) years immediately preceding our response to this RFQ, there have been no construction arbitration demands filed by or against Brown and Caldwell.

J.2. Lawsuits: List all construction related lawsuits (other than labor or personal injury litigation) filed by or against your firm in the last five years, and identify the nature of the claim, the amount in dispute, the parties, and the ultimate resolution of the lawsuit.

William W. Wheeler, III, as Special Administrator of the Estate of Juan De Dios Marin Penaloza, Plaintiff v. Carolina Tap & Bore, Inc., and Brown and Caldwell, Defendants, Case No. 2018CP28-01000, filed in the South Carolina Court of Common Pleas on November 27, 2018. The Complaint claims Mr. Penaloza died while working for Northeast Backflow, Inc. (NEB) on a project where NEB was responsible for a trench that collapsed on him on 9/9/16. NEB is not named in the lawsuit. Carolina Tap and Bore, Inc. (CTB), the prime contractor that subcontracted with NEB, is alleged to have negligently selected, inspected and/or supervised NEB. Brown and Caldwell (BC), as the City of Camden's Engineer on the Project, is alleged to have negligently inspected the site, despite the fact that BC's services during construction included only a maximum of eight hours at the site per month to attend a progress meeting and observe the general progress of the overall project. BC does not believe it bears any responsibility in this matter; discovery and investigation are ongoing.

J.2.1 Other Proceedings: Identify any lawsuits, administrative proceedings, or hearings initiated by the National Labor Relations Board or similar state agency in the past five years concerning any labor practices by your firm. Identify the nature of any proceeding and its ultimate resolution.

In the five (5) years immediately preceding our response to this RFQ, Brown and Caldwell has not been involved in any lawsuits or hearings initiated by the National Labor Relations Board or similar state agency, and there have been no administrative or judicial findings against Brown and Caldwell, concerning Brown and Caldwell's labor practices.

J.2.2 Identify any lawsuits, administrative proceedings, or hearings initiated by the Occupational Safety and Health Administration concerning the project safety practices of your company in the last five years. Identify the nature of any proceeding and its ultimate resolution.

None. In the five (5) years immediately preceding our response to this RFQ, Brown and Caldwell has not been the subject of any lawsuits, administrative proceedings, or hearings initiated by the Occupational Safety and Health Administration concerning Brown and Caldwell's safety practices.

J.3. Bankruptcies: Has your firm or its parents or any subsidiaries ever had a Bankruptcy Petition filed in its name, voluntarily or involuntarily? (If yes, specify date, circumstances, and resolution).

No

J.4. Has a contract to which you were a party even been terminated by the other party?

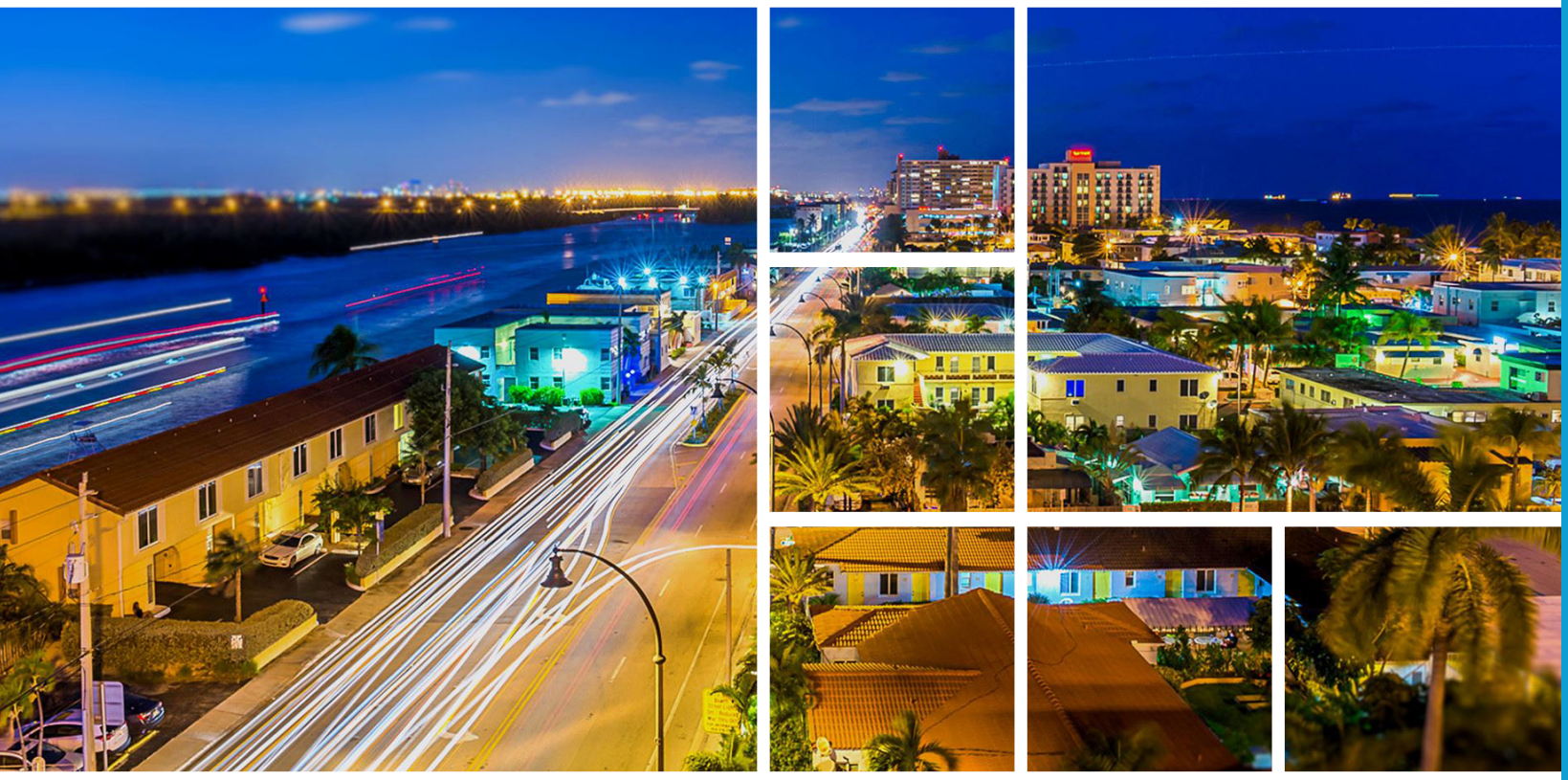
While we believe it likely that contracts may have been terminated for convenience over the years, generally as a result of changes in client plans and available funding, we are not aware of any material contracts which were terminated early for default or breach of contract.

