Hazen

CITY OF Hollywood FLORIDA

Construction Administration Services for the Drilling of Deep Injection Wells No. 3 & No. 4 at Southern Regional Wastewater Treatment Plant

RFP No. 19-9119 | August 6, 2019

Hazen

SUBMITTED BY:
HAZEN AND SAWYER
4000 HOLLYWOOD BLVD., SUITE 750 NORTH
HOLLYWOOD, FL 33021
(954) 987-0066
CONTACT PERSON: PATRICK DAVIS, PE / (954) 987-0066

CITY OF Hollywood FLORIDA

Construction Administration Services for the Drilling of Deep Injection Wells No. 3 & No. 4 at Southern Regional Wastewater Treatment Plant

RFP No. 19-9119 | August 6, 2019

Selection Criteria

Hazen is qualified to provide full Professional Engineering Consultant Services to the City of Hollywood. WWe have addressed all of the Selection Criteria noted in the RFP, as highlighted below.

02 25 Points
Previous Performance on Related Projects

Our team has **in-depth experience** working on projects involving disposal of concentrate via blending and construction at an active injection well site, SRF-funded projects, and has assisted our clients in addressing complex permitting and construction issues.

Hazen has provided complete injection well services
including planning, design, permitting, 24-hour construction supervision, and/or startup
for numerous South Florida clients since 1978.

In fact, OVER HALF of the 42 deep injection wells currently constructed in Broward County are projects Hazen worked on.

Our team's extensive local injection well experience will assist in minimizing, if not eliminate, risks that may occur.

Both Michael Wengrenovich and Albert Muniz worked at the site during construction of Hollywood's first two injection wells. John Largey was a resident inspector during construction of IW-1, IW-2 and MW-1.

See **Section 3** – Profile of Consultant, pages 3-5 to 3-7 and **Section 4** – Previous Performance on Related Projects.

03 10 Points
Current and Projected Workload and Time Schedule to Complete

Hazen's current and projected workload is such that we do not anticipate any work that would prevent us from completing the City's project within schedule. Should we be selected for this contract, **we commit** that the individuals identified on the organizational chart will serve the City.

Our current and projected workload for our Hollywood office is in **Section 7.** Our volume of work with the City of Hollywood in the last 5 years is also included in Section 7, along with a time schedule to complete this project.

05 15 Points
Ability to Complete Project on Time

We routinely meet project schedules for all sizes and types of projects. Proofs of our ability to successfully complete projects on time appear in Section 4 (page 4-29), including projects for the City of Hollywood.

We have demonstrated our **ability to respond** to the City's emergency situations on an immediate basis—for example, during the Taft Street force main rupture and the puncture of the Ocean Outfall by a wayward geotechnical firm.

See **Section 4** – Previous Performance on Related Projects.

04 10 Points
Principal Location

To provide the City with a team that can respond in an expeditious manner, **Hazen's office in Hollywood** (established in 1968), will be responsible for the proposed contract.

For 24/7, 365 days-per-year projects, the selected team must be ready to address any and all issues at any time, especially on projects constructed on sites with active injection wells.

All of our key team members reside in Broward County, which enables us to quickly address any issues.

See **Section 3** – Profile of Consultant, page 3-3.

06 15 Points
Ability to Complete Project on Budget

We routinely meet project budgets for all sizes and types of projects. Proof of our ability to successfully complete projects on budget appear in Section 4 (pages 4-27), including rojects for the City of Hollywood.

See **Section 4** – Previous Performance on Related Projects.

01 25 Points
Expertise of Designated Staff

Our proposed project team has **unequalled experience in South Florida**, especially in Broward County, resulting in:

- In-depth knowledge of local site conditions.
- Comprehensive understanding of how to get an injection well project completed in a timely manner.
- Experience working with FDEP regulators to avoid delays during construction and testing...and then through operational testing and subsequent permitting.

Hazen has assisted all of our injection well clients in securing operating permits.

Albert Muniz, PE
Project Manager

- 38+ years of experience in permitting, design, mechanical integrity testing, and construction management of injection wells in South Florida

Michael Wengrenovich, PE
Deputy Project Manager

- Involved with planning, design, & construction of injection wells projects in South Florida for the past 39 years
- Has served as Lead Design Engineer and/or Construction Manager on over 30 injection wells in Florida, primarily in Broward County

J. Philip Cooke, PE
Project Director

- Has been managing Hazen's general consulting projects for the City since 2006
- 30 years of experience in planning, design, permitting, and construction administration of wastewater and water projects for both municipal and industrial clients

Our project team has unsurpassed knowledge and familiarity with the City of Hollywood, its site conditions, and the effluent disposal system.

See **Section 5** – Organization of the Project Team and **Appendix A** – Resumes.

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Tab 1 – Letter of Transmittal

Hazen and Sawyer
4000 Hollywood Boulevard, Suite 750 North
Hollywood, FL 33021 • 954.987.0066

August 6, 2019

City of Hollywood
Office of the City Clerk
2600 Hollywood Boulevard, Room 221
Hollywood, FL 33020

Re: Construction Administration Services for the Drilling of Deep Injection Wells No. 3 & No. 4 at Southern Regional Wastewater Treatment Plant (Project No. 19-9119)

Dear Evaluation Committee Members:

The City of Hollywood owns and operates a modern regional wastewater treatment plant and has an experienced management staff adept at navigating challenging regulatory requirements. The Ocean Outfall Rule of 2008, which will severely curtail the City's current disposal practices, includes such requirements. Utility staff is wisely responding by expanding the existing deep injection wellfield installed in 2003 and has requested engineering consultant services during construction of Deep Injection Wells No. 3 and No. 4. The project will include preconstruction and project coordination activities, observation of drilling services, coordination with the City and FDEP, permitting, engineering support services, and other related services during construction. The Hazen and Sawyer (Hazen) team offers exceptional depth of talent, construction administration expertise, and a proven record of dedication to meeting your needs. We have provided complete construction management and administration services from our South Florida offices since the 1960s.

Aside from the technical challenges with confirming alignment while drilling over 3,000 feet below grade at a wastewater treatment plant with existing active deep injection wells and interpreting lithological formations, our team also has an understanding of the routine, yet important, obligations associated with projects financed through the State Revolving Fund such as monitoring Buy American provisions and enforcement of the Davis-Bacon Act.

The Hazen team offers the City of Hollywood the following benefits:

UNPARALLELED SOUTH FLORIDA EXPERIENCE

Unparalleled South Florida Experience. The local Hazen team has been involved in the design, permitting, testing, and/or construction of numerous Class I deep injection wells in South Florida since 1978. In fact, Hazen has worked on over half of the 42 deep injection wells constructed in Broward County, including the design and construction management of the two existing wells at Hollywood's Southern Regional Wastewater Treatment Plant. Hazen has assisted all of our injection well clients in securing operating permits. Our team's South Florida experience within the last five years includes five installed deep injection wells and accompanying dual-zone monitor wells—two at Broward County North Regional Wastewater Treatment Plant, two at Seminole Tribe of Florida (STOF) Hollywood Reservation, and one at STOF Brighton Reservation (completion anticipated in November 2019). For all these projects, Hazen prepared the design documents and permit application, assisted with procurement, and provided and/or is currently providing construction engineering and construction management services. Our knowledge, lessons learned, and experience in dealing with and resolving significant challenges during drilling operations will help minimize risks and change orders and result in on-schedule projects.

DEPTH OF PERSONNEL

Depth of Personnel. The Hazen team has a pool of resources and inspectors right here in our Hollywood office, which will ensure efficient service. Our Project Manager, **Albert Muniz, PE,** residing in Coconut Creek for over 34 years, has extensive experience in the permitting, design, mechanical integrity testing, and construction management of injection wells in South Florida, having worked on 22 systems for wastewater effluent and concentrate disposal. Deputy Project Manager, **Michael Wengrenovich, PE,** from our Hollywood office, will support Mr. Muniz. With over 40 years of experience, Mr. Wengrenovich has served as lead design engineer and/or construction manager for numerous deep injection well projects. He has provided design and permitting services on over 30 injection wells in Florida, primarily in Broward County. Our Project Director, **J. Philip Cooke, PE,** has been managing Hazen's general consulting projects for the City of Hollywood since 2006.

We have also supplemented our team with two subconsultants. JLA Geosciences, Inc. (JLA) will provide well resident observation, hydrogeology, and QA/QC services. JLA has completed work on over 60 Floridan Aquifer wells since 1985 and hundreds of other wells located throughout South and Central Florida. John Largey from Drilling Geo will provide well resident observation services. He served as one of the resident inspectors during construction of IW-1, IW-2, and MW-1.

LOCAL PRESENCE

Strong Local Presence. Our Southeastern Regional Headquarters has been located in Hollywood, Florida, since 1968. All of our key team members reside in Broward County, which allow us to address construction and testing-related issues quickly and in a cost-effective manner. We are available 24/7, 365 days. We have also partnered with Hollywood on projects continuously since 1984, which provides us with a profound understanding of the myriad issues facing the utility, as well as the historical context surrounding each issue.

It has been our pleasure, not only to work with the City over the last four decades, but to be an integral part of the economic and social fabric of Hollywood. We hope to continue that relationship through this construction administration services contract. As you review our proposal, we hope that you will agree that Hazen is the ideal choice and can offer the City the best value.

The following persons are authorized to make representations for the firm:

Albert Muniz, PE
Vice President
2101 N.W. Corporate Boulevard, Suite 301
Boca Raton, FL 33431
(561) 997-8070
amuniz@hazenandsawyer.com

Patrick Davis, PE
Vice President
4000 Hollywood Boulevard, Suite 750 North
Hollywood, FL 33021
(954) 987-0066
pdavis@hazenandsawyer.com

Please feel free to contact us if you have any questions or would like to discuss our qualifications further.

Very truly yours,

Albert Muniz, PE
Project Manager

J. Philip Cooke, PE
Project Director

Tab 2 – Submittal Questionnaire (Attachment A)

ENGINEERING SERVICES QUALIFICATION STATEMENT AND SUBMITTAL QUESTIONNAIRE

PROJECT NAME: CONSTRUCTION ADMINISTRATION SERVICES FOR THE DRILLING OF DEEP INJECTION WELLS NO. 3 & NO. 4
PROJECT NO.: 19-9119

1. FIRM NAME & OFFICE LOCATION (Mailing Address and Street Address)

Name: Hazen and Sawyer

Mailing Address:
Street/PO Box: 4000 Hollywood Boulevard, Suite 750 North
City: Hollywood **State** FL **Zip** 33021

Physical Address (if different from above):
Street: Same as above
City: _____ State: _____ Zip: _____

Phone (954) 987 - 0066 Ext _____ Fax (954) 987 - 2949

Primary E-Mail Address: pdavis@hazenandsawyer.com

Web Site Address: www.hazenandsawyer.com

Contacts:
1. Name: Patrick Davis, PE Title: Vice President
2. Name: Albert Muniz, PE Title: Vice President

2. TYPE OF ORGANIZATION

A. Check One:

- ☑ Corporation (complete Section B and G)
- ☐ Partnership (complete Section C and G)
- ☐ Sole Proprietorship (complete Section D)
- ☐ Joint Venture (complete Section E and G
- ☐ Other (complete Section F and G

B. If a Corporation, State incorporated: New York

Date of Incorporation: June 13, 1977

State in which Incorporated: New York

If an out-of-state corporation that is currently authorized to do business in the State of Florida, give the date of such authorization: October 18, 1978

*

Name and Titles of Principal Officers	Date Elected
Patrick Davis, PE	1989
Alber Muniz, PE	1998
Robert Taylor Jr., PE	2011

*Southeast Region Principal Officers

C. If a Partnership, State formed:

Date of Partnership:

Type of Partnership (General or Limited):

Names and Addresses of Partners:

D. If Joint Venture, State formed:

Date of Joint Ventureship:

Names and Addresses of Joint Venturers:

E. If a Sole Proprietorship, State created:

Name and Address of Sole Proprietor:

F. If other than above, please describe:

G. Related Parent Company, Divisions, and Subsidiaries:
(Attach additional information on other office locations, if appropriate)*

Regional Headquarters: 4000 Hollywood Boulevard, Suite 750N, Hollywood, FL 33021

101 NE Third Avenue, Suite 550, Fort Lauderdale, FL 33301

2101 NW Corporate Boulevard, Suite 301, Boca Raton, FL 33431

999 Ponce de Leon Boulevard, Suite 1150, Coral Gables, FL 33134

919 Lake Baldwin Lane, Suite A, Orlando, FL 32814

10002 Princess Palm Avenue, Registry One Building, Suite 200, Tampa, FL 33619

7334 Delainey Court, Sarasota, FL 34240

6675 Corporate Center Pkwy, Suite 330, Jacksonville, FL 32216

*Only Florida offices listed

Please attach the following:

a. Corporate Organization Chart — Please see the following page.
b. Resumes of Principal Staff — Please see Appendix 1.
c. Corporate Family Tree — N/A
d. Company Brochure/Annual Report — Please see Appendix 2.

Corporate Organizational Chart

Hazen

Board of Directors

Charles S. Hocking, PE
Patricia Carney, PE
Gary J. Haubner, PE
Peter J. Young, PE
Richard E. Peters, PE
Paul A. Pitt, PhD, PE
Alan L. Stone, PE
Robert B. Taylor, Jr., PE
Ronald L. Taylor, PE

President and CEO

Charles S. Hocking, PE

CORPORATE OPERATIONS

Accounting
William A. Crayon

Information Technology
David Jao

Communications
Jeffrey A. Neale

Training
Donald Ray

REGIONAL OPERATIONS

Southeast
Robert B. Taylor, Jr., PE

Northeast
Richard E. Peters, PE

Mid-Atlantic
Ronald L. Taylor, PE

Midwest
Gary J. Haubner, PE

Southwest
Chamindra Dassanayake, PE

Intermountain
Roger Austin, PE

3. EMPLOYEES AND PERSONNEL Provide a separate listing for personnel at the corporate (national) level, with the state (Florida) level and for the local office.

Permanent Office Staff	Number	Avg. Years With Firm		
		1-5	5-10	10+
Administrative	133	73	25	35
Project Management	26	11	6	9
Engineers (1)	763	436	105	222
Design/Drafting	91	51	14	26
Computer Services	N/A			

Permanent Office Staff	Number	Avg. Years With Firm		
		1-5	5-10	10+
Clerical /Technicians	29	13	8	8
Procurement	N/A			
Project Control and Estimating	10	2	3	5
Construction Management	145	73	23	49
Research and Development	N/A			

Total: 1,197

Local Office Location:
Hollywood, Florida

Personnel in Organization by Discipline.

Discipline	Engineers		Designers
	Reg	Total	Total
Civil	34	34	91 for all disciplines
Sanitary	300	300	
Structural	49	49	
Mechanical	72	72	
HVAC	14	14	
Process	96	96	
Electrical	46	46	
Instrumentation	22	22	
Industrial	0	0	

Total: 740

(1) This number includes 232 project managers.

Discipline (*Procurement)*	**Personnel**
Capital Equipment Buyers	0
Subcontract Administrators	0
Bulk Material Buyers	0
Inspection/Expediting	0
Clerical/Technical Support	0

Discipline (*Construction Management)*	**Personnel**	
Field Superintendents	0	
Home Office Management	0	
Planners (Site, City, Community)	0	
Architects	2	
Other	Field Coordinator: 16	Senior Field Coordinators: 26
	Field Inspectors: 2	Senior Field Inspectors: 10

Maximum Man-Hours Available Per Year:	1,661,920 hours
Current Estimated Man-Hours Per Year:	1,130,000 hours

3. EMPLOYEES AND PERSONNEL Provide a separate listing for personnel at the corporate (national) level, with the state (Florida) level and for the local office.

Permanent Office Staff	Number	Avg. Years With Firm		
		1-5	5-10	10+
Administrative	12	0	1	6
Project Management (1)	33	0	0	33
Engineers	54	8	6	39
Design/Drafting	7	0	1	6
Computer Services	1	0	1	0

Permanent Office Staff	Number	Avg. Years With Firm		
		1-5	5-10	10+
Clerical /Technicians	5	4	0	1
Procurement	N/A			
Project Control (2) and Estimating	5	0	2	3
Construction (3) Management	5	0	0	5
Research and Development	N/A			

Total: 119

Local Office Location:
Hollywood, Florida

Personnel in Organization by Discipline.

Discipline	Engineers		Designers
	Reg	Total	Total
Civil	21	21	7 for all disciplines
Sanitary	39	39	
Structural	4	4	
Mechanical	3	3	
HVAC	1	1	
Process	8	8	
Electrical	3	3	
Instrumentation	4	4	
Industrial	1	1	

Total: 84

(1) This number includes 23 engineers.

(2) This number includes 2 engineers.

(3) This number includes 5 engineers.

Discipline (*Procurement)*	**Personnel**
Capital Equipment Buyers	0
Subcontract Administrators	0
Bulk Material Buyers	0
Inspection/Expediting	0
Clerical/Technical Support	0

Discipline (*Construction Management)*	**Personnel**
Field Superintendents	100
Home Office Management	29
Planners (Site, City, Community)	0
Architects	16
Other	0

Maximum Man-Hours Available Per Year:	180,960 hours
Current Estimated Man-Hours Per Year:	123,000 hours

3. EMPLOYEES AND PERSONNEL Provide a separate listing for personnel at the corporate (national) level, with the state (Florida) level and for the local office.

Permanent Office Staff	Number	Avg. Years With Firm		
		1-5	5-10	10+
Administrative	3	0	0	3
Project Management (1)	10	0	0	13
Engineers	31	4	3	24
Design/Drafting	2	0	1	1
Computer Services	1	0	1	0

Permanent Office Staff	Number	Avg. Years With Firm		
		1-5	5-10	10+
Clerical /Technicians	1	1	0	1
Procurement	N/A			
Project Control (2) and Estimating	2	0	0	2
Construction Management	2	0	0	2
Research and Development	N/A			

Total: 52

Local Office Location:
Hollywood, Florida

Personnel in Organization by Discipline.

Discipline	Engineers		Designers
	Reg	Total	Total
Civil	11	11	2 for all disciplines
Sanitary	19	19	
Structural	1	1	
Mechanical	1	1	
HVAC	0	0	
Process	2	2	
Electrical	2	2	
Instrumentation	2	2	
Industrial	0	0	

Total: 38

(1) This number includes 5 engineers.

(2) This number includes 2 engineers.

