Professional Engineering Services for Studies and Reports
Overview

1. Introduction and Team
2. Our Past Performance with Broward County
3. Other Client Performance
4. Our Approach and Looking to the Future
5. Our Commitment to the Community
Introduction and Team
1. Introduction and Team

Nationally recognized, full service engineering and design firm
Consistently ranked among the top Environmental and Design firms by Engineering News Record (ENR)
# 1. Introduction and Team

## Our Vast and Diverse Experience with Broward County

<table>
<thead>
<tr>
<th>1990s to 2000</th>
<th>2000 to 2010</th>
<th>2010 to present</th>
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</thead>
<tbody>
<tr>
<td>• Biosolids Master Plan</td>
<td>• District 2 Wells 8 and 9 Investigation and Rehab</td>
<td>• AWS CIP Assessments</td>
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<tr>
<td>• Biosolids Pilot Study (drying and composting)</td>
<td>• Alternative Water Supply (AWS) Master Plan</td>
<td>• Repump Station 4 log BODR (various)</td>
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<td>• Regional Wellfield O&amp;M Plan</td>
<td>• Twin Lakes NIP</td>
<td>• District 3B/C Storage/Repump Station 4 log BODR</td>
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<td>• Corrosion Control Study</td>
<td>• Risk Management Plans</td>
<td>• NRWWTP Effluent PS Electrical Improvements</td>
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<td>• Raw Water Supply Treatability Study</td>
<td>• Process Safety Manuals</td>
<td>• Surveys (various)</td>
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<td>• Annual Reports</td>
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<td>• WTP 3A Site Plan Permitting Assistance</td>
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<td>• District 1A Generator Design</td>
<td>• Broadview Estates Sanitary Sewer Design</td>
<td>• Annual Reports</td>
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<tr>
<td>• District 1 and 2 Chlorination System Improvements</td>
<td>• 1A-2 Ground storage Tank BODR</td>
<td>• 1A and 2A WTPs Chemical Feed Systems</td>
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<td>• Filtration System Improvements</td>
<td>• Treatment Facilities Lighting Improvements</td>
<td>• North County Reuse Feasibility Study</td>
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<td>• District 1A Nanofiltration Evaluation</td>
<td>• District 2A WTP 4-log DBP Testing Support</td>
<td>• District 3A Collection System Hydraulic Model</td>
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<td>• Consumer Confidence Reports</td>
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<td>• District 2 Chloride Infiltration Study</td>
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<td>• Water Supply Vulnerability Study</td>
<td>• 1A WTP Tank Replacement Design Report</td>
<td>• Customer Service Call Center Assessment</td>
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<td>• D/DBP System Control Study</td>
<td>• Utility Rates Structure Review</td>
<td>• Master PS 462 Assessment</td>
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<td>• Chaves Lake Flushing System Design</td>
<td>• Lift Station Power Supply Upgrades</td>
<td>• 3BC Sewering Feasibility Study/TM</td>
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<td>• Unaccounted-For Water Mitigation Plan</td>
<td>• Stormwater Drainage Improvements</td>
<td>• District 1A rTCR Study</td>
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<tr>
<td>• Water and Wastewater Master Plan</td>
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<td>• Advanced Metering Infrastructure (AMI) Assessment</td>
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<td>• Large User Raw Water Supply Negotiations</td>
<td></td>
<td>• 3BC Septic Tank Elimination Memo</td>
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<td></td>
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<td>• Aquifer Storage &amp; Recovery (ASR)</td>
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1. Introduction and Team

Albert Perez, PE  
Principal-in-Charge

Celia Earle, PhD  
Client Service Manager / Lead Project Manager

Nigel Grace, PE  
Project Delivery Officer

Proven Partnership. Trusted Solutions.
1. Introduction and Team

Robert Abordo, PE
Electrical Systems

Jennifer Leone, PE
Water Treatment Plants/Distribution
Water Quality

Ruth Burney, PE
Wastewater Treatment Plants/Reclaimed Water/Permitting

Diego Herrera, PE
Water Distribution System/Sewer Collection System Infrastructure
Our Past Performance with Broward County
2. Our Past Performance with Broward County

Our team members have successfully performed projects across WWS’ four main divisions

Our evaluation scores are first-rate

4.3
MEDIAN SCORE
Our legacy of innovation continues to be leveraged to Broward County’s benefit

- **P. Schafer** - World’s largest thermal hydrolysis digester
- **E. Wahlberg** - Hyperion WWTP restoration saves $50 mil
- **G. Jones** - Authored industry standard Pump Station Design Book
- **K. Derr** - Developed first pressure pipe inspection program
- **J. Willis** - Process innovation reduced digestion time by 97%
- **C. Paulson** - NRC watershed management policy development
- **N. Grace** - Applied modeling to optimize stored water management
- **D. Parker** - Invented flocculator clarifier design
Our legacy of innovation continues to be leveraged to Broward County’s benefit