J.5. Have you ever had to use bonding moneys to complete a project or to pay a subconsultant or supplier?

No

Required Forms

TAB K

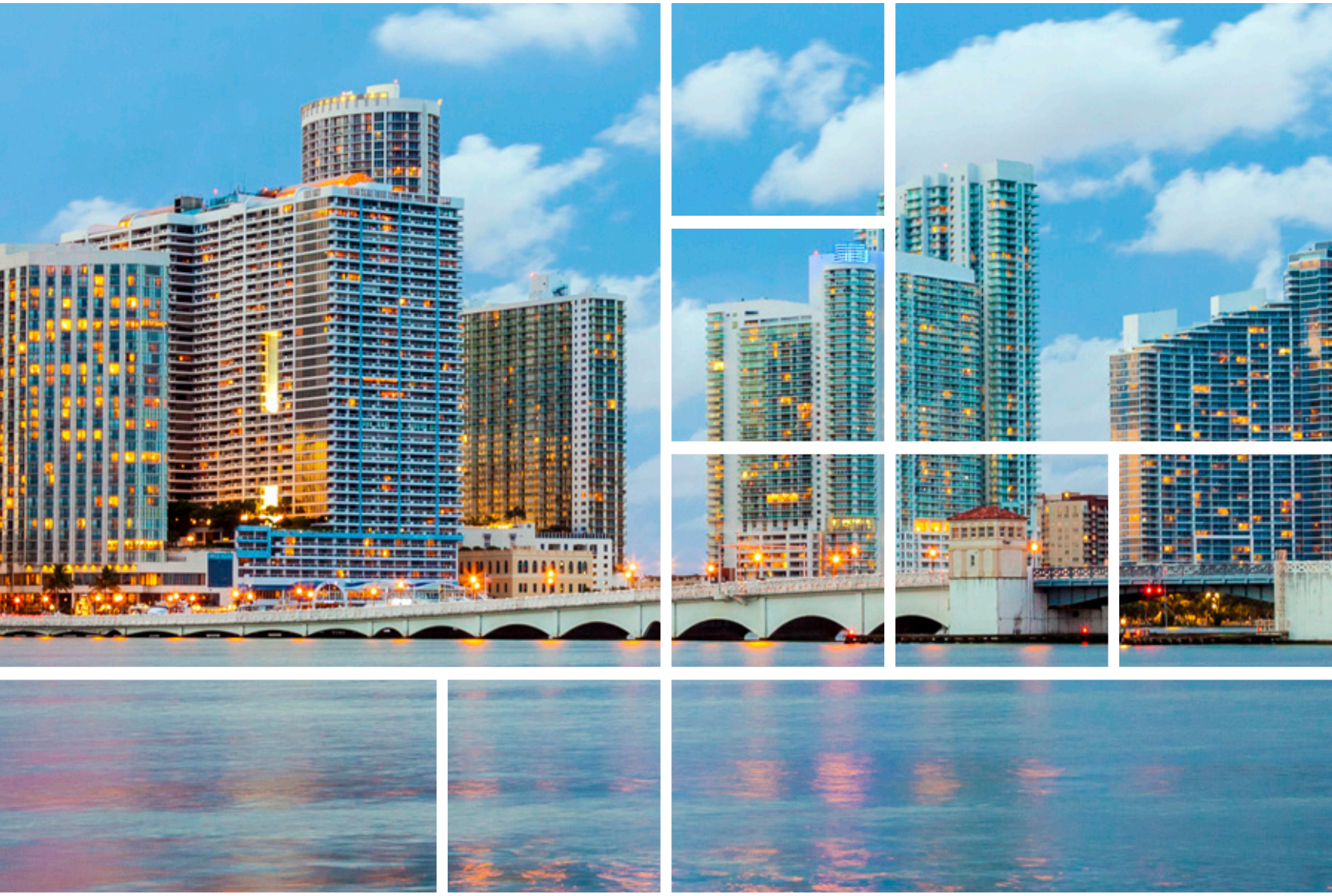


Brown AND Caldwell

Required Forms

Required forms statement:

The required forms have been completed and submitted through the procurment portal Open Gov.



Brown AND Caldwell

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