Discipline (*Procurement)*	**Personnel**
Capital Equipment Buyers	0
Subcontract Administrators	0
Bulk Material Buyers	0
Inspection/Expediting	0
Clerical/Technical Support	0

Discipline (*Construction Management)*	**Personnel**	
Field Superintendents	0	
Home Office Management	0	
Planners (Site, City, Community)	0	
Architects	0	
Other	Field Coordinator: 1	Senior Field Coordinators: 1
	Field Inspectors: 1	Senior Field Inspectors: 0

Maximum Man-Hours Available Per Year:	60,320 hours
Current Estimated Man-Hours Per Year:	41,000 hours

4. FINANCIAL INFORMATION

A. Attach a copy of current audited income statement and balance sheet.

Please see Appendix 3. We respectfully request that all financial materials be treated as confidential. Financial statements are exempt from Florida Public Records requirements, as noted in Florida Statute Chapter 119.

5. WORK EXPERIENCE:

A. Types of Services Provided (Check Yes or No)

	Yes	No		Yes	No
Feasibility Studies	☑	☐	Stress Analysis*	☐	☑
Drawings					
Preparation of Specifications	☑	☐	Pipeline	☑	☐
Construction Mgmt. Services	☑	☐	Surveying	☐	☑
Process Problem Analysis	☑	☐	Direct Hire Field Construction	☐	☑
Energy Conservation Studies	☑	☐	Detailed Instrumentation & Control	☑	☐
Soil and Foundation Studies	☐	☑	Process Design	☑	☐
Foundation Design	☐	☑	Equipment Design	☐	☑
Structural Design	☑	☐	Detailed Electrical	☑	☐
Testing Capability	☐	☑	Detailed Piping Design	☑	☐
Detailed Mechanical	☑	☐	Construction Management	☑	☐

Procurement ☐ ☑ Inspection/Expediting ☑ ☐

B. Drafting Method Utilized:

*Manual ☑ Computer ☑ If Computer, What Program: Auto CAD 17, Civil 3D 2017, Revit 2017

C. Please attach summaries for projects, related to the type of work to be awarded as a result of this submittal, completed by your firms including: Please see Tab 4 for projects sheets.

1) Location of project and client
2) Description of project
3) Your scope of involvement in project
4) Contract type (e.g. reimbursable/fixed fee/fixed price)
5) Approximate value of contract
6) Duration of work
7) Project Manager Utilized

6. EXPERIENCE WITH THE CITY OF HOLLYWOOD

A. Most Recent City of Hollywood Work Experience: (Date/Location/Description)

Started 11/2016 / Ongoing ; Clarifiers 5&6 Rehabilitation

Started 02/2018 / Ongoing; RAS Pump Station No. 1 Replacement

Started 11/2018 / Ongoing: Citywide Vulnerability Study

Completed 08/2017: Deep Injection Well MIT

Completed 09/2017: Deep Injection Well Cleaning

Completed 07/2017: Deep Injection Well Operating Permit

Completed 08/2018; Hollywood WWTP; Reuse Water System Expansion Phase 2

B. Current City of Hollywood Engineering services agreement, if any: (Agreement Number/Expiration Date/Location/Description)

City Project No. 17-1324; awarded 10/2017; Public Utilities Department;

Professional Consulting Engineering Services Related to Water Treatment Plant and

Wastewater Treatment Plant Projects

7. SUBCONTRACTED SERVICES:

List Subcontractor/ Sub-consultant firms expected to be utilized, and their portion of the work below:

Name of Firm	Area of work to be Performed under this agreement
JLA Geosciences, Inc.	Well Resident Observation, Hydrogeology, QA/QC
Drilling Geo	Well Resident Observation

Also, provide resumes of individuals from these firms whom the Subcontractors shall utilize for completion of the construction. See Appendix A.

Identify those subcontractors that are Minority/Women's Business Enterprises and repeat required information in "Minority/Woman Business Participation", below for said Subcontractors. (THIS REQUIREMENT FOR M/WBE INFORMATION IS VOLUNTARY)

8. BUSINESS SIZE AND CLASSIFICATION

A. Size (check one)

☐ Small
A domestic concern that normally employs less than 500 persons, or as defined by section 3 of the Small Business Act.

☑ Large
A domestic concern which, including domestic and foreign divisions and affiliates, normally employs 500 or more persons, is independently or publicly owned or controlled and operated and

which may be a division of another domestic or foreign concern.

B. Classification (check where applicable; may be more than one**)**

☐ Foreign:
A concern which is not incorporated in the United States or an unincorporated concern having its principal place of business outside the United States.

☐ Minority:
A business, at least 50% of which is owned by minority group members, or, in case of publicly owned businesses, at least 51% of the stock of which is owned by minority group members. For the purpose of this definition, minority group members are Black-Americans, Hispanic-Americans, American-Orientals, American-Indians, American-Eskimos, and American-Aleuts.
(THE REQUIREMENT FOR M/WBE INFORMATION IS VOLUNTARY)

☐ Women:
A business that is at least 51% owned and controlled by a woman or women.
(THE REQUIREMENT FOR M/WBE INFORMATION IS VOLUNTARY)

☐ Nonprofit:
A business or organization that has received nonprofit status under IRS Regulation 501C3.

☐ Sheltered:
A sheltered workshop or other equivalent business basically employing the handicapped.

Please indicate in the space below how your firm complies with the definitions selected above.

N/A

9. PROFESSIONAL ENGINEER'S LICENSE:

Respondent must hold a valid State of Florida Professional Engineer's License to be considered a qualified bidder.

State of Florida Professional Engineer's License No.: CA2771

Date: Expires: 2/28/21

Primary Classification: Engineering

10. QUALIFICATION FORM PREPARED BY:

Name (print or type): Patrick Davis, PE

Title: Vice President

Signature: Patrick C. Davis

Address: 4000 Hollywood Blvd., Suite 750N, Hollywood, Florida 33021

Telephone Number: (954) 987-0066

INSURANCE REQUIREMENTS

The insurance policy shall not contain any exceptions that would exclude coverage for risks that can be directly or reasonably related to the scope of goods or services in this bid/proposal. A violation of this requirement at any time during the term, or any extension thereof shall be grounds for the immediate termination of any contract entered in to pursuant to this bid/proposal. In order to show that this requirement has been met, along with an insurance declaration sheet demonstrating the existence of a valid policy of insurance meeting the requirements of this bid/proposal, the successful proposer must submit a signed statement from insurance agency of record that the full policy contains no such exception.

The City reserves the right to require additional insurance in order to meet the full value of the contract.

The City reserves the right to require any other insurance coverage it deems necessary depending upon the exposures.

HOLD HARMLESS AND INDEMNITY CLAUSE:

Hazen and Sawyer Patrick A. Davis, PE, Vice President

(Company Name and Authorized Signature, Print Name),

the contractor shall indemnify, defend and hold harmless the City of Hollywood, its elected and appointed officials, employees and agents for any and all suits, actions, legal or administrative proceedings, claims, damage, liabilities, interest, attorney's fees, costs of any kind whether arising prior to the start of activities or following the completion or acceptance and in any manner directly or indirectly caused, occasioned or contributed to in whole or in part by reason of any act, error or omission, fault or negligence whether active or passive by the contractor, or anyone acting under its direction, control, or on its behalf in connection with or incident to its performance of the contract.

Hazen and Sawyer Patrick A. Davis, PE, Vice President

(Company Name and Authorized Signature, Print Name),

further certifies that it will meet all insurance requirements of the City of Hollywood and agrees to produce valid, timely certificates of coverage.

OTHER CONSIDERATIONS

Copies submitted may not be viewed until 30 days after opening date or notice of intent to award is posted.

HAZE&SA-01 KGODWIN

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 3/29/2019

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

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

PRODUCER
Ames & Gough
8300 Greensboro Drive
Suite 980
McLean, VA 22102

CONTACT NAME:
PHONE (A/C, No, Ext): (703) 827-2277 FAX (A/C, No): (703) 827-2279
E-MAIL ADDRESS: admin@amesgough.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Hartford Fire Insurance Company A+ (XV)	19682
INSURER B : Hartford Casualty Insurance Company A+ (XV)	29424
INSURER C : Twin City Fire Insurance Company	29459
INSURER D : Continental Casualty Company (CNA) A, XV	20443
INSURER E :	
INSURER F :	

INSURED
HAZEN AND SAWYER
498 Seventh Avenue
New York, NY 10018

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

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

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY			42UUNBH8062	3/29/2019	3/29/2020	EACH OCCURRENCE	$ 1,000,000
	CLAIMS-MADE X OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$
							MED EXP (Any one person)	$ 10,000
							PERSONAL & ADV INJURY	$ 1,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 2,000,000
	POLICY X PRO-JECT X LOC						PRODUCTS - COMP/OP AGG	$ 2,000,000
	OTHER:							$
B	AUTOMOBILE LIABILITY			42UENBH7997	3/29/2019	3/29/2020	COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
	X ANY AUTO						BODILY INJURY (Per person)	$
	OWNED AUTOS ONLY / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	HIRED AUTOS ONLY / NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
							Comp./Coll. Ded	$ 1,000
	UMBRELLA LIAB OCCUR						EACH OCCURRENCE	$
	EXCESS LIAB CLAIMS-MADE						AGGREGATE	$
	DED RETENTION $							$
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY	N / A		42WBAD0SYE	3/29/2019	3/29/2020	X PER STATUTE OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y / N: N						E.L. EACH ACCIDENT	$ 1,000,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000
D	Professional Liab			AEH008231489	3/29/2019	3/29/2020	Per Claim/Agg	1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
The City of Hollywood is included as additional insured where required by written contract with respect to general liability.

CERTIFICATE HOLDER
City of Hollywood
PO Box 229045
Hollywood, FL 33022

CANCELLATION
SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

EQUAL EMPLOYMENT OPPORTUNITY

Proposer shall provide a written statement that it does not and will not discriminate against any person, employee, or applicant for employment, because of race, creed, color, religion, sex, national origin, ancestry, age or disability.

PROMPT PAYMENT: LATE PAYMENTS BY CONTRACTOR TO SUBCONTRACTOR AND MATERIAL SUPPLIERS; PENALTY:

When a contractor receives from the City of Hollywood any payment for contractual services, commodities, materials, supplies, or construction contracts, the contractor shall pay such moneys received to each Subcontractor and Material Supplier in proportion to the percentage of work completed by each Subcontractor and Material Supplier at the time of receipt. If the contractor receives less than full payment, then the contractor shall be required to disburse only the funds received on a pro rata basis with the Subcontractors and Material Suppliers, each receiving a prorated portion based on the amount due on the payment. If the contractor without reasonable cause fails to make payments required by this section to Subcontractors and Material Suppliers within 15 working days after the receipt by the contractor of full or partial payment, the contractor shall pay to the Subcontractors and Material Suppliers a penalty in the amount of one percent of the amount due, per month, from the expiration of the period allowed herein for payment. Such penalty shall be in addition to actual payments owed. Retainage is also subject to the prompt payment requirement and must be returned to the Subcontractor or Material Supplier whose work has been completed, even if the prime contract has not been completed. The Contractor shall include the above obligation in each subcontract it signs with a Subcontractor or Material Suppler.

ADA COMPLIANCE

Persons with disabilities who require reasonable accommodation to participate in City programs and/or services may call the Equal Opportunity Manager, Office of Human Resources and Risk Management at (954) 921-3218 (voice). If an individual is hearing or speech impaired, please call Florida Relay Service 1-800-955-8771.

PUBLIC ENTITY CRIMES

"A person or affiliate who has been placed on the convicted vendor list following a conviction for public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list."

DECLARATION

The aforementioned, as Proposer (herein used in the masculine singular, irrespective of actual gender and number), declares, under oath that no other person has any interest in this Proposal or in any resulting agreement to which this Proposal pertains, that this Proposal is not made with connection or arrangement with any other persons, and that this Proposal is made without collusion or fraud.

The Proposer further declares that he has complied in every respect with all the instructions to Proposers, that he has read all addenda, if any, issued prior to the opening of Proposals, and that he has satisfied himself fully relative to all matters and conditions with respect to the general conditions of the agreement and all relevant information to which this proposal pertains.

DISCLOSURE OF CONFLICT OF INTEREST

Vendor shall disclose below, to the best of his or her knowledge, any City of Hollywood officer or employee, or any relative of any such officer or employee as defined in Section 112.3135, Florida Statutes, who is an officer, partner, director or proprietor of, or has a material interest in the vendor's business or its parent company, any subsidiary, or affiliated company, whether such City official or employee is in a position to influence this procurement or not.

Failure of a vendor to disclose any relationship described herein shall be reason for debarment in accordance with the provisions of the City of Hollywood Purchasing Ordinance.

Name	Relationship
Not Applicable	

In the event the vendor does not indicate any name, the City shall interpret this to mean that no such relationship exists.

Ron DeSantis, Governor

FBPE
FLORIDA BOARD OF PROFESSIONAL ENGINEERS

STATE OF FLORIDA

BOARD OF PROFESSIONAL ENGINEERS

THE ENGINEERING BUSINESS HEREIN IS AUTHORIZED UNDER THE PROVISIONS OF CHAPTER 471, FLORIDA STATUTES

HAZEN AND SAWYER, P.C.

HAZEN AND SAWYER
498 SEVENTH AVENUE
11TH FLOOR
NEW YORK NY 10018

LICENSE NUMBER: CA2771

EXPIRATION DATE: FEBRUARY 28, 2021

Always verify licenses online at MyFloridaLicense.com

Do not alter this document in any form.

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

State of Florida
Department of State

I certify from the records of this office that HAZEN AND SAWYER, P.C. is a New York corporation authorized to transact business in the State of Florida, qualified on October 18, 1978.

The document number of this corporation is 841657.

I further certify that said corporation has paid all fees due this office through December 31, 2019, that its most recent annual report/uniform business report was filed on January 14, 2019, 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 Fourteenth day of January, 2019

Secretary of State

Tracking Number: 0927146459CC

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

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

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Tab 3 – Profile of Consultant

Section 3

Profile of Consultant

The Hazen team offers award-winning national expertise through local specialized engineers with experience within the unique hydrological environment of South Florida.

Hazen is a national/global corporation that specializes solely in water, wastewater, and reclaimed water engineering. It is our only business. **Hazen has been involved in the permitting, design, and construction of Class I deep injection wells in south Florida since 1978.** In fact, over half of the 42 deep injection wells constructed in Broward County are projects Hazen worked on, and 15 of those wells have been installed by Younquist Brothers Incorporated. Using our vast experience, the Hazen Deep Injection Well Construction Administration Services Team has reviewed the Request for Qualifications (RFQ) and has developed a project approach that addresses the necessary services outlined by the City of Hollywood.

Hazen's roots go back over 100 years to the accomplishments of Allen Hazen, one of the pioneers of modern water supply engineering and co-developer of the Hazen-Williams formula for fluid flow in pipes in 1903. Hazen was established by Hazen's son Richard and Alfred W. Sawyer in 1951. Together they created a company culture focused on the profession—not just the business—of engineering. Their legacy is a firm with a reputation for high-quality work and customer service.

Hazen has provided complete in-house engineering services in Florida since 1968. Our staff members have extensive expertise in water, wastewater, reclaimed water, structural, electrical and instrumentation and controls.

Over half of the 42 deep injection wells constructed in Broward County are projects Hazen worked on.

68 years in existence

51 years in **Florida**

1,197 **total** staff

120 **Florida** staff

South Florida staff **91**

100% of work devoted to **the water environment**

Hazen and Sawyer's Areas of Service

- Water Resources
- Wastewater
- Stormwater
- Conveyance
- Deep Injection Wells
- Modeling
- Permitting
- Construction
- Drinking Water
- Reuse

- Energy Management
- Economic & Financial Services
- Hydraulic Modeling
- Biosolids
- Environmental Planning and Permitting
- Sustainability
- Asset Management
- Alternative Delivery
- Applied Research
- CFD Modeling
- Cost Estimating
- Disinfection
- Groundwater Treatment
- Integrated Planning
- Membranes

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Our Florida staff has been involved in the implementation of more than $2 billion in water-related projects in Florida over the past ten years. These Florida projects include planning, design, value engineering and facility optimization, permitting, construction management, and start-up of water, wastewater, and reclaimed water treatment and storage systems; conveyance systems; planning; and electrical and instrumentation/control systems.

Most of our team members are long-time Florida residents and offer considerable knowledge of Florida's current and historic issues with water use permitting, water demand, water supply, effluent disposal, and the natural environment. The firm is owned entirely by its employees, many of whom have been with the firm for more than

Office Locations

Hazen's company headquarters is located in New York City. In Florida, which is within Hazen's Southeast Region, we have eight offices strategically located to provide full engineering services to our local clientele.

Alabama
Birmingham
Arizona
Tempe
California
Irvine
Palm Desert
Sacramento
San Diego
San Francisco
San Jose
Los Angeles
Colorado
Denver
Connecticut
Hartford

Florida
Boca Raton
Coral Gables
Fort Lauderdale
Hollywood
Jacksonville
Orlando
Sarasota
Tampa
Georgia
Atlanta
Illinois
Marion
Kentucky
Lexington
Louisville

Maryland
Baltimore
Silver Springs
Massachusetts
Boston
Michigan
Detroit
New Hampshire
Manchester
New Jersey
Edison
New Mexico
Albuquerque
New York
Hicksville
New York
White Plains

North Carolina
Charlotte
Greensboro
Raleigh
Winston-Salem
Ohio
Akron
Cincinnati
Cleveland
Columbus
Pennsylvania
Philadelphia
State College
South Carolina
Charleston
Columbia
Greenville

Tennessee
Chattanooga
Knoxville
Nashville
Texas
Austin
Corpus Christi
Dallas
El Paso
Fort Worth
Houston
Virginia
Fairfax
Newport News
Richmond
Virginia Beach

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Principal Office Location

Hazen has offices strategically located throughout Florida to provide full engineering services to all our clients. To provide the City with a team that can respond in an expeditious manner, Hazen's office in Hollywood, Florida (established in 1968), will be primarily responsible for the proposed contract. In addition, a majority of our key personnel who will lead the construction administration of this project are located in the Hollywood office. Our Hollywood office is conveniently located near the Florida's Turnpike and I-95 at 4000 Hollywood Boulevard, a 10-minute drive from the Southern Region Wastewater Treatment Plant (SRWWTP).

Project Director, **J. Philip Cooke, PE,** and Deputy Project Manager, **Michael Wengrenovich, PE,** are located in Hollywood as are well resident observation inspectors, **Jorge Valdes** and **Lauren Kuzbyt;** and backup inspectors, **Tara VanEyk, PE, and Monique Durand, PE.** Project Manager, **Albert Muniz, PE,** lives in Coconut Creek. All key staff reside in Broward County, which ensures we are readily available to the City.

The map below illustrates our project team's office locations in proximity to the City's facilities. In addition, Hazen can call on support staff from our Boca Raton and Coral Gables offices, as well as staff from our other Florida offices, as needed.

Our team is locally-based, ready, and available to respond to the City's needs.

Address

Hazen and Sawyer
4000 Hollywood Boulevard
Suite 750 North
Hollywood, FL 33021

(954) 987-0066

Awards

Hazen's project earn national and local recognition. A sampling of our awards appear on the next page.