G. Jones - Authored industry standard Pump Station Design Book

The Situation with one of WWOD’s Master Pump Stations

Ragball formation
- Impedes pumping
- Maintenance intensive
- Impacts reliability
- Reduces operating efficiency
Our legacy of innovation continues to be leveraged to Broward County’s benefit

Our analysis of your Master Pump Stations (MPSs) have identified improvements that will improve efficiency, reliability and operational performance

WWS has acted to incorporate recommended improvements to MPSs 462 and 320 and has indicated its desire to extend this approach to other MPSs in need of improvement
Our legacy of innovation continues to be leveraged to Broward County’s benefit

Our analysis of your Master Pump Stations (MPSs) have identified improvements that will improve efficiency, reliability and operational performance

Up to 50% Less Energy
Our legacy of innovation continues to be leveraged to Broward County’s benefit

N. Grace - Applied modeling to optimize stored water management

Applied proven approach to identify impactful improvements to further enhance water quality in two service areas

Operating Practices + Configuration Review + Controls Assessment + Local Validation = Low Cost and Impactful Solutions

Optimized Operation

Tank Improvements

Process Enhancements

Improvements are underway and lessons learned may be extended to other areas of the water system.
3 Other Client Performance
Our team has delivered impactful results for local utilities
City of Hollywood Ocean Outfall Legislation

Guided City’s Ocean Outfall Legislation Compliance Strategy

**Achievements**

1. Reduced new reuse required by 14.4 mgd (70% reduction)

2. Estimated savings - $200M

**Remaining Requirements**

1. Fulfill actual and contracted reuse requirements

2. Implement effluent disposal via High-Level Disinfection and deep injection well
3. Other Client Performance

Our team’s impact to other Florida Utilities conveys beneficial expertise to Broward County

Ocean Outfall Legislation (OOL) Compliance

- **Hollywood** – achieved $200mil savings
- **Miami-Dade WASD** – guide compliance strategy
- **Broward WWS** – implement treatment and planning PBC Reclaimed Water distribution

Energy Independence

- **Miami-Dade WASD** – SDWWTP Cogeneration to offset Power Demand
- **St. Petersburg** – convert biogas to diesel fuel to power fleet

Climate Impact

- **Miami-Dade WASD** – Storm surge impact assessment and stormwater improvements
- **Miami-Dade WASD** – climate adaptation & resiliency design of plant improvements

Studies and BODRs

- **Broward WWS** – 25-year history across all divisions
- Planning, business systems, optimization, process – Sunrise, Hollywood, Broward WWS, Palm Beach County, Miami-Dade County
Our Approach and Looking to the Future
Brown and Caldwell’s **360 Degree Approach**

- **Understanding Key Issues & Uncertainties**
- **Data Acquisition**
- **Assess Existing Conditions**
- **Integrated Approach to Alternatives Evaluation**
- **Defensible Recommendations**
- **Plans, Studies, and Reports**
- **Solutions You Can Trust**
Stakeholder buy-in is critical and our team is well positioned to help you
We understand Broward’s key issues

<table>
<thead>
<tr>
<th>WWED</th>
<th>WWOD</th>
<th>WMD</th>
<th>BOD</th>
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<tbody>
<tr>
<td>Ocean Outfall Legislation</td>
<td>Water Quality</td>
<td>Water Supply/C-51</td>
<td>Automated Metering</td>
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<tr>
<td>Septic Tank Elimination</td>
<td>Master Pump Station Optimization</td>
<td>Water Use Permitting</td>
<td>Infrastructure Affordability</td>
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<tr>
<td>Climate Change</td>
<td>Infrastructure Condition</td>
<td>Stormwater Management</td>
<td>Rate Impacts</td>
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<td>Reliability Improvements</td>
<td></td>
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<td>Process Optimization</td>
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Our independent objectivity will continue to yield solutions you can trust.
Our Commitment to the Community
5. Our Commitment to the Community

*Everybody donates money to charity, but no one gives of their time as much as we do!*  

Broward County’s  
Christmas in July Project for Homeless Children  

17 years ago, started by Celia Earle  

700+ Brown and Caldwell volunteer hours annually  

25K+ homeless children have been provided with personalized necessities
5. Commitment to the Community

South Florida Charitable Contributions

- Broward Coalition to End Homelessness
- Kiwanis Broward County Annual Thanksgiving Feeding Program
- Kiwanis Grand Charity Ball
- United Way (Broward County and Miami-Dade County)
- Jewish Federation of Broward County
- Broward County Black Elected Officials Event/Gala
- Miami-Dade Mercedes Benz Corporate Run - proceeds go to Leukemia and Lymphoma
- Sickle Cell Foundation of Palm Beach County and Treasure Coast
- Local professional societies
Our team has the history, momentum and vision to continue to deliver impactful solutions

✓ Proven performance on similar projects
✓ Available and committed local resources
✓ Significant knowledge of your assets
✓ Significant knowledge of the four main WWS Divisions
✓ A record of identifying creative solutions
✓ Successful delivery of all project types
✓ Credibility and success with key stakeholders
Thank You!