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Our Projects earn national and local recognition.

ECRWRF Biosolids Improvements Project

ASCE Palm Beach 2019 Outstanding Project of the Year

JEA Arlington East WRF BNR Upgrade

2011 FICE Engineering Excellence Award

Newtown Creek Wastewater Treatment Plant

2014 ACEC National Recognition Award

Miami-Dade WASD South District WWTP High Level Disinfection Upgrade

2014 FICE Winner in the Water/ Stormwater Category

Miami-Dade WASD Government Cut Utility Relocation Projects

2014 DBIA Florida Region Award

Loxahatchee River Environmental Control District (LRD) Reuse Program

2016 FWEA Collection System of the Year Award in the Large Systems Category

2016, 2011 FWEA David York Water Reuse Award (5 to 15 mgd)

Fort Lauderdale Intracoastal Waterway Crossings at Las Olas Boulevard

2017 Florida Region DBIA Project of the Year Award (Water/ Wastewater)

SWIFT Research Center Hampton Roads, VA

2018 ENR Mid-Atlantic Best Water/Environment Project of the Year

Miami-Dade PWWM Bear Cut and West Bridges Emergency Rehabilitation and Water Main Replacement

2015 FES Technical Achievement

New York City Wastewater Resiliency Plan

2014 ACEC National Recognition Award

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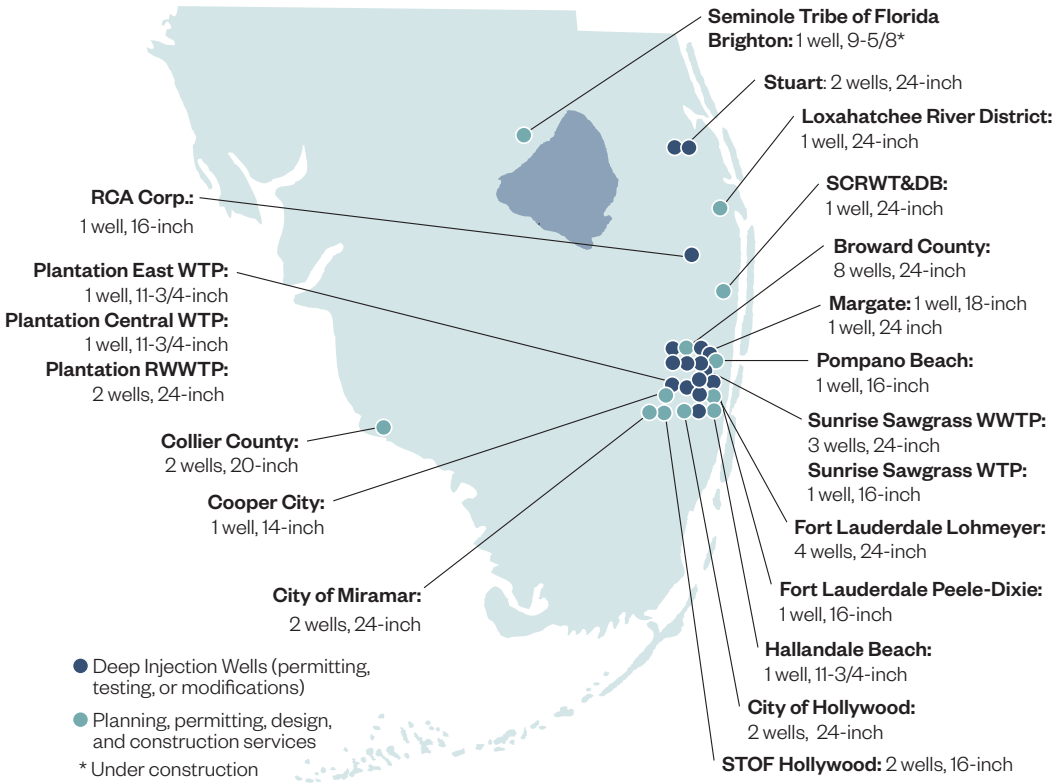
Deep Injection Wells

Hazen has been permitting, designing, and managing the construction of deep injection wells for almost 40 years, with 24 installations in Broward County alone. This has provided us with invaluable insights into the regulatory and contracting environment for this highly specialized type of work.

The Hazen team, in particular team members **Albert Muniz, PE; Michael Wengrenovich, PE; John Largey;** and **Rodney Miller, PG,** offer extensive experience in the study, design, permitting and construction of injection wells as shown in the map below. In addition to our proven track record, Hazen has led efforts on behalf of Florida utilities related to injection well use and applications. We have worked closely with all regulatory and permitting agencies responsible for projects in Florida over the last four decades. Hazen performs utility/engineering related permitting and regulatory compliance services on most of our contracts.

Our mechanical integrity testing experience appears on the next page.

Hazen Team's Deep Injection Well Experience



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Mechanical Integrity Testing Experience

Client	Plant	No. of Wells	Years Performed	
Broward County	North Regional WWTP	Six	2014 2019	
Collier County	South Central Regional WTP	Two	2008 2002	
City of Cooper City	WTP	One	2001	
City of Fort Lauderdale	Peele-Dixie WTP	One	2015 2013 2010	
City of Hallandale Beach	WTP	One	2014 2016	2013 2009
City of Hollywood	WWTP	Two	2017 2012 2011	2009 2007 2003
Loxahatchee River District	WWTP	One	2019 2016 2011 2006	2001 1996 1991 1986
City of Margate	WWTP	Two	2018 2013 2008	
City of Miramar	WWTP	Two	2015 2010	2005 2000
Palm Beach County	Southern Regional WRF	Two	1994	
City of Plantation	Central WTP	One	2017 2012	2007 2002
City of Plantation	East WTP	One	2018 2013	2009 2004
City of Plantation	Regional WWTP	Two	2015 2010	2005 2000
City of Pompano Beach	WTP	One	2001	
South Central Regional Wastewater Treatment and Disposal Board	WWTP	One	2013 2009	
City of Sunrise	Sawgrass WWTP	Three	2018 2013 2008	
City of Sunrise	WTP	One	2019*	
City of North Miami Beach	WTP	One	2019*	

* Services awarded; commenced permitting

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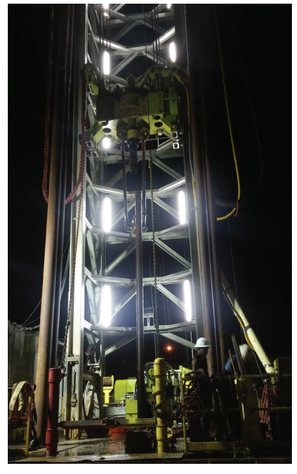
Hazen's Comprehensive Deep Injection Well Experience

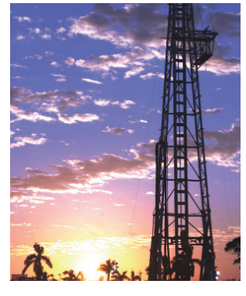
Client	Description	Design & Construction Permit	Construction and Testing Oversight	Well Completion Report	O&M Manual	Initial Operating Permit	Mechanical Integrity Testing	Operating Permit Renewal
Broward County	NRWWTP - Four Injection Wells [1] (IW-1 through IW-4)	●	●	●	●	●	●	●
Broward County	NRWWTP - Two Injection Wells (IW-5 and IW-6)	●	●	●	●	●	●	●
Broward County	North Regional WWTP Injection Wells 7 & 8	●	●	●	●	●	●	
Broward County	NRWWTP - Modify Dual Zone Monitor Wells (MW-1 and MW-2)	●	●	●				
Broward County	NRWWTP - One Dual Zone Monitor Well (MW-5)	●	●	●				
Broward County	NRWWTP - Operating Permit Renewal and Mechanical Integrity Test						●	●
City of Fort Lauderdale	Injection Wells 1, 2 & 3	●	●	●	●	●	●	
City of Plantation	Central WTP - Industrial Well (Tubing and Packer Replacement)	●	●	●	●		●	
City of Plantation	Central WTP - Injection Well Operating Permit Renewal and Mechanical Integrity Test						●	●
City of Plantation	East WTP - Industrial Well (Tubing and Packer Replacement)	●	●	●	●		●	
City of Plantation	East WTP - Injection Well Operating Permit Renewal and Mechanical Integrity Test						●	●
City of Plantation	Regional WWTP - Dual Zone Monitor Well Replacement	●	●	●				
City of Plantation	Regional WWTP - Injection Well Operating Permit Renewals and Mechanical Integrity Test						●	●
City of Sunrise	Sawgrass WWTP - (Three Injection Wells) Operating Permit and Mechanical Integrity Test						●	●
City of Cooper City	WTP - Industrial Well (Tubing & Packer)	●	●	●	●	●	●	
City of Fort Lauderdale	G. T. Lohmeyer WWTP - Test Injection Well and One Monitor Well	●	●	●	●	●	●	
City of Fort Lauderdale	Peele-Dixie WTP - One Industrial Well (Tubing & Packer)	●	●	●	●	●	●	●
City of Fort Lauderdale	Peele-Dixie WTP - Operating Permit Renewal and Mechanical Integrity Test						●	●
City of Hallandale Beach	Hallandale WTP Industrial Design - One Industrial Well (Tubing & Packer)	●	●	●	●	●	●	●
City of Hallandale Beach	Hallandale WTP Injection Well Mechanical Integrity Test						●	●
City of Hollywood	SRWWTP Two Injection Wells and One Dual Zone Monitoring Well	●	●	●	●	●	●	●
City of Hollywood	SRWWTP - Injection Well Mechanical Integrity Test						●	●
City of Margate	WWTP Operating Permit and Mechanical Integrity Test (Two Injection Wells)						●	●
City of Miramar	Water Reclamation Facility - Two Injection Wells and Two Dual Zone Monitor Wells	●	●	●	●	●	●	●
City of Miramar	Water Reclamation Facility - Operating Permit Renewal and Mechanical Integrity Test						●	●
City of Pompano Beach	Pompano Beach WTP - Industrial Well (Tubing & Packer) for One Injection Well	●	●	●	●	●	●	
Collier County	SCRWTP Industrial Well (Tubing & Packer) Two Injection Wells [1]	●	●	●	●	●	●	
Loxahatchee River Environmental Control District	WRF One Injection Well and Monitor Well Tubes	●	●	●	●	●	●	●
Loxahatchee River Environmental Control District	WRF Dual-Zone Monitoring Well	●	●	●	●	●	●	
Miami-Dade Water and Sewer Department	South Miami Heights Injection Wells	●	●					
Seminole Tribe of Florida	Brighton Reservation Deep Injection Well (Ongoing)	●	●		●	●	●	
Seminole Tribe of Florida	Hollywood Reservation Injection Wells 1 and 2	●	●	●	●	●	●	
South Central Regional WWTP	Cities of Boynton Beach and Delray Beach WRF One Injection Well and One Dual Zone Monitor Well	●	●	●	●	●	●	●
RCA	Industrial Well (Tubing & Packer) (Note: Well not constructed)	●						

In association with another consultant [1]

Hazen

Hazen has provided complete injection well services including design, permitting, 24-hour construction supervision, and/or startup for numerous South Florida clients since 1978.





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Permitting and Permit Compliance

With decades of experience in providing utility engineering permitting and monitoring regulatory compliance, the Hazen team will assist the City with permitting. We have excellent relationships with local regulators in the region. With the number of deep injection wells we have designed, permitted, and constructed as noted above, including Injection Wells 1 and 2 at the Southern Regional Wastewater Treatment Plant, our staff has extensive knowledge of the unique challenges involved with such wells including overseeing injectivity testing, performance operations, and documenting well completion for regulatory compliance. This allows us to quickly prepare and process permit applications and required well inspection, completion, and operational notices, avoiding potential delays.

Construction Services

Building today's utility infrastructure is a complex task. Even small projects often have challenging aspects. Add in legal requirements, limited work-space, tight budgets, and regulatory-driven schedules, and the challenges quickly multiply. Acting as Construction Manager on over $5 billion worth of recent projects, we have managed programs spanning multiple sites and involving dozens of contractors and hundreds of subcontractors in a simple and efficient manner. This includes construction management of dozens of deep injection wells in Florida for over 40 years.

Litigation History

In the last 10 years, the Southeast Region of Hazen has been responsible for approximately $2 billion worth of public works construction. Our litigation record (or lack of) is excellent.

We also want to emphasize that Hazen is not wholly or partly self-insured. Hence, it is our insurer that bears the risk and not the client.

As requested, the table below provides a summary of litigation (settled or pending) within the last five years. The summary includes the nature of the litigation/claim, a brief description of the case, the outcome or projected outcome, and the monetary amount involved.

Please note that none of the listed cases will affect the performance of services to be rendered.

Professional Liability Claims	Description	Date of Action	Date Closed	Outcome	Identification Number	Court
City of Wooster vs. ATS Engineering, Inc., and Siemens Industry, Inc., and Hazen and Sawyer, P.C.and Daniel R. Miklos	The City of Wooster alleges negligence in ATS Engineering's design of a wastewater treatment plant. The City alleges that Hazen and Sawyer is the successor firm to ATS Engineering.	1/30/14	2/4/15	Settled	Case No. 14.CV.0053	In the Court of Common Pleas, Wayne County, Ohio
Yik Tak Cheung, Hao Dong Zhang and Yeung Sun Poultry Market, Inc. against City of New York, New York City Department of Environmental Protection, Northeast Remsco Construction, Inc., Nicholson Construction Company, Corporations XYZ Nos 1-5 and John Does Nos 1-10. Northeast Remsco Construction Inc., against Brierley Associates, LLC and Hazen and Sawyer, P.C.	Hazen and Sawyer is a second third-party defendant brought into this claim by Northeast Remsco Construction, Inc. Northeast Remsco alleges that Hazen's design was negligent and contributed to a building collapse. Hazen was the construction inspector, not the design engineer.	1/30/14	11/9/17	Settled	Index No.: 157328/12	Supreme Court of the State of New York, County of New York
R. J. Sullivan Corp., a Florida Corporation v. Hazen and Sawyer, P.C.	City requested Hazen to investigate excessive noise from Contractor-selected pumps. Hazen determined pump manufacturer bearing issues. Contractor sued Hazen.	5/7/14	8/29/18	Judgment against Hazen	Case CACE-14-008682(05)	In the Circuit Court of the Seventeenth Judicial Circuit in and for Broward County, Florida
Cecil Dwayne Whitson, Doing Business as Stately Scapes v. Hazen and Sawyer, P.C.	Contractor alleged negligence in connection with the construction of a retaining wall.	6/29/17	02/05/18	Settled	Civil Action No. 3:17-CV-988	United States District Court for the Middle District of Tennessee

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Professional Liability Claims	Description	Date of Action	Date Closed	Outcome	Identification Number	Court
Personal Injury Claims from Contractor Employees						
Julian Garrett and Pauline Garrett against City of New York and Skanska/Picone Joint Venture, Environmental Laboratories, Inc. and Environmental Energy Associates against Synagro Northeast, LLC against Environmental Laboratories, Inc. and Environmental Energy Associates against City of New York and Skanska/ Picone Joint Venture against Environmental Laboratories, Inc. and Environmental Energy Associates City of New York and Skanska/Picone Joint Venture against Hazen Sawyer, P.C./ Malcolm-Pirnie, Inc., A Joint Venture, Hazen and Sawyer, P.C. and Malcolm Pirnie, Inc.	Julian Garrett, an employee of Synagro Technologies, Inc., alleges he was injured cleaning a waste tank.	9/3/14	4/21/17	Settled	Index No. 14158/09	Supreme Court of the State of New York, County of Kings
Johnny Franklin Woodle verus Adams-Robinson Enterprises, Inc. and Hazen and Sawyer, P.C.	Mr. Woodle, an employee of Adams-Robinson, alleges he was injured in Columbia, South Carolina.	10/1/14	12/12/14	Dismissed	Civil Action 3:14-cv-00467-CMC	United States District Court, District of South Carolina, Columbia Division
Ronald Valerio against Hazen and Sawyer, D.P.C., Eaton Electric, Inc. and Five Star Electric Corporation	Mr. Valerio, an employee of contractor WDF, alleges an employee of an electrical contractor injured him at the Bowery Bay WWTP.	3/19/15	Open	Open	Index No. 306522/14	Supreme Court of the State of New York, County of Bronx
Marc Fodera against The City of New York, The New York City Department of Environmental Protection, The New York City Department of Sanitation and Northeast Remsco Construction, Inc. against Hazen & Sawyer, PC, Bidwell Environmental, LLC and Barbaro Electric Co. Inc	Mr. Fodera, an employee of Barbaro Electric, alleges he tipped and fell on a drainpipe at the Gowanus Canal site.	7/26/17	Open	Open	Index No. 511003/2015	Supreme Court of the State of New York, County of Kings
Michael Patrick Corbett, Jr. and Lisa Corbett against Skanska USA, Inc., Hazen & Sawyer, AECOM USA, Inc., and ARCADIS U.S., Inc	Michael Corbett alleges he contracted a bronchial infection while working at the Croton Filtration Plant from 2012 through February 2016.	2/15/19	Open	Open	Index no: 21995/2019E	Supreme Court of the State of New York, County of Bronx

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Tab 4 – Previous Performance on Related Projects

Section 4

Previous Performance on Related Projects

Hazen has provided services ranging from design and permitting through startup and operation for several recent Class I Deep Underground Injection Control (UIC) well projects from the FDEP.

Hazen has been involved in the permitting, design, and construction of Class I deep injection wells in South Florida since 1978. In fact, over half of the 42 deep injection wells constructed in Broward County are Hazen projects, and 15 of those wells have been installed by Younquist Brothers Incorporated.

Hazen offers the City of Hollywood:

35 years of familiarity with the City's facilities. Both Michael Wengrenovich, PE, and Albert Muniz, PE, worked at the site during construction of Hollywood's first two injection wells. John Largey served as a resident inspector during construction of IW-1, IW-2, and MW-1). This group of individuals has **unsurpassed knowledge and familiarity with the City of Hollywood**, site conditions, and the effluent disposal system.

A Hollywood-based firm that has been involved in the permitting, design, and/or construction of deep injection wells for 40+ years. **We have assisted all of our injection well clients in securing operating permits.**

Injection well design and construction experts each with at least 18 years of experience.

Directly relevant experience on similar projects, with a majority of those projects right here in Broward County.

Availability of key staff for the duration of the project—staff who live in Broward County or are based in Hazen's Hollywood office.

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Class I Injection Well Drilling and Testing Oversight, Well Completion Report Preparation and Construction Engineering, and Inspection of Class I Injection Well System Installation at an Existing Operational Utility Facility Experience

Hazen's experience also includes providing services for construction of injection wells in facilities with existing active injection wells. Activities must be performed correct the first time as inspection and construction are activites completed in series.

The value of qualified staff to oversee construction of injection wells cannot be overstated. Well construction activities occur in series, and tasks must be done correctly the first time. For every Hazen injection well designed and permitted, we have provided procurement assistance, field observation, construction management, and preparation of construction completion reports. Hazen has not only provided public-sector bidding support services, but has also provided assistance with negotiating contracts with licensed well drillers.

The Hazen team has qualified personnel to provide the required oversight of drilling operations and testing of Class I Deep Injection Wells and for construction engineering and inspection services for installation of Class I Deep Injection Well systems at existing and operational utility facilities. Hazen's experience also includes providing services for construction of injection wells in facilities with existing active injection wells. This is important to the inherent difficulties encountered during drilling due to imparted back pressure in the target formation. Hazen has also prepared numerous injection well completion reports (refer to Section 3 - Profile of Consultant, page 3-7), and has successfully assisted each of our injection well clients with securing an operating permit. For every injection well designed, permitted, and constructed, Hazen has obtained permission for commencement of operational testing. For those wells that completed operation testing, operational permits have been obtained.

Hazen has successfully assisted each of our injection well clients with securing an operating permit.

Similar Projects within the Last Five Years

Please refer to the project table on pages 4-5 to 4-19 that shows our experience providing construction administration services for Class I Deep Injection Well projects, as well as projects for the City of Hollywood, within the last five years. Selected project descriptions are included on pages 4-21 to 4-30, followed by brief project summaries of our additional relevant experience. It should be noted that none of the projects listed in the table include our vast other work involving well rehabilitation, tubing replacement, well design-only, well permit-only, or private client well projects.

1021-309

Average Turnaround Time for Requests for Information (RFI) and Shop Drawing/Submittal Approvals

The average turnaround time for responding to RFIs for a typical construction project will be less than 10 days. As a standard practice for deep injection well projects, RFIs are time-sensitive due to the nature of the construction. Responses usually occur in a matter of hours and are documented via email.

Likewise, for shop drawings on a typical construction project, the average turnaround time for review is 17 days. However, deep injection well projects receive 10-20 standard shop drawings—far fewer than standard types of utility contracts—and turnaround time is usually within 10 business days. As with RFIs, we prioritize our approval process to match the Contractor's schedule needs and often return shop drawings within 1–2 days when they are critical to maintain the project schedule. We also work directly with suppliers when needed and approved by the contractor to expedite submittal approvals.

As a standard practice, for deep injection well projects, RFI responses occur in a matter of hours and are documented via email.

Ability to Perform Construction Management of Deep Injection Wells with In-house Resources

The Hazen team has the expertise and depth of resources to perform construction management of deep injection wells with in-house resources. All work will be coordinated from our principal office location in Hollywood, Florida, a short drive away from the City's facilities. We have a deep bench of local staff who have worked on deep injection well projects for Southeast Florida clients over many years. Our proposed Project Director, **J. Philip Cooke, PE;** Project Manager, **Albert Muniz, PE;** and Deputy Project Manager, **Michael Wengrenovich, PE;** and well resident observation inspectors, **Jorge Valdes** and **Lauren Kuzbyt,** are based in Broward County.

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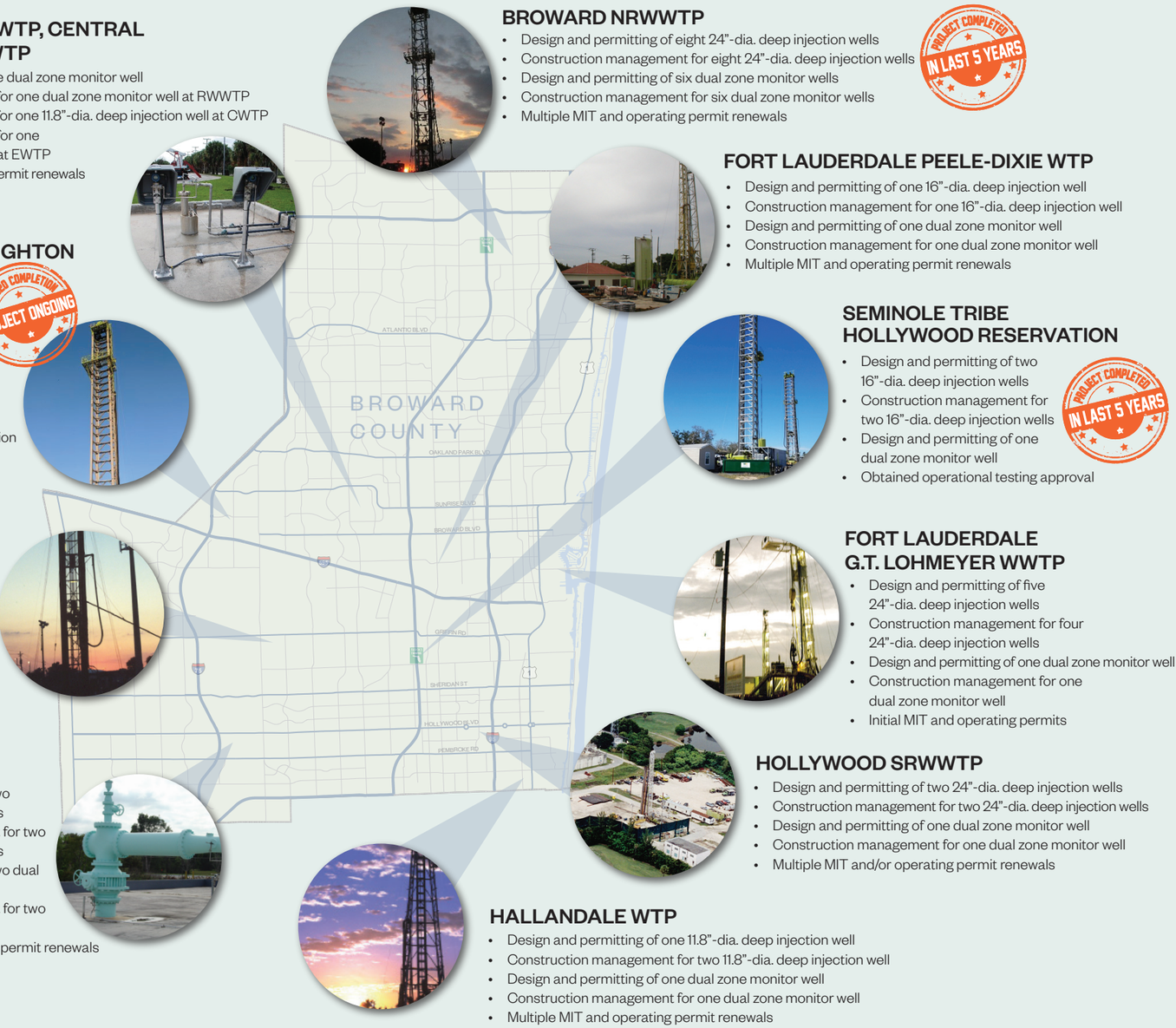
Hazen has been involved in the design, permitting, testing, and construction management of Class I deep injection wells in South Florida since 1978.

Over half of the 42 deep injection wells currently operating in Broward County are Hazen projects.



PLANTATION EAST WTP, CENTRAL WTP, REGIONAL WWTP

- Design and permitting of one dual zone monitor well
- Construction management for one dual zone monitor well at RWWTP
- Design tubing replacement for one 11.8"-dia. deep injection well at CWTP
- Construction management for one 11.8"-dia. deep injection well at EWTP
- Multiple MIT and operating permit renewals

SEMINOLE TRIBE BRIGHTON RESERVATION

- Design and permitting of a 9⅝-inch injection well
- Design and permitting of one dual zone monitor well
- Prepared design documents and permit application, and assisted with procurement
- Currently providing construction management services

COOPER CITY WTP

- Design and permitting of one 14"-dia. deep injection well
- Construction management for one 14"-dia. deep injection well
- Design and permitting of one dual zone monitor well
- Construction management for one dual zone monitor well
- Initial MIT and operating permit

MIRAMAR WRF

- Design and permitting of two 24"-dia. deep injection wells
- Construction management for two 24"-dia. deep injection wells
- Design and permitting of two dual zone monitor wells
- Construction management for two dual zone monitor wells
- Multiple MIT and operating permit renewals

HALLANDALE WTP

- Design and permitting of one 11.8"-dia. deep injection well
- Construction management for two 11.8"-dia. deep injection well
- Design and permitting of one dual zone monitor well
- Construction management for one dual zone monitor well
- Multiple MIT and operating permit renewals

HOLLYWOOD SRWWTP

- Design and permitting of two 24"-dia. deep injection wells
- Construction management for two 24"-dia. deep injection wells
- Design and permitting of one dual zone monitor well
- Construction management for one dual zone monitor well
- Multiple MIT and/or operating permit renewals

FORT LAUDERDALE G.T. LOHMEYER WWTP

- Design and permitting of five 24"-dia. deep injection wells
- Construction management for four 24"-dia. deep injection wells
- Design and permitting of one dual zone monitor well
- Construction management for one dual zone monitor well
- Initial MIT and operating permits

SEMINOLE TRIBE HOLLYWOOD RESERVATION

- Design and permitting of two 16"-dia. deep injection wells
- Construction management for two 16"-dia. deep injection wells
- Design and permitting of one dual zone monitor well
- Obtained operational testing approval

FORT LAUDERDALE PEELE-DIXIE WTP

- Design and permitting of one 16"-dia. deep injection well
- Construction management for one 16"-dia. deep injection well
- Design and permitting of one dual zone monitor well
- Construction management for one dual zone monitor well
- Multiple MIT and operating permit renewals

BROWARD NRWWTP

- Design and permitting of eight 24"-dia. deep injection wells
- Construction management for eight 24"-dia. deep injection wells
- Design and permitting of six dual zone monitor wells
- Construction management for six dual zone monitor wells
- Multiple MIT and operating permit renewals

Hazen

We have depth of in-house resources right here in Hazen's Hollywood office to provide construction management services for deep injection wells...

Michael Wengrenovich, PE

Albert Muniz, PE

Jorge Valdes

Lauren Kuzbyt

...and we have backup staff to provide additional support if needed.

Tara VanEyk, PE

Monique Durand, PE

Our subconsultants, JLA Geosciences and Drilling Geo, will assist with well resident observation services.

John Largey
Drilling Geo

Caroline Smith
JLA Geosciences

Claudio Zuccarelli
JLA Geosciences

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Similar Class I Deep Injection Well Experience within the Last Five Years

Project Title and Location	Description Including and Scope	Client Name, Contact Person, Address, Phone; Contract Type	Cost of Project (Est. vs Act.)	Consultant's Scope of Involvement	Completion Date	Project Manager	Staff Involved	Contractor
Deep Injection Well Construction Seminole Tribe of Florida Hollywood Reservation 	Construction of two deep Injection wells and one dual-zone Floridan aquifer monitor well in Broward County within the last 5 years. For this project, Hazen prepared design documents, permit application, assisted with procurement, and provided construction management services. Since the project is on Tribal lands within the State of Florida, permitting is through the U.S. Environmental Protection Agency (EPA). To assure compliance with Florida injection well construction standards, the EPA is having FDEP and SFWMD review appropriate documents during design and construction. The two injection wells at the Hollywood Reservation serve both the water treatment plant and the wastewater treatment plant. These recently constructed wells were designed as tubing and packer type injection wells so that they were able to accept both secondary treated municipal wastewater effluent and concentrate from the membrane water treatment plant. This alternative design calls for a cemented-in-place 16-inch FRP tubing within a 24-inch diameter steel casing. A dual-zone Floridan Aquifer monitor well is also included in the project. The permit application issued for this project by the EPA was the first Class I injection well being permitted by EPA District 4.	Luis Rioseco Jr. Seminole Tribe of Florida Public Works Department 3107 North SR 7 Hollywood, FL 33021 (954) 894-1060, ext. 10901 luis.rioseco@semtribe.com Contract Type: Fixed fee	Estimate: $14 million (construction) Actual: $10.4 million (construction) COs: $143,000 (betterment)	Preliminary design, design, permitting, procurement assistance, services during construction, completion report, O&M manual preparation, and obtaining operational testing approval from EPA.	Original: January 2016 (design) January 2018 (construction) Actual: January 2017 (design) March 2018 (construction)	Albert Muniz, PE, QA/QC, Technical Expert Michael Wengrenovich, PE, Project Manager	Albert Muniz, PE Michael Wengrenovich, PE Lauren Kuzbyt Jorge Valdes John Largey	Youngquist Brothers
Deep Injection Well Construction Seminole Tribe of Florida Brighton Reservation 	Construction of one deep Injection well and one dual zone monitor well in Glades County. This project is currently under construction. For this project, which is currently under construction, Hazen prepared design documents, prepared permit application, assisted with procurement, and is providing construction management services. Since the project is on Tribal lands within the State of Florida, permitting is through the EPA. To assure compliance with Florida injection well construction standards, the EPA is having FDEP and SFWMD review appropriate documents during design and construction. The project includes one injection well for the disposal of membrane WTP concentrate. It has been designed as an alternative design tubing and packer type injection well with a cemented-in-place 9-5/8-inch FRP tubing within a 16-inch diameter steel casing. A dual zone Floridan Aquifer monitor well is also included in the project.	Luis Rioseco Jr. Seminole Tribe of Florida Public Works Department 3107 North SR 7 Hollywood, FL 33021 (954) 894-1060, ext. 10901 luis.rioseco@semtribe.com Contract Type: Fixed fee	Estimate: Negotiated Actual: $6.6 million (negotiated) (construction) COs: N/A Ongoing construction	Preliminary design, design, permitting, procurement assistance, services during construction, completion report, O&M manual preparation, and obtaining operational testing approval from the EPA.	Original: January 2016 (design) January 2018 (construction) Actual: January 2018 (design) Ongoing (estimated 11/2019 construction completion)	Albert Muniz, PE, QA/QC, Technical Expert Michael Wengrenovich, PE, Project Manager	Albert Muniz, PE Michael Wengrenovich, PE Lauren Kuzbyt Jorge Valdes	Youngquist Brothers
North Regional WWTP Injection Wells 7 and 8 Broward County 	Construction of two deep Injection wells and one dual-zone Floridan aquifer monitor well in an active wellfield in Broward County within the last 5 years. Injection Wells 7 and 8 were constructed at plant site with six existing deep injection wells. These wells were drilled into an active wellfield that has been in operation for 30 years. This facility is the largest injection wellfield in Broward County. Hazen previously provided design, permitting, and bidding services for all the injection wells at this site. For Injection Wells 7 and 8, Hazen provided design, permitting, bidding assistance, construction engineering and oversight, and preparation of a completion report.	Alan W. Garcia, PE Director Broward County Water and Wastewater Services 2555 West Copans Road Pompano Beach, FL 33069 (954) 831-0705 agarcia@broward.org Contract Type: Fixed fee	Estimate: $13.7 million (construction) Actual: $7 million (construction) COs: -$211,000	Preliminary design, design, permitting, procurement assistance, services during construction, completion report, and obtaining operational testing approval from FDEP.	Original: January 2013 (design) April 2014 (construction) Actual: April 2013 (design) May 2016 (construction)	Albert Muniz, PE, QA/QC, Technical Expert Michael Wengrenovich, PE, Project Manager	Albert Muniz, PE Michael Wengrenovich, PE John Largey	Youngquist Brothers

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Similar Class I Deep Injection Well Experience within the Last Five Years

Project Title and Location	Description Including and Scope	Client Name, Contact Person, Address, Phone; Contract Type	Cost of Project (Est. vs Act.)	Consultant's Scope of Involvement	Completion Date	Project Manager	Staff Involved	Contractor
Injection Well MIT City of Hollywood Southern Regional WWTP 	Injection Well Mechanical Integrity Testing in Broward County within the last 5 years Hazen performed services associated with mechanical integrity of injection wells including submitting of Plan of Study to FDEP for approval, assisted owner with contract procurement with a qualified well driller, coordination with FDEP, field witnessing of testing, preparation of completion report, and submittal to FDEP for approval. The two injection wells consist of 24-inch diameter casing set to approximately 3,000 feet below land surface. A dual zone monitor well was located mid-way between the two injection wells. Hazen continues to assist the City with operation of the injection well system.	Francois Domond, PE Senior Project Manager – ECSD Department of Public Services City of Hollywood Post Office Box 229045 Hollywood, Florida 33022 (954) 921-3930 fdomond@hollywoodfl.org Contract Type: Fixed fee	Estimate: $100,000 Actual: $88,000 COs: $0	Obtaining approval of the Plan of Study from FDEP, procurement assistance, services during testing including witness testing, completion report, and obtaining approval from FDEP.	Original: July 2017 (design) August 2017 (construction) Actual: July 2017 (design) August 2017 (construction)	Albert Muniz, PE, QA/QC, Technical Expert Michael Wengrenovich, PE, Project Manager	Albert Muniz, PE Michael Wengrenovich, PE Lauren Kuzbyt Jorge Valdes John Largey	All Webbs Enterprises
Injection Well Operating Permit Renewal City of Hollywood Southern Regional WWTP 	Injection Well Operating Permit Renewal in Broward County within the last 5 years On behalf of the County, Hazen submitted an injection well operating permit renewal to FDEP for the SRWWTP. Preparation of the application included identifying and performing an area of review, a review of injection well operating data, review of monitor well operating data, review of infectivity testing, review of water quality data, developing well plugging and abandoning plans and determining financial responsibility. The application was prepared and submitted to FDEP for approval.	Francois Domond, PE Senior Project Manager – ECSD Department of Public Services City of Hollywood Post Office Box 229045 Hollywood, Florida 33022 (954) 921-3930 fdomond@hollywoodfl.org Contract Type: Fixed fee	Engineering Fee: $35,883 COs: N/A Construction N/A	Submit an injection well operating permit renewal to FDEP, complete with review of operating data.	Original: March 2017 (design) N/A (construction) Actual: 07/2017 (design) N/A (construction)	Albert Muniz, PE, Project Manager, QA/QC, Technical Expert Michael Wengrenovich, PE, Project Engineer	Albert Muniz, PE Michael Wengrenovich, PE	N/A. Provided engineering services only.
Injection Well Cleaning City of Hollywood Southern Regional WWTP 	Injection Well Cleaning in Broward County within the last 5 years The City's two injection wells were in service since 2003. Gradually over time, the efficiency of the well decreased. The City retained Hazen to design a system to clean the injection well casing and to lift buildup out of the well. This type of cleaning has only been performed a few times. The net result of the operation was an increase in well efficiency. This project was bid in conjunction with the MIT of the injection wells but was performed after the MIT was complete and required separate mobilization.	Francois Domond, PE Senior Project Manager – ECSD Department of Public Services City of Hollywood Post Office Box 229045 Hollywood, Florida 33022 (954) 921-3930 fdomond@hollywoodfl.org Contract Type: Fixed fee	Estimate: $300,000 Actual: $286,000 COs: -$35,000	Notification to FDEP, procurement assistance, services during testing including witness testing, completion report, and obtaining approval from FDEP.	Original: March 2017 (design) September 2017 (construction) Actual: March 2017 (design) September 2017 (construction)	Albert Muniz, PE, QA/QC, Technical Expert Michael Wengrenovich, PE, Project Manager		All Webbs Enterprises
Injection Well Construction South Miami Heights WTP 	Injection Well Construction in Miami-Dade County within the last 5 years In conjunction with a proposed water treatment plant, the Miami-Dade Water and Sewer Department elected to construct two injection wells at the site. Hazen participated in the planning, design, and construction management services of these wells. Features of the wells included 30-inch steel casing, 18-inch FRP tubing, and a dual zone monitor well. This project was performed in conjunction with another national engineering firm.	Virginia Walsh, PG, PhD Senior Professional Geologist, Chief Hydrogeology Section Miami-Dade Water and Sewer Department 3071 SW 38th Avenue, Room 554-10 Miami FL 33146 (786) 552-8266 Virginia.Walsh@miamidade.gov Contract Type: Fixed fee	$3 million per well; they were completed for $5 million	Hazen provided planning, design, and construction management services including full-time field observation of well drilling.	Original: December 2012 (design) December 2013 (construction) Actual: June 2013 (design) June 2017 (construction)	Jayson Page, PE Hazen's Project Manager		Youngquist Brothers

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Similar Class I Deep Injection Well Experience within the Last Five Years

Project Title and Location	Description Including and Scope	Client Name, Contact Person, Address, Phone; Contract Type	Cost of Project (Est. vs Act.)	Consultant's Scope of Involvement	Completion Date	Project Manager	Staff Involved	Contractor
Monitor Wellhead Replacement Broward County North Regional WWTP 	Monitor wellhead repair in Broward County within the last 5 years. The County retained Hazen to design, permit, and provide construction services for replacement of the three older wellheads. Each well was removed from service one at a time while the repairs were being made. The new wellheads are now stainless steel. The NRWWTP includes six dual zone monitor wells of which three were deteriorated to the point where the wellheads had to be replaced.	Alan W. Garcia, PE Director Broward County Water and Wastewater Services 2555 West Copans Road Pompano Beach, FL 33069 (954) 831-0705 agarcia@broward.org Contract Type: Fixed fee	Estimate: $229,000 Actual: $230,000 COs: $-24,000	Design, permitting, procurement assistance, services during construction and completion report.	Original: January 2018 (design) July 2018 (construction) Actual: March 2018 (design) August 2018 (construction)	Albert Muniz, PE, QA/QC, Technical Expert Michael Wengrenovich, PE, Project Manager	Albert Muniz, PE Michael Wengrenovich, PE	All Webbs Enterprises
Injection Wells 1 through 6 Construction Broward County NRWWTP 	Injection Well Mechanical Integrity Testing in Broward County within the last 5 years Hazen performed services associated with mechanical integrity of injection wells including submitting of Plan of Study to FDEP for approval, assisted owner with contract procurement with a qualified well driller, coordination with FDEP, field witnessing of testing, preparation of completion report and submittal to FDEP for approval. The NRWWTP includes six Class 1 injection wells and four dual zone monitor wells for this project. The injection well casings are 24-inch in diameter set 3,000 feet below grade, with open holes drilled to 3,500 feet.	Alan W. Garcia, PE Director Broward County Water and Wastewater Services 2555 West Copans Road Pompano Beach, FL 33069 (954) 831-0705 agarcia@broward.org Contract Type: Fixed fee	Estimate: $300,000 Actual: $248,000 COs: $0	Preliminary design, design, permitting, procurement assistance, services during construction, completion report, and obtaining operational testing approval from FDEP.	Original: March 2019 (design) May 2019 (construction) Actual: March 2019 (design) May 2019 (construction)	Albert Muniz, PE, QA/QC, Technical Expert Michael Wengrenovich, PE, Project Manager	Albert Muniz, PE Michael Wengrenovich, PE Lauren Kuzbytz	Youngquist Brothers
11 Injection Well Operating Permit Renewal Projects for Multiple Clients within the past 5 years	Injection Well Operating Permit Renewal all within the last 5 years, and all within Broward, Miami-Dade, and Palm Beach Counties On behalf of the owner, Hazen submitted an injection well operating permit renewal to FDEP for the treatment plant injection well(s). Preparation of the application included identifying and performing an area of review, review of injection well operating data, review of monitor well operating data, review of infectivity testing, review of water quality data, developing well plugging and abandoning plans and determining financial responsibility. The application was prepared and submittal to FDEP for approval. Services also including responding to FDEP questions.	Multiple Clients for multiple projects Contract Type: Fixed fee	No construction costs associated with these projects. Approximate fee for each is $50K. Change Orders: N/A	Submit an injection well operating permit renewal to FDEP, complete with required supporting documentation.	11 Injection Well Operating Permit Renewal Projects all submitted on time to FDEP	For all of these projects, either Albert Muniz, PE, or Michael Wengrenovich, PE, served as Project Manager. The other staff member served as either Project Engineer or in a review and support capacity.	Albert Muniz, PE Michael Wengrenovich, PE	N/A. Provided engineering services only.
One injection well at the Peele-Dixie WTP, City of Fort Lauderdale	See above	City of Fort Lauderdale	See above	Testing verification	2010 (Actual)	See above	Albert Muniz, PE Michael Wengrenovich, PE	N/A. Provided engineering services only.
One injection well at the WTP, City of Hallandale Beach	See above	City of Hallandale Beach	See above	Testing verification	2015 (Actual)	See above	Albert Muniz, PE Michael Wengrenovich, PE	N/A. Provided engineering services only.
Two injection wells at the West WWTP, City of Margate	See above	City of Margate	See above	Testing verification	2015 (Actual)	See above	Albert Muniz, PE Michael Wengrenovich, PE	N/A. Provided engineering services only.

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Similar Class I Deep Injection Well Experience within the Last Five Years

Project Title and Location	Description Including and Scope	Client Name, Contact Person, Address, Phone; Contract Type	Cost of Project (Est. vs Act.)	Consultant's Scope of Involvement	Completion Date	Project Manager	Staff Involved	Contractor
One injection well at the Central WTP, City of Plantation	See above	City of Plantation	See above	Testing verification	2015 (Actual)	See above	Albert Muniz, PE Michael Wengrenovich, PE	N/A. Provided engineering services only.
One injection well at the East WTP, City of Plantation	See above	City of Plantation	See above	Testing verification	2016 (Actual)	See above	Albert Muniz, PE Michael Wengrenovich, PE	N/A. Provided engineering services only.
Two injection wells at the Regional WWTP, City of Plantation	See above	City of Plantation	See above	Testing verification	2017 (Actual)	See above	Albert Muniz, PE Michael Wengrenovich, PE	N/A. Provided engineering services only.
Three injection wells at Sawgrass WWTP, City of Sunrise	See above	City of Sunrise	See above	Testing verification	2016 (Actual)	See above	Albert Muniz, PE Michael Wengrenovich, PE	N/A. Provided engineering services only.
One injection well at the Sawgrass WTP, City of Sunrise	See above	City of Sunrise	See above	Testing verification	2016 (Actual)	See above	Albert Muniz, PE Michael Wengrenovich, PE	N/A. Provided engineering services only.
One injection well at the WWTP, Loxahatchee River District, Jupiter	See above	Loxahatchee River District	See above	Testing verification	2016 (Actual)	See above	Albert Muniz, PE Michael Wengrenovich, PE	N/A. Provided engineering services only.
One injection well at the South Central Region WWTP, Delray Beach	See above	South Central Region WWTP, Delray Beach	See above	Testing verification	2018 (Actual)	See above	Albert Muniz, PE Michael Wengrenovich, PE	N/A. Provided engineering services only.
One injection well at the Norwood-Oeffler WTP, City of North Miami Beach	See above	City of North Miami Beach, Miami-Dade County	See above	Testing verification	2019 (Actual)	See above	Albert Muniz, PE Michael Wengrenovich, PE	N/A. Provided engineering services only.
11 Injection Well Mechanical Integrity Testing Projects for Multiple Clients within the past 5 years	Hazen performed services associated with mechanical integrity of injection wells including submitting of Plan of Study to FDEP for approval, assisted owner with contract procurement with a qualified well driller, coordination with FDEP, field witnessing of testing, review of monitor well water quality data, preparation of completion report, submittal to FDEP for approval, and response to questions from FDEP.	Multiple Clients for multiple projects Contract Type: Fixed fee	Prices bid for MIT of injection wells vary widely due to market conditions and the limited number of experienced contractors. Over this five-year period, the cost of MIT was approximately $40K per injection well.	Obtaining approval of the Plan of Study from FDEP, procurement assistance, services during testing including witness testing, completion report, and obtaining approval from FDEP	11 Injection Well Operating Permit Renewal Projects all submitted on time:	For all of these projects, either Albert Muniz, PE, or Michael Wengrenovich, PE, served as Project Manager. The other staff member served as either the Project Engineer or in a review and support capacity	Albert Muniz, PE Michael Wengrenovich, PE	See below
Two injection wells at the WWRF, City of Miramar	See above	City of Miramar	See above	Mechanical integrity verification	2015 (Actual)	See above	Albert Muniz, PE Michael Wengrenovich, PE	All Webbs Enterprises
One injection well at the Peele-Dixie WTP, City of Fort Lauderdale	See above	City of Fort Lauderdale	See above	Mechanical integrity verification	2015 (Actual)	See above	Albert Muniz, PE Michael Wengrenovich, PE	Layne Christensen Co.
One injection well at the WTP, City of Hallandale Beach	See above	City of Hallandale Beach	See above	Mechanical integrity verification	2016 (Actual)	See above	Albert Muniz, PE Michael Wengrenovich, PE	All Webbs Enterprises

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Similar Class I Deep Injection Well Experience within the Last Five Years

Project Title and Location	Description Including and Scope	Client Name, Contact Person, Address, Phone; Contract Type	Cost of Project (Est. vs Act.)	Consultant's Scope of Involvement	Completion Date	Project Manager	Staff Involved	Contractor
Two injection wells at the West WWTP, City of Margate	See above	City of Margate	See above	Mechanical integrity verification	2018 (Actual)	See above	Albert Muniz, PE Michael Wengrenovich, PE	All Webbs Enterprises
One injection well at the Central WTP, City of Plantation	See above	City of Plantation	See above	Mechanical integrity verification	2019 (Actual)	See above	Albert Muniz, PE Michael Wengrenovich, PE	Youngquist Brothers
One injection well at the East WTP, City of Plantation	See above	City of Plantation	See above	Mechanical integrity verification	2018 (Actual)	See above	Albert Muniz, PE Michael Wengrenovich, PE	All Webbs Enterprises
Two injection wells at the Regional WWTP, City of Plantation	See above	City of Plantation	See above	Mechanical integrity verification	2017 (Actual)	See above	Albert Muniz, PE Michael Wengrenovich, PE	All Webbs Enterprises
Three injection wells at Sawgrass WWTP, City of Sunrise	See above	City of Sunrise	See above	Mechanical integrity verification	2018 (Actual)	See above	Albert Muniz, PE Michael Wengrenovich, PE Lauren Kuzbyt	All Webbs Enterprises
One injection well at the Sawgrass WTP, City of Sunrise	See above	City of Sunrise	See above	Mechanical integrity verification	2019 (Actual)	See above	Albert Muniz, PE Michael Wengrenovich, PE	Currently in design
One injection well at the WWTP, Loxahatchee River District, Jupiter	See above	Loxahatchee River District	See above	Mechanical integrity verification	2018 (Actual)	See above	Albert Muniz, PE Michael Wengrenovich, PE Lauren Kuzbyt	All Webbs Enterprises
One injection well at the South Central Region WWTP, Delray Beach	See above	South Central Region WWTP, Delray Beach	See above	Mechanical integrity verification	2018 (Actual)	See above	Albert Muniz, PE Michael Wengrenovich, PE Lauren Kuzbyt	All Webbs Enterprises
One injection well at the Norwood-Oeffler WTP, City of North Miami Beach	See above	City of North Miami Beach	See above	Mechanical integrity verification	2019 (Actual)	See above	Albert Muniz, PE Michael Wengrenovich, PE	Currently bidding

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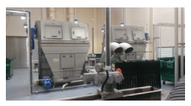
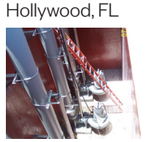
Selected City of Hollywood Experience

Project Title and Location	Description Including and Scope	Client Name, Contact Person, Address, Phone; Contract Type	Cost of Project (Est. vs Act.)	Consultant's Scope of Involvement	Completion Date	Project Manager	Staff Involved	Contractor
OTHER PROJECT EXPERIENCE								
Southern Regional WWTP: RAS PS No. 2 Replacement Design Hollywood, FL 	This project included the replacement of pumps, VFDs, and structural repairs to 40-yr old clarifier construction joints which leaked effluent into the pump station. Construction is currently Substantially Complete with Final Completion expected June 16, 2017.	City Hollywood Public Utilities Department Steve Joseph, PE, Director 1621 North 14th Avenue Hollywood, FL 33020 954-967-4455	Estimate: $1.6 million (construction) $73,024 (fee) Actual: $1.54 (construction) $73,024 (fee) COs: $0	Detailed design / Prime	Original: 5/2015 (design) 6/2017 (construction) Actual: 5/2015 (design)	Phil Cooke, PE	Phil Cooke, PE Tara VanEyk, PE	N/A. Provided engineering services only.
Southern Regional WWTP: Reuse Water System Expansion Phase 2 Hollywood, FL 	Update of the City's reuse hydraulic model and re-placement of existing reuse pumps to provide flexibility to better serve existing customers on demand with provisions to serve additional future customers. Construction is substantively complete with Final Completion expected July 8, 2017.	City Hollywood Public Utilities Department Steve Joseph, PE, Director 1621 North 14th Avenue Hollywood, FL 33020 954-967-4455	Estimate: $1.1 million (construction) $98,559 (fee) Actual: $0.84 million (construction) $98,559 (fee) COs: $0	Hydraulic modeling, design, bidding / Prime	Original: 12/2015 (design) 7/2017 (construction) Actual: 12/2015 (design)	Phil Cooke, PE	Phil Cooke, PE Monique Durand, PE	N/A. Provided engineering services only.
Southern Regional WWTP: Headworks Rehabilitation and Replacement Hollywood, FL 	This project involved the rehabilitation of headworks facility, replacement of the bar screens, grit pumps, slide gate replacement, large diameter plant pipe lining, grit pipe replacement, bypass pumping, specialty coatings, and lighting upgrades.	City Hollywood Public Utilities Department Steve Joseph, PE, Director 1621 North 14th Avenue Hollywood, FL 33020 954-967-4455	Estimate: $6.7 million (construction) Actual: $5.9 million (construction) COs: -$55,538 (-1%)	Detailed design and technical services during construction* / Prime *Special structural inspection by others	Original: 06/2015 (construction) Actual: 09/2015 (construction)	Phil Cooke, PE	Phil Cooke, PE Monique Durand, PE	N/A. Provided engineering services only.
Southern Regional WWTP: Clarifier Nos. 5-8 Flow Distribution Box Rehabilitation Hollywood, FL 	Inspection of deteriorated mixed-liquor distribution box, detailed design of rehabilitation including replacement of transfer pumps, bypass pumping, specialty coatings and electric actuator replacement.	City Hollywood Public Utilities Department Steve Joseph, PE, Director 1621 North 14th Avenue Hollywood, FL 33020 954-967-4455	Estimate: $1.4 million (construction) Actual: $1.37 million (construction) COs: $56,569 (4%)	Detailed design and technical services during construction / Prime	Original: 2/2014 (construction) Actual: 2/2014 (construction)	Phil Cooke, PE	Phil Cooke, PE Monique Durand, PE	N/A. Provided engineering services only.
Southern Regional WWTP: PLC System Upgrade Hollywood, FL 	Complete replacement of 15 WWTP PLCs, shop drawing review, and contractor coordination.	City Hollywood Public Utilities Department Steve Joseph, PE, Director 1621 North 14th Avenue Hollywood, FL 33020 954-967-4455	Estimate: $650,000 (construction) Actual: $582,000 (construction) COs: $26,800 (1%)	Construction management services / Prime	Original: 2/2012 (construction) Actual: 2/2012 (construction)	Phil Cooke, PE	Phil Cooke, PE	N/A. Provided engineering services only.

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Selected City of Hollywood Experience

Project Title and Location	Description Including and Scope	Client Name, Contact Person, Address, Phone; Contract Type	Cost of Project (Est. vs Act.)	Consultant's Scope of Involvement	Completion Date	Project Manager	Staff Involved	Contractor
Aquifer Recharge Pilot Study Hollywood, FL 	Design, construction, start-up, operation and testing of a pilot plant to determine the feasibility of MF, IX, AOP, BAC as treatments alternative to RO for use with a highly saline effluent for aquifer recharge.	City Hollywood Public Utilities Department Steve Joseph, PE, Director 1621 North 14th Avenue Hollywood, FL 33020 954-967-4455	Estimate: $2.9 million Actual: $2.9 million* *includes fee and pilot plant construction CO: $26,800 (1%)	Design, construction, start-up, operation and testing* / Prime *Laboratory analysis of samples by others.	Original: 03/2014 Actual: 03/2014	Phil Cooke, PE	Phil Cooke, PE Monique Durand, PE Tara VanEyk, PE	N/A. Provided engineering services only.
McKinley Street 66-inch PCCP Pipeline Hollywood, Florida 	Open cut installation of 7,000 LF of 66-inch PCCP interceptor to the City of Hollywood Southern Regional WWTP. Design and construction of the tie-in structure involved excavation over 20-ft below the water table around the existing 60-inch Taft Street Interceptor and 48-inch Dania Beach pipeline. Three micro-tunnel crossings were performed beneath railroads and busy roads.	City Hollywood Public Utilities Department Steve Joseph, PE, Director 1621 North 14th Avenue Hollywood, FL 33020 954-967-4455	Estimate: $16.7 million (construction) $1.09 million (fee) Actual: $11.6 million (construction) $1.09 million (fee) COs: $299,419 (2.5%)	Hydraulic analysis, corridor analysis, conceptual design, permitting, detailed design, bidding and technical services during construction. / Prime	Original: 04/2013 Actual: 04/2013	Phil Cooke, PE	Phil Cooke, PE Monique Durand, PE	N/A. Provided engineering services only.

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Injection Wells 1 and 2 Construction

Hollywood Reservation, FL

Two injection wells for the Hollywood Reservation WTP/WWTP were recently completed. The wells were designed as tubing and packer type injection wells so that they were able to accept both secondary treated municipal wastewater effluent and concentrate from the membrane water treatment plant.

Hazen provided design and permitting services, bidding, and construction management services. This alternative design calls for a cemented-in-place 16-inch FRP tubing within a 24-inch diameter steel casing. A dual-zone Floridan Aquifer monitor well is also included in the project.

A permit for this project was issued by the United States Environmental Protection Agency (EPA). This is the first Class I injection well permitted by EPA District 4. The permit application meets FDEP requirements for a Class I injection well. FDEP provided permitting assistance to the EPA for this project. EPA approved operation of the well in March 2019.

The final 14-inch seamless steel casing is 2,920 feet (IW-1) and 3,000 feet (IW-2). The upper monitoring zone is located between 1,500 feet and 1,529 feet and the lower monitoring zone is located between 1,270 feet and 1,810 feet.

Project Highlights

- Two injection wells
- Design and permitting services, bidding, and construction management services

Project Cost

$10.3 million (construction)

Project Duration

2014-2018

Client Reference

Seminole Tribe of Florida
Luis Rioseco Jr.
(954) 894-1060, ext. 10901
luis.rioseco@semtribe.com

1021-309

Hazen

Deep Injection Well

Brighton Reservation, FL

One injection well at the Seminole Tribe Brighton Reservation for the disposal of membrane WTP concentrate is under construction.

The injection well has been designed as an alternative design tubing and packer type injection well with a cemented-in-place 9-5/8-inch FRP tubing within a 16-inch diameter steel casing. A dual zone Floridan Aquifer monitor well is also included in the project. The final casing was set at 2,750 feet below land surface. Construction of these wells is nearing completion after working through challenging hydrogeologic formations. The upper monitoring zone has been established between 1,545 and 1,575 feet, and the lower monitoring zone has been established between 2,200 and 2,310 feet.

Design documents and a permit application for this project have been prepared, and the permit application will be submitted to the U.S. Environmental Protection Agency (EPA) for review. The permit application will also meet FDEP requirements for a Class I injection well. Hazen provides design and permitting services, in addition to procurement and construction management services.

Project Highlights

- Injection well
- Dual zone monitor well
- Design and permitting services
- Procurement and construction management services

Project Cost

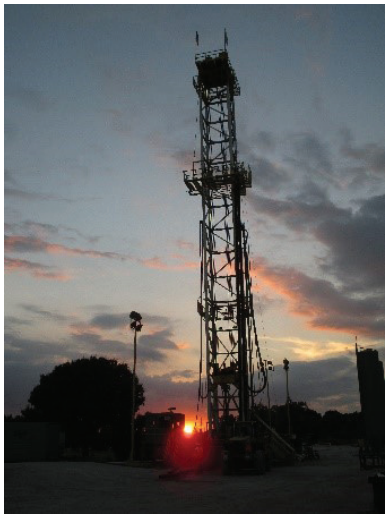
$6.6 million (construction)

Project Duration

2014-Ongoing
(est. 11/2019 completion)

Client Reference

Seminole Tribe of Florida
Luis Rioseco Jr.
(954) 894-1060, ext. 10901
luis.rioseco@semtribe.com



North Regional WWTP Deep Injection Wells

Broward County, FL

Hazen provided planning, design, permitting, procurement, and construction oversight services for eight deep injection wells at the 95-mgd average annual daily flow (AADF) North Regional Wastewater Treatment Plant (NRWWTP).

The initial well construction project (for IWs 1-4) was performed in conjunction with another national engineering firm. The second well project (for IWs 5-6) was performed by Hazen under the NRWWTP Updating project. The most recent project (for IWs 7-8) was performed by Hazen under the NRWWTP Capacity Improvements project.

The Broward wellfield has been geologically challenging since inception. Hazen has worked closely with the County and the Florida Department of Environmental Protection (FDEP) to research and address issues related to confinement, potential fluid migration, and capacity reductions within the injection formation. Such collaborative work has been successful in maintaining a permittable facility.

A unique aspect of the wellfield is a capacity restoration/enhancement project involving the use of booster pumps. The addition of booster pumps at IW 1-8 has significantly increased the effluent disposal ability of the NRWWTP through the injection well system by an additional 60+ mgd.

Project Highlights

- Planning, design, permitting, procurement, and construction oversight services for eight deep injection wells
- Permitting assistance for the operational testing, operation permit renewal, and for all the periodic MIT of all the wells

Project Cost

$9 million (construction)

Project Duration

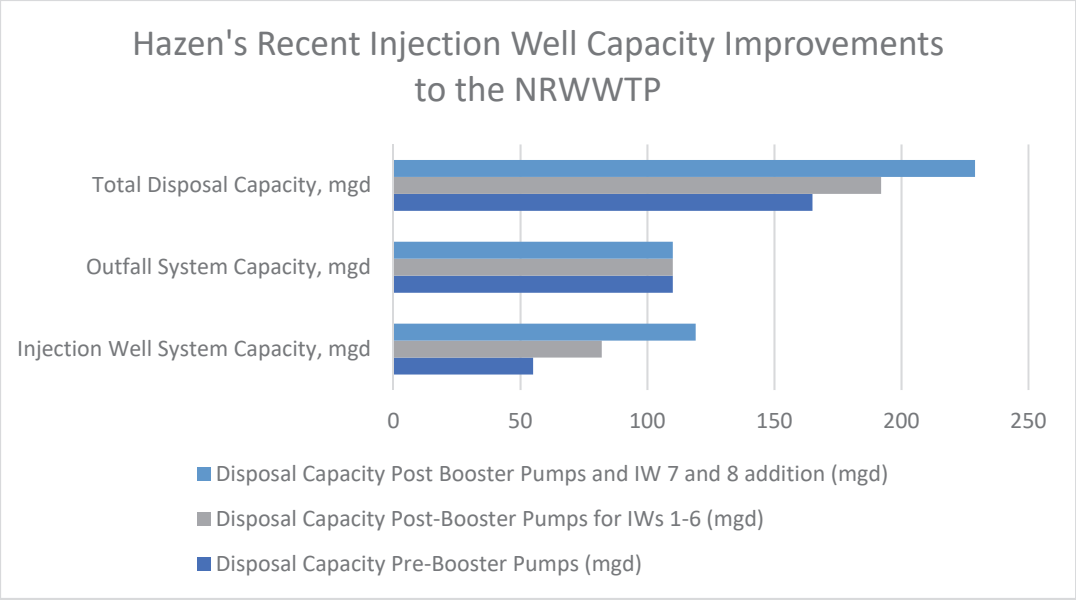
2016-2017

Client Reference

Alan W. Garcia, PE
Director
Broward County Water and Wastewater Services
2555 West Copans Road
Pompano Beach, FL 33069
(954) 831-0705
agarcia@broward.org

1021-309

Hazen



To date, the County has spent less than $20 million to achieve this increased disposal capacity of over 60 mgd.

Hazen's history of injection well work for Broward County includes the previous planning activities for all eight injection wells, including siting and spacing of the wells, number and location of monitor wells, and evaluation of the surge relief and surface equipment. Hazen prepared construction drawings for all wells and surface equipment, and assisted the County with procurement through both open bid and sole-source procurement for construction of the eight injection wells and six monitor wells.

Additionally, Broward County contracted Hazen for the required permitting assistance for the operational testing, operation permit renewal, and for all the periodic mechanical integrity testing (MIT) of all the wells. **The most recent MIT of IW 1-6 was successfully conducted earlier this year, under a suppressed timeframe, through which Hazen provided continuous oversight.**

For each injection well and monitor well, construction oversight services included 24-hours per day, 7 days per week field observations (which are critical for these drilling projects), evaluation of hydrogeologic data, preparation of reports, coordination of construction activities with the driller and the Florida Department of Environmental Protection (FDEP), and contract administration. Upon completion of construction, Hazen prepared the completion of construction records including drawings, reports, and operation and maintenance manuals, all approved by FDEP.

Hazen has also successfully assisted the County in litigation support related to certain injection well contractor issues. Such support included hydrogeological expertise as well as commercial terms and conditions professional advice.

Southern Regional Wastewater Treatment Plant Effluent Disposal Upgrade

Hollywood, FL

Hazen has been assisting the City of Hollywood with effluent disposal issues and related design, permitting, and construction administration since 1989.

The Southern Regional Wastewater Treatment Plant (SRWWTP) is located in Hollywood. Hazen is currently completing an upgrade to the effluent disposal system for the Hollywood SRWWTP.

In continuing to provide services for effluent disposal at the SRWWTP to address the City's need for further capacity increases at the SRWWTP, Hazen performed a study of effluent disposal options to ensure the most appropriate approach was selected for uprating above 42 mgd, in phases. The study determined that paper uprating was possible to 45 mgd based upon interim outfall uprating negotiated with the DEP and commitment to increase effluent disposal capacity and flexibility using the most cost effective approach of a deep injection well system.

Hazen completed services associated with design, permitting, bidding, and construction administration for the deep injection well (DIW) system. The DIW at this facility includes two deep wells approximately 3,000 feet deep, one monitoring well to serve both injection wells about 1,500 feet deep, and shallow monitoring wells. To expedite implementation and to ensure quality construction, the injection well drilling contract was negotiated directly with an experienced specialty drilling contractor.

Project Highlights

- Design, permitting, bidding, and construction administration for deep injection well system

Client Reference

Francois Domond, PE
Senior Project Manager – ECSD
Department of Public Services
City of Hollywood
Post Office Box 229045
Hollywood, Florida 33022
(954) 921-3930
fdomond@hollywoodfl.org

1021-309

Hazen

Concentrate Disposal System

Fort Lauderdale, FL

Hazen was selected by the City to permit, design, oversee construction and assist in obtaining an operating permit for a Class I tubing and packer designed disposal system.

The City of Fort Lauderdale constructed a 12-mgd nanofiltration water treatment plant (WTP) at the existing Peele-Dixie facility. Concentrate from the membrane facility is disposed of through a 16-inch diameter tubing and packer disposal well. The membrane WTP is designed to provide up to 12-mgd of potable water.

Hazen prepared a Class I well construction application and assisted the City in obtaining a construction permit. Contract documents were prepared, and Hazen assisted the City in negotiating a contract with the well drilling contractor.

The disposal system consists of a 16-inch diameter tubing set to a depth of approximately 2,900 feet below land surface, with an open hole drilled to a depth of 3,400 feet. Additionally, the system includes a dual-zone monitoring well as well as surface facilities necessary to pump the concentrate into the injection horizon. Construction of the concentrate disposal well and monitor well was completed in 2006. Construction of the concentrate pumping system was complete in early 2007.

Project Highlights

- Preparation of a Class I well construction application
- Dual-zone monitoring well
- Assisted the City in obtaining a construction permit

Project Cost

$5.3 million (construction)

Project Duration

2005-2008

Client Reference

Miguel Arroyo
Water and Wastewater
Treatment Manager
City of Fort Lauderdale
949 NW 38th Street
Oakland Park, FL 33309
954.828.7806
marroyo@fortlauderdale.gov

1021-309

Hazen

Concentrate Disposal System

Hallandale Beach, FL

Hazen permitted, designed, and oversaw construction and assisted in obtaining an operating permit for an 11-¾" Class I tubing-and-packer-designed disposal system.

Hallandale Beach constructed a membrane water treatment plant (WTP) to produce potable water. The state-of-the-art facility is equipped to treat 6 mgd with a build out capacity of 13 mgd. After review of feasible disposal options, the City chose to construct a concentrate disposal well. The concentrate disposal system has been designed and permitting has been initiated.

Hazen prepared a Class I well construction application and is assisting the City in obtaining a construction permit. Contract documents were also prepared. Hazen also assisted the City in negotiating a contract with the well drilling contractor.

The disposal system consists of a 11¾" diameter tubing set. A dual-zone monitoring well was also constructed as part of the project in addition to the surface facilities necessary to pump the concentrate into the injection horizon.

Project Highlights

- Permitting, design, construction oversight
- Preparation of a Class I well construction application
- Assisted the City in obtaining an operating permit

Project Cost

$4.4 million (construction)

Project Duration

2005-2008

Client Reference

James Sylvain, PE
Director of Public Works/Utilities
City of Hallandale Beach
Public Works, Utilities and Engineering
630 Northwest 2nd Street
Hallandale Beach, FL 33009
(954) 457-1669
eking@hallandalebeachfl.gov

1021-309

Hazen

Injection Well Repair and Testing

Plantation, FL

The City of Plantation operates one Class I injection well at the Central Water Treatment Plant. Hazen was retained to review the recommendations and implement necessary modifications to allow continued operation of the well.

The City of Plantation operates one Class I injection well at the Central Water Treatment Plant. The well is used to dispose of concentrate from the membrane plant. Continued utilization of the well has been jeopardized by two failures of the steel tubing since 1997. A corrosion study by others concluded that the failures were due to corrosion of the steel tubing and identified recommendations included replacement with a coated steel tubing or with a non-metallic material.

Hazen recommended to replace the steel tubing and fluid filled annulus with a cemented in place fiberglass reinforced plastic (FRP) tubing. At that time, there were no cemented in place FRP tubing designs constructed or permitted in the state. Hazen provided regulatory assistance, design, procurement, and construction management services for the replacement of the tubing and the testing of the well.

Project Highlights

- Regulatory assistance, design, procurement, and construction management services for the replacement of the tubing and the testing of the well.

Project Cost

$818,000

Project Duration

2001-2002

Client Reference

Steve Urich
Acting Director of Utilities
City of Plantation
400 NW 73 Avenue
Plantation, Florida 33317
(954) 797-2293
surich@plantation.org

Specific work elements included: Development of a testing program to assess the mechanical integrity testing of the casing prior to replacement of the tubing; recommendation on final selection of replacement tubing material; preparation of contract documents and permit application for the repair and testing of the well; assistance during the review and approval process by the Technical Advisory Committee (TAC) headed by the FDEP; assistance during negotiation to procure the services of a well drilling contractor; field observation during repair and testing; review and evaluation of the test procedures and results, and preparation of construction reports.

Plantation Injection Well Projects

Plantation, FL

The City of Plantation operates three treatment plants on separate sites, all with injection wells. There are two injection wells at the Regional WWTP, one at the Central WTP, and one at the East WTP. Hazen has performed design, permitting and services on all of these injection well sites.

Regional WWTP

Two injection wells constructed under two separate contracts with two different designs are present at the Regional WWTP. IW-1 was constructed with 24-inch casing to 3,000 feet below land surface (bls) with annular monitor tubes. IW-2 was constructed with 24-inch casing to 2,942 feet bls with a separate dual zone monitor well. Hazen has performed mechanical integrity tests on these wells and are in the process of completing the Florida Department of Environmental Protection (FDEP) Injection Well Operating Permit.

After the monitor tubes in IW-1 failed, Hazen was retained to design, permit and provide construction management services for a new replacement dual zone monitor well. Hazen worked with the City and a well drilling contractor to address corrosion problems associated with IW-2 monitor well wellhead.

Central WTP

One industrial type (a tubing and packer design) injection well is located at the Central WTP. This well consisted of a final 16-steel casing to

Project Highlights

- Two injection wells
- Design and permitting services, bidding, and construction management services

Project Cost

$1.1 million (construction)

Project Duration

2012-2016

Client Reference

Steve Urich.
Interim Director of Utilities
City of Plantation
400 Northwest 73 Avenue
Plantation, Florida 33317
(954) 797-2293
SUrich@plantation.org

1021-309

Hazen

2,778 feet bls with a removable steel tubing to 2,740 feet bl. The annular space between the final casing and the tubing was fluid filled and the tubing had failed due to corrosion twice. Hazen was retained to evaluate a corrosion study by others and recommend a repair for the well. An innovative design at that time to replace the tubing with FRP and a cemented annulus was selected to avoid future corrosion problems. Hazen designed, permitted, and provided construction management services for the project. Subsequently, Hazen has performed Mechanical Integrity Tests on these wells and has obtained an FDEP Injection Well Operating Permit for the well.

East WTP

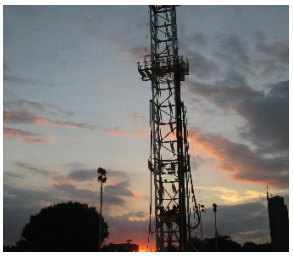
One industrial type injection well is located at the East WTP. This well consisted of a final 16-steel casing to 2,981 feet bls with a 10-3/4-inch removable steel tubing to 2,959 feet bls. The annular space between the final casing and the tubing was fluid filled. Hazen has performed Mechanical Integrity Tests on these wells and has obtained an FDEP Injection Well Operating Permit for the well.

Recently, pressure was lost in the well annular space. Hazen was retained to perform investigatory work on the well, which identified the problem to be in the vicinity of the downhole packer. Hazen designed and permitted a replacement tubing for the well, which will consist of an FRP tubing and a cemented annulus.

SUPPLEMENTAL PROJECT EXPERIENCE

1 Broward County North Regional WWTP Injection Wells 7 and 8

Injection Wells 7 and 8 were constructed at plant site with six existing deep injection wells. This facility is the largest injection wellfield in Broward County. Hazen previously provided design, permitting, bidding services for all the injection wells at this site. For Injection Wells 7 and 8, Hazen provided design, permitting, bidding assistance, construction engineering and oversight and preparation of a completion report.



2 City of Fort Lauderdale Peele Dixie WTP Concentrate Disposal Well

Hazen was selected to provide engineering services for the conversion of the Peele-Dixie lime softening plant to a membrane facility including the permitting, pre-design, design, construction oversight services and preparation of the well completion report and startup for 5.8-mgd deep injection well for concentrate disposal.

3 City of Miramar Effluent Disposal System

Hazen and Sawyer was responsible for preparing the construction permit, design, overseeing construction and assistance in obtaining an operating permit for the Class 1 injection well system. Hazen and Sawyer prepared a construction application and assisted the City in obtaining a construction permit. Contract documents were prepared, and Hazen and Sawyer assisted the City in negotiating a contract with the well drilling contractor. Design of the City of Miramar's effluent system consisted of two injection wells, and two dual-zone monitor wells. The injection wells consists of 24-inch diameter casing set to approximately 3,000 feet below land surface. Each injection well has its own stand alone dual zone monitor well. Hazen and Sawyer continues to assist the City with operation of the injection well system and has successfully completed mechanical integrity testing

4 Cooper City Concentrate Disposal System

Construction of one deep Injection well and one dual-zone Floridan aquifer monitor well in Broward County.

One 14-inch diameter tubing and packer injection well and one dual zone monitor well The City of Cooper City replaced a portion of their lime softening water treatment plant (WTP) with a membrane nanofiltration facility. The membrane WTP was designed to provide up to 6-mgd of potable water. Initially, 3-mgd of capacity was installed with an intended expansio.n.

Hazen and Sawyer was selected by the City to permit, design, oversee construction and assist in obtaining an operating permit for a Class 1 tubing and packer designed disposal system. Hazen and Sawyer prepared a Class 1 well construction application and assisted the City in obtaining a construction permit. Contract documents were also prepared, and Hazen and Sawyer assisted the City in negotiating a contract with the well drilling contractor. Construction of the injection well commenced in November 2000, and was completed in June 2001.

5 City of Fort Lauderdale GT Lohmeyer WWTP Test Injection Well

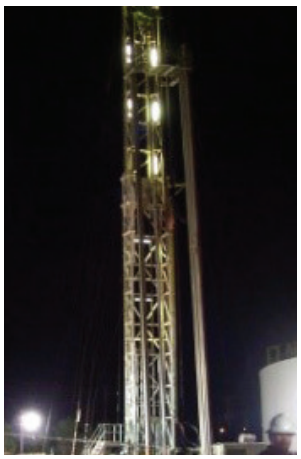
Hazen was selected to provide engineering services for the construction of one deep test injection well and one tri-zone Floridan aquifer monitor well including predesign, design, permitting, obtaining operational testing approval from FDEP., construction oversight services and preparation of the well completion report and startup for 15-mgd deep injection well for effluent disposal

6 City of Fort Lauderdale GT Lohmeyer WWTP Injection Wells 1, 2, and 3

Hazen was selected to provide engineering services for the construction of three injection wells including predesign, design, permitting, obtaining operational testing approval from FDEP, construction oversight services and preparation of the well completion report and startup for 15-mgd deep injection wells for effluent disposal.

7 South Central Regional WWTP Deep Injection Well System

The injection well system at the South Central WWTP consists of one 24-inch diameter Class I injection well and one 6-inch diameter dual-zone monitor well. The final string of casing at the injection well is set to a depth of 2,430 feet below grade, with a nominal 24-inch diameter open hole drilled to 3,024 feet in depth. The project also included a dual-zone monitor well. Hazen provided design, permitting, bidding assistance, construction engineering and oversight and preparation of a completion report. **Construction management services included field observations, evaluation of hydrogeologic data, preparation of reports, coordination of construction activities with the driller and the regulatory agencies, and contract administration. Our services were extended through the operation of the well with on-going services for general assistance. Hazen provided all required permitting assistance for construction permitting, operational testing, mechanical integrity testing, and preparation of an operating permit.**and construction management services.



"I am pleased to recommend Hazen and Sawyer to anyone seeking to use the expertise of this company as it relates to permitting of Deep Injection Wells with local government agencies, particularly for operation and renewal of existing permits...Hazen and Sawyer has demonstrated an excellent working relationship with regulators, specifically the FDEP, which enabled projects to proceed expeditiously...Hazen and Sawyer has assisted LRD with the preparation of several operating permit renewals."

D. Albrey Arrington, PhD
Loxahatchee River District

1021-309

8 Loxahatchee River District Injection Well, Loxahatchee, FL

Planning, design, permitting, procurement, construction administration services, and resident project representation for a deep injection well system. The injection well system at the Loxahatchee River District presently consists of one 24-inch diameter Class I injection well, one 6-inch diameter deep monitor well, and one 6-inch diameter dual-zone monitor wells. Construction management services included field observations, evaluation of hydrogeologic data, preparation of reports, coordination of construction activities with the driller and the regulatory agencies, and contract administration.

9 Collier County Construction of Two Deep Injection Wells

Preliminary design, design, permitting, procurement assistance, services during construction, completion report, and obtaining operational testing approval from FDEP for construction of two deep Injection wells and one dual-zone Floridan aquifer monitor well in Collier County.

11 Broward County North Regional WWTP Monitor Well MW-5

Dual zone monitor well MW-5 was constructed to replace monitor well MW-4 at plant site with existing injection wells. Hazen provided design, permitting, bidding assistance, construction engineering and oversight and preparation of a completion report.

12 Loxahatchee River District Floridan Aquifer Monitor Well

Project involved construction of one deep Floridan aquifer monitor well in Palm Beach County. This monitor well was constructed to replace failed monitor tubes at this existing WWTP. Hazen provided design, permitting, bidding assistance, construction engineering and oversight and preparation of a completion report for this dual zone monitor well and the plugging and abandoning of the failed monitor tube.

13 City of Plantation East WTP Injection Well Modification

The tubing in the existing concentrate disposal well had failed. After investigating the problem, Hazen provided, design, permitting, bidding assistance, construction engineering and oversight and preparation of a completion report for the replacement of the steel tubing with a cemented-in-place fiberglass reinforced plastic (FRP) tubing.

"It is without hesitation that I highly recommend Hazen and Sawyer, P.C. for any management, inspection and analytical studies of deep injection wells and associated monitoring wells. This firm performs in a timely manner, produces technically sound documents and works well with contractors to ensure that the City's interests are protected."

Larry Duemmling
City of Plantation, FL

1021-309

JLA Geosciences Project Experience

Our subconsultant, JLA Geosciences, similar project experience appears in the tables below and on the next page.

JLA Staff Experience in Class I and Class V Injection Well Systems

CLASS I INJECTION WELL SYSTEMS							
Facility Name	City	County	Design	Permitting & Reporting	Construc-tion	Testing	Rehab
Hollywood WTP	Hollywood	Broward	X	X	X	X	
Springtree Utility Complex	Sunrise	Broward	X	O	X	O/X	
Pompano Beach WTP	Pompano Beach	Broward		X		X	
Deerfield Beach WTP	Deerfield	Broward		X	X	X	
FGUA Golden Gate WWTP	Golden Gate	Collier	X	X	X	X	
PBCWUD WTP 2	West Palm Beach	Palm Beach		X		X	
Hialeah WTP	Hialeah	Miami-Dade		O/X	X	X	
Key Largo WTP	Key Largo	Monroe	X	X	X	X	
North Martin Co. WWTF (IW2)	Jensen Beach	Martin		X	X	O/X	
Tropical Farms WTP/WWTF	Stuart	Martin				O	
Southport WTP	Port St. Lucie	St. Lucie		X		X	
Northport WWTF	Port St. Lucie	St. Lucie		X		X	
Westport WWTF	Port St. Lucie	St. Lucie		O/X	X	X	
JEA WTP	Port St. Lucie	St. Lucie		X	X	X	
Glades WWTF	Port St. Lucie	St. Lucie	X	X	X	X	
Vero Beach WTP	Vero Beach	Indian River	X	O/X	X	O/X	
Wellington WWTF	Wellington	Palm Beach		X	X	X	
Wellington WTP	Wellington	Palm Beach		X	X	X	
Equistar Chemicals	Tuscola	Douglas (IL)		X			
Pahokee WWTF	Pahokee	Palm Beach		O/X			O/X
Seacoast Utility Authority DZMW	Palm B. Gard.	Palm Beach	O	O	O	O	
PBC WRWWTF	Belle Glade	Palm Beach		O		O	O
South Dade IWs		Miami-Dade				O	
Confidential Client	Homestead	Miami-Dade			O		
PBCWUD WTP 3	Delray	Palm Beach		X		X	
Clewiston WTP	Clewiston	Hendry		X	X	X	
Collier County SRWRF	Naples	Collier			X	X	

"O" refers to current staff experience while employed at JLA Geosciences, Inc.
"X" refers to experience of staff currently employed at JLA but that has performed the work prior to employment
"O/X" refers to experience of staff currently employed at JLA that has performed work prior to and also during employment at JLA

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CLASS V INJECTION WELL SYSTEMS							
Facility Name	**City**	**County**	**Design**	**Permitting & Reporting**	**Construc-tion**	**Testing**	**Rehab**
FDOT Alligator Alley Rest Area	NA	Broward		X	X	X	
LaGorce Country Club	Miami B.	Miami-Dade	O	O		O	
Manalapan WTP	Manalapan	Palm Beach	O	O		O	
WPB ASR	West Palm B.	Palm Beach		O		O	O
Knight Island		Charlotte		X	X	X	
Colony Don Pedro		Charlotte		X	X	X	
Little Gasparilla Island		Charlotte		X	X	X	
WTP #9 ASR		Hillsboro		X			
WTP #3 ASR		Hillsboro		X	X		
Boynton Beach ASR	Boynton B.	Palm Beach	X	X	X	X	
Miami Beach ASR	Miami B.	Miami-Dade	X		X	X	
Tuscany Reserve ASR	Naples	Collier			X	X	
Carica Road ASR	Naples	Collier			X	X	
Destin Water Users	Destin	Okaloosa		X	X		
Surf Ranch	NA	Palm Beach	O	O			

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"X" refers to experience of staff currently employed at JLA but that has performed the work prior to employment
"O/X" refers to experience of staff currently employed at JLA that has performed work prior to and also during employment at JLA

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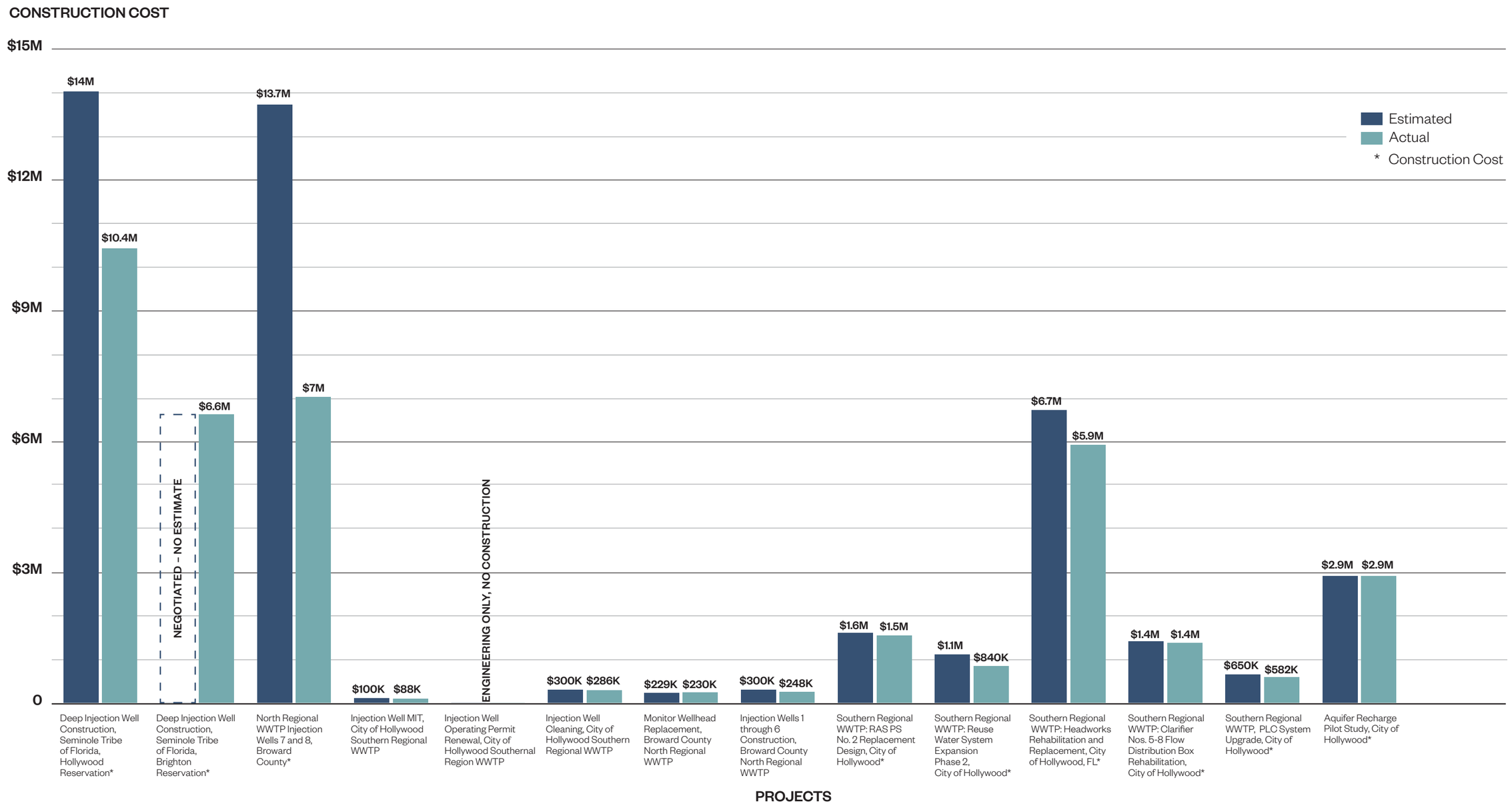
Ability to Meet Budget

The bar chart below graphically shows our referenced projects and Hazen's ability to meet budget.



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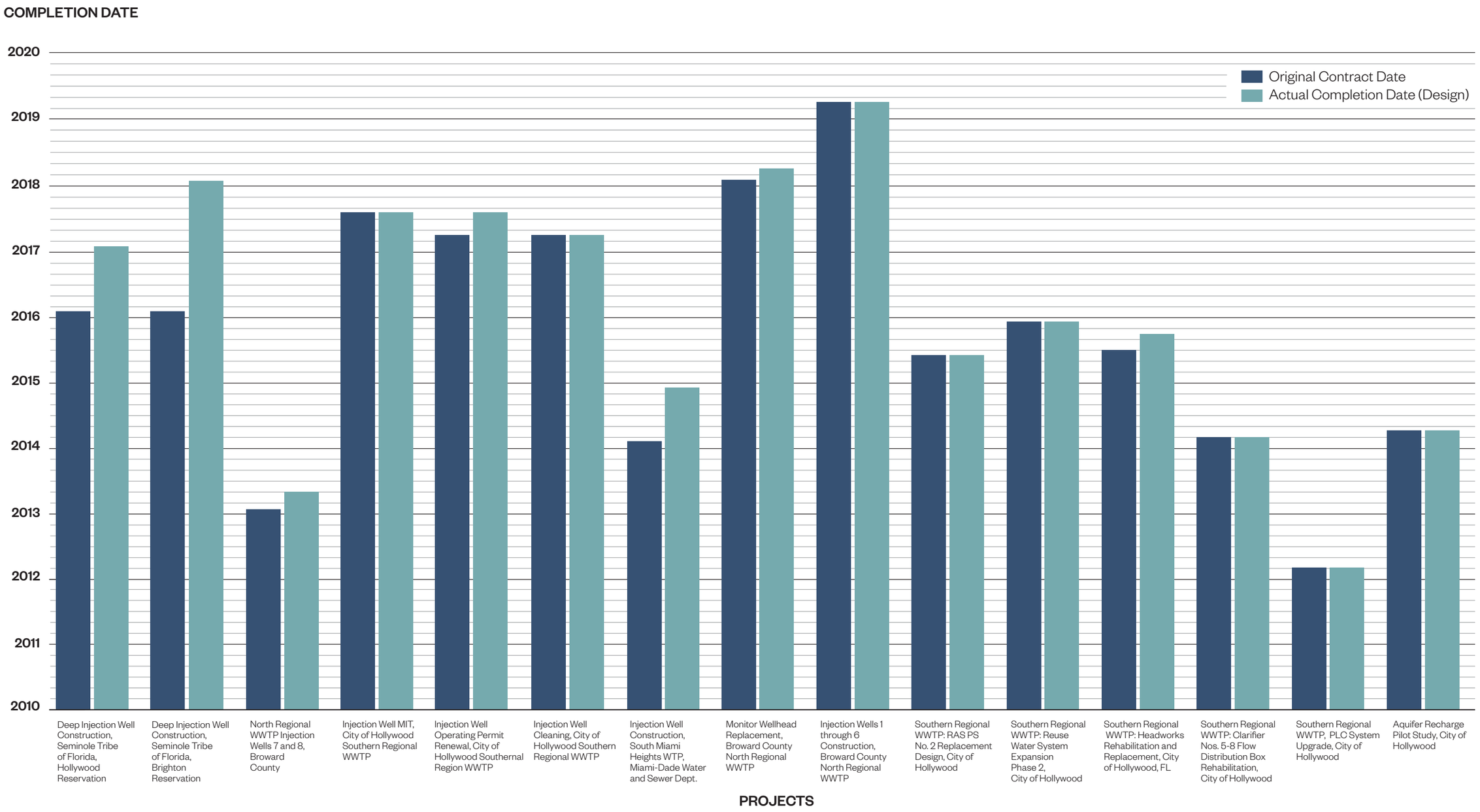
Ability to Meet Design and Permitting Schedules

The bar chart below graphically shows our referenced projects and Hazen's ability to meet scheduled time frames.



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Tab 5 – Organization of the Project Team

Section 5

Organization of Project Team

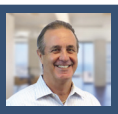
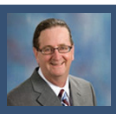
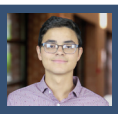
The Hazen team has the expertise and depth of resources to deliver. We have a deep bench of local staff who have worked on deep well projects for Southeast Florida clients over many years.

Hazen has assembled a qualified team to serve the City of Hollywood. We understand that clients select consultants based on team qualifications, and we have proposed individuals who will work on your projects—what you see is what you get.

Our team members are primarily local South Florida staff, which is a significant benefit to the City in that a range of experienced engineers are just a short drive away. Our team leadership is further strengthened by seasoned technical experts (in all disciplines needed), who have performed numerous projects of similar nature. Our proposed Project Manager, **Albert Muniz, PE,** is a Vice President of the firm with over 38 years of experience in the field of water engineering including effluent disposal and deep well injection programs, aquifer storage and recovery, and wellfield design and evaluation. Our Deputy Project Manager, **Michael Wengrenovich, PE,** is a Senior Associate over 39 years of well expertise in the South Florida area.

Team members are committed to providing quality, prompt, and responsive services while meeting the City's goals.

In addition, our team members have worked together on multiple DIW projects, as highlighted in the table below.

Project	Drilling of Wells	Testing of Wells	Permitting	 Albert Muniz, PE	 Michael Wengrenovich, PE	 John Largey	 Jorge Valdes	 Lauren Kuzbyt
City of Hollywood SRWWTP Injection Well Construction	✓	✓	✓	●	●	●		
Seminole Tribe of Florida (STOF) Brighton Reservation Injection Well Construction	✓	✓	✓	●	●	●	●	●
STOF Hollywood Reservation Injection Wells 1 and 2 Construction	✓	✓	✓	●	●	●	●	●
Broward County NRWWTP Injection Wells 7 and 8 Construction	✓	✓	✓	●	●	●		

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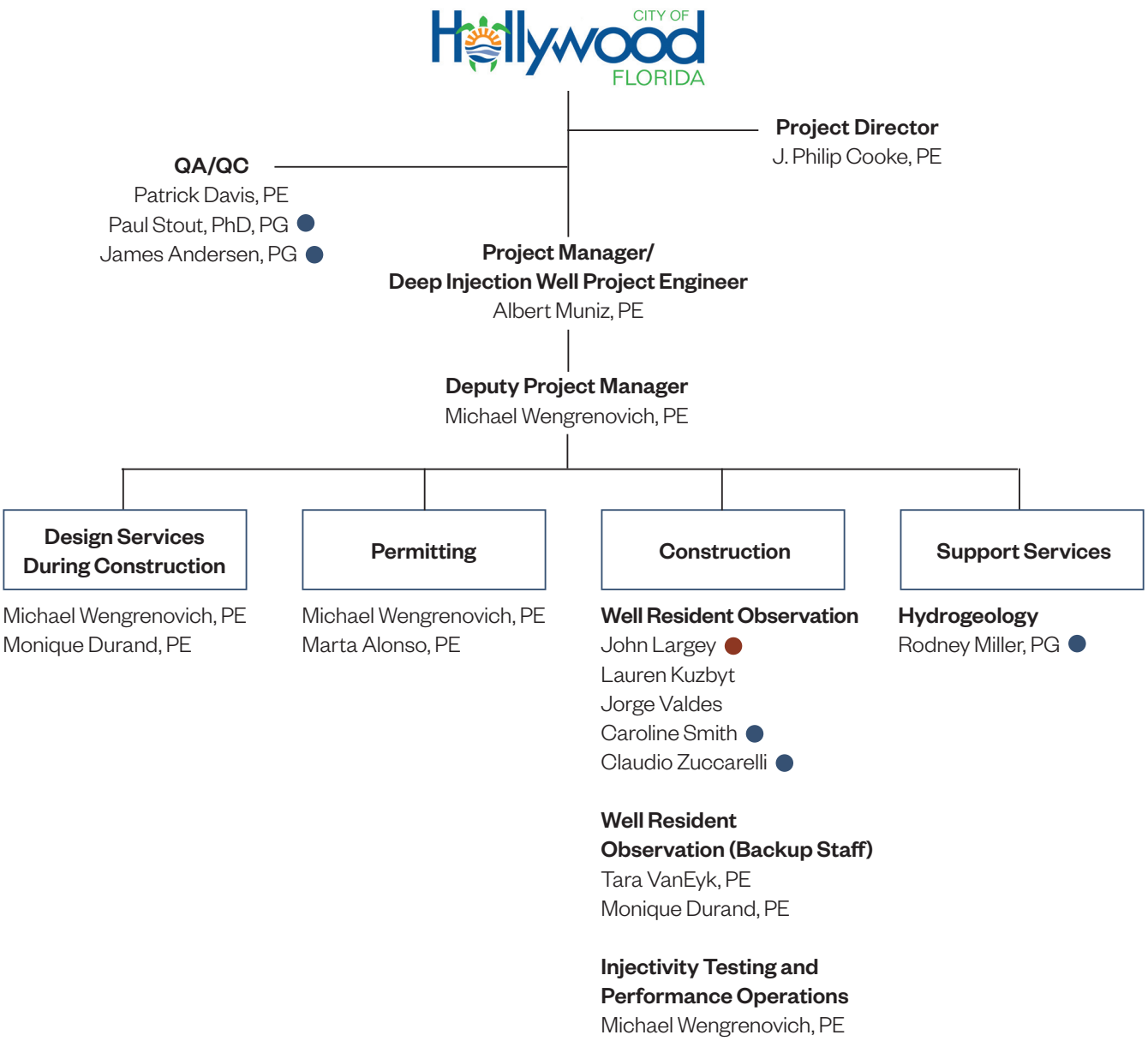
Hazen's proposed organizational chart below stresses short and direct lines of communication and responsibility and allows for simplified project coordination. It details the structure of the proposed team and primary areas of responsibility. Detailed resumes that describe the educational background and experience of each team member in conducting similar projects are included in Appendix A.



Subconsultants

- JLA Geosciences, Inc.
- Drilling Geo

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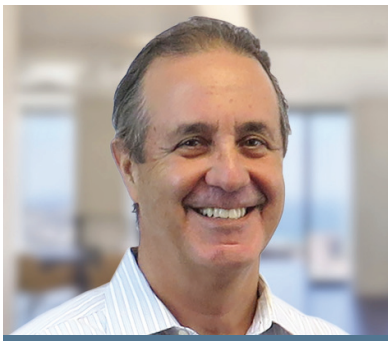

38 Years of Experience

Albert Muniz, PE
Project Manager

- Extensive experience related to water resources, including effluent disposal and deep well injection programs, aquifer storage and recovery (ASR), wellfield design and evaluation, saltwater intrusion analysis, water supply, permitting, and regulatory development.
- Recognized as a leader in his field and has served as a technical member on many committees, including the Governor's Commission for a Sustainable South Florida and as Chair of the AWWA Groundwater Committee.
- Authored over 60 publications including three books.
- Designed an injection well system for the City of Naples that stores reclaimed water in a saline environment for later retrieval to meet irrigation demands. This system has pioneered the concept of successfully storing and recovering both reclaimed and surface water in waters containing more than 10,000 mg/L total dissolved solids.

40 Years of Experience

Michael Wengrenovich, PE
Deputy Project Manager

- Has been involved with the planning, design, and construction of injection wells projects, treatment facilities, pumping stations, and pipelines for municipalities throughout South Florida during the past 40 years.
- As Project Manager, provided planning, design, permitting, procurement, and construction management services for all the wells at the Broward County NRWWTP, the largest injection well wellfield in Broward County.
- As Project Manager, provided design, permitting, and construction services for two 24-inch injection wells for the Seminole Tribe of Florida Hollywood Reservation WTP/WWTP. A dual zone Floridan Aquifer monitor well is also included in the project. This is the first Class I injection well that complies with FDEP standards and has been permitted by EPA District 4.

30 Years of Experience

J. Philip Cooke, PE
Project Director

- Managed general consulting projects for Hollywood since 2006, with over $25 million worth of wastewater projects in the past 7 years.
- Hollywood project experience includes SRWWTP Effluent Recharge Treatment Pilot Study, SRWWTP Headworks Rehabilitation and Replacement, and McKinley Street Interceptor.
- Located in Hazen's Hollywood office to provide responsive service; Broward County resident for 29 years.
- Has managed or participated in various projects including pre-design, design, permitting, rehabilitation, water resource planning, construction management, remediation, and aquatic studies.

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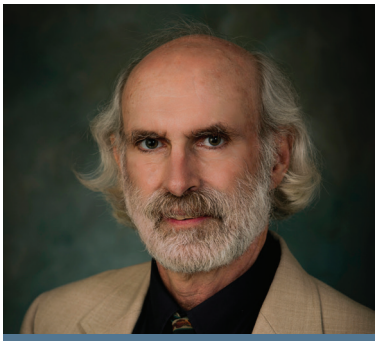
39 Years of Experience

Patrick Davis, PE
QA/QC

- Expert on wastewater effluent management issues, notably those related to reuse (filtration/ high level disinfection), toxicity and Class I injection well disposal.
- Has successfully dealt with permitting agencies at the local, state and federal level. All facets of permitting have been included, especially those related to surface water disposal, Class I injection well disposal, and risk analyses associated with the multitude of effluent management options in Hollywood.
- Project Director on several Class I deep injection well projects over the past four decades, including: Fort Lauderdale (4 wells); Loxahatchee River District; BCWWS (8 wells in multiple projects); Miramar (2 wells); Hollywood (2 wells); RCA Corp. (industrial well); and Plantation (tubing and packer repair). This experience has afforded Mr. Davis the opportunity to interface with many key decision makers affecting UIC decisions (Class I and Class V).



34 Years of Experience

Paul Stout, PhD, PE
QA/QC

- Performed SEAWAT variable-density groundwater flow and transport modeling to evaluate proposed operations of deep injection wells within Floridan Aquifer System (FAS) for Martin County Utilities. Involved in predicting potential migration of combined discharges from reverse osmosis concentrate and wastewater treatment plant effluent.
- Hydrogeologic services to support application for SFMWD Consumptive Use Permit renewal for Orangebrook Golf Course (Hollywood, FL).
- Hydrogeologic expert on Hazen team for the U.S. State Department's Millennium Challenge Corporation Water Supply Compact in Mongolia.

34 Years of Experience

James Andersen, PG
QA/QC

- Has been responsible for construction and completion of hundreds of water supply wells in South Florida including over 100 in the Upper Floridan Aquifer.
- Extensive experience in hydrogeology, groundwater water resource investigations, wellfield design, construction, development, well problem evaluations, and well rehabilitation.
- As Principal Hydrogeologist, provided project design, construction, and testing of one new 2,000 gpm, 20-inch-diameter FRP Upper Floridan aquifer well for the FPL Turkey Point FLEX UFA Cooling Water Well in Homestead, FL.
- As Principal Hydrogeologist, provided permitting and FDEP UIC re-rating of a 24-inch, 3,320 feet deep domestic wastewater injection well and preparation of the MIT summary report for the Seacoast Utility Authority.

*Backup Staff

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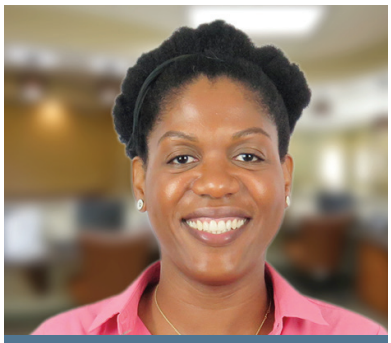


16 Years of Experience

Monique Durand, PE

Design Services During Construction; Permitting

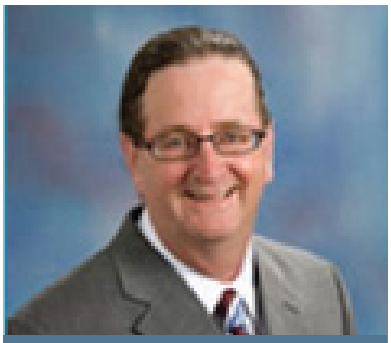
- Has participated in a variety of water and wastewater projects including water supply planning, evaluation, and design; water treatment design, distribution system design, and wastewater treatment and collection system design.
- Served on the field observation team for the Broward County NRWWTP Injection Well project.
- Experienced with construction administration for a variety of water and wastewater projects.
- Extensive experience preparing permitting submittals in Broward County and for the City of Hollywood.
- Developed construction sequence restrictions, construction constraints, contingency planning and permitting requirements for the City of Hollywood McKinley Street Interceptor and the City of Margate Design Criteria Package for the Reclaimed Water Canal Crossing.

18 Years of Experience

Rodney Miller, PG

Hydrogeology

- More than 18 years of experience and provides expertise in the construction, operational and mechanical integrity testing, and contract administration of Class I injection well systems and Floridan Aquifer and Surficial Aquifer production wells.
- Responsibilities include contractor coordination and overall contract/project management, well design, field observation, and technical reporting.
- For the City of Hollywood Class I Injection Well and Monitor Well Construction Management and Operating Permit Application project, served as geologist for construction of one large-diameter injection well and associated dual-zone monitor well. Also performed quality control and technical guidance services throughout all aspects of design, permitting, construction, and testing; and prepared O&M manual and secured approval from FDEP to perform operational testing and secured operating permit.
- Well versed and familiar with State regulations related to permitting of Class I systems.

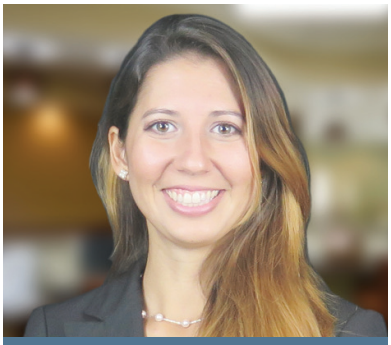


32 Years of Experience

John Largey, PE

Well Resident Observation

- 32 years of experience in water resources and well drilling including coordination of field activities related to construction and testing of numerous Class I municipal and industrial tube and packer injection wells and associated dual-zone monitor wells.
- He has supervised and trained field staff during drilling and testing of numerous Class I and Class V injection wells.
- Prepared required documentation to the United States Environmental Protection Agency for construction and testing of two Class 1 industrial deep injection wells and associated dual zone monitor well at the Seminole Tribe of Florida (STOF) Hollywood Reservation as well as numerous Class I and Class V injection wells regulated by FDEP.
- Expertise includes collecting, logging, and describing geologic samples; collecting and analyzing conventional cores; witnessing/verifying quality control of geophysical logging, straddle packer and single packer pumping tests, collection of water samples, casing installation, cementing operations, hydrostatic pressure tests, video surveys, and radioactive tracer surveys.



2 Years of Experience

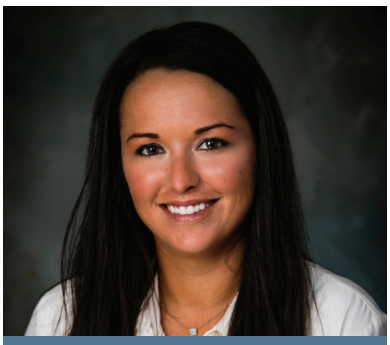
Lauren Kuzbyt
Well Resident Observation

- Has provided/provides deep injection well construction inspection and oversight for various municipal injection wells projects in Broward and Miami-Dade counties.
- Served as Construction Inspector responsible for ensuring the contract documents are met and collecting the various geologic data that form the basis for construction of the two injection wells for the STOF Hollywood Reservation WTP/WWTP.
- Involvement with weekly pad monitoring wells by measuring static water levels, and collecting and conducting initial water quality readings of surrounding surficial groundwater.
- Documented casing pressure testing, video logging, temperature logging, and radioactive tracer surveying for the injection wells at the City of Margate's WWTP.

2 Years of Experience

Jorge Valdes
Well Resident Observation

- Experience includes participating in deep injection well construction inspection and oversight projects for various South Florida clients.
- Experience monitoring surface water and groundwater quality, processing water samples, interpreting lithologic cuttings and conventional cores from drilling operations, interpreting geophysical logs, aquifer pump testing, and construction inspection of deep injection wells.
- Serves as Construction Inspector responsible for ensuring compliance with the contract documents and collecting the various geologic data that form the basis for construction of one Class I injection well for the STOF Brighton Reservation WTP.
- Served as Construction Inspector responsible for ensuring the contract documents are met and collecting the various geologic data that form the basis for construction of the two 16-inch injection wells for the STOF Hollywood Reservation WTP/WWTP.
- Evaluated video logging for the injection wells at the City of Margate's WWTP.



3 Years of Experience

Caroline Smith
Well Resident Observation

- Has overseen construction of multiple Upper Floridan Aquifer Wells and provided 24-hour on-site construction management and coordination.
- Experience in hydrogeologic field oversight during well construction and development phases; oversight for various drilling techniques; geophysical log interpretation; implementation of well design and construction; hydrologic data collection; water quality profiling; and performing field geologic analysis and pump testing for Surficial and Floridan Aquifer projects in South Florida.
- For a new power plant in Okeechobee, FL, provided field construction oversight for construction of six large-diameter Floridan Aquifer production wells; five wells completed in UFA and one dual-zone well completed in the UFA and Avon Park Producing Zone.
- Provided field construction oversight for construction and testing of four new, 20-inch diameter FRP Floridan Aquifer wells for an existing power plant in Miami-Dade County.

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2 Years of Experience

Claudio Zuccarelli
Well Resident Observation

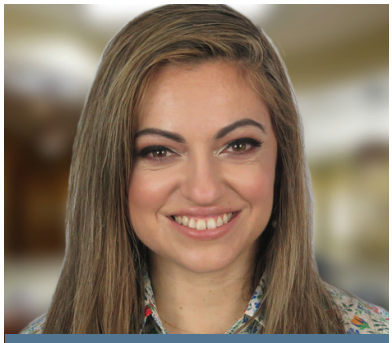
- Experience in hydrogeologic field oversight during well construction and development phases. Caroline Smith (JLA)
- Performs comprehensive field evaluations of wellfields including assessment of well performance, water quality evaluation, and report preparation.
- Served as Field Hydrogeologist and provided field construction oversight during the drilling for replacement of Well No.4 for the South County Water Treatment Plant, South Oslo Road Water Treatment Plant Floridan Aquifer Wells Rehabilitation Project.
- Serves as Field Hydrogeologist for the FPL Turkey Point Biscayne Aquifer Groundwater Monitoring Well Construction Project in Homestead, FL. Responsibilities include coring oversight and sample collection through the Biscayne Aquifer System, geophysical logging and interpretation of data to determine flow zones for monitoring well completion intervals, report preparation, etc.

13 Years of Experience

Tara Van Eyk, PE
Well Resident Observation*

- Over 13 years of engineering experience in a variety of water/ wastewater/reuse treatment and sanitary sewer projects, from master planning to piloting, design, permitting and construction management services.
- Performed construction management for expansion of Broward County's effluent disposal program, including two new injection wells at the NRWWTP. She also prepared the comprehensive Operation and Maintenance Manual for the expanded Injection Well and Booster Pump system.
- Performs ongoing services during construction and regulatory assistance for plant projects such as regulatory compliance documents for plant performance, DIW permit renewal and DIW mechanical integrity testing documents.

*Backup Staff



16 Years of Experience

Marta Alonso, PE, ENV SP
Permitting

- Over 15 years of consulting experience, including planning, funding, permitting, design, and construction of numerous water and wastewater infrastructure projects throughout Florida, the United States, and abroad.
- Worked as field inspector in the construction of two injection wells and one monitoring well at the Broward County North Regional Wastewater Treatment Plant.
- Prepared Conceptual Design Reports and preliminary cost estimates for the injection well disposal systems of the STOF Brighton Reservation Water Treatment Plant and the Hollywood Reservation Water and WWTP, and prepared subsequent construction and operation permit applications for the Environmental Protection Agency.
- Completed the operating permit renewal for the City of Margate wastewater treatment plant injection well system.

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Estimated Hours for Each Member of the Team

Although the drilling contractor's schedule is not currently available, the contract documents suggest sequential drilling of Injection Well No. 3, the Monitor Well, then Injection Well No. 4, and allow for 840 days to complete construction. The difficult nature of well construction is facilitated by 24-hour-per-day operations during drilling activities. Because of this, construction observation is also essential around-the-clock to verify all aspects of the installation are within specifications. **Our team of experienced resident well observers are completing recent well installations, including the concentrate disposal well at the Seminole Tribe of Florida's Brighton Water Treatment Plant, and will be ready to begin the project in November 2019.** A preliminary estimate of the number of hours for each member of the team for this project appear in the table below.

Name	Level of Involvement	Field of Expertise	Estimated Hours
Patrick Davis, PE	QA/QC	Deep Injection Well Constr.	40
Paul Stout, PhD, PG (JLA)	QA/QC	Hydrogeology	40
James Andersen, PG (JLA)	QA/QC	Hydrogeology	40
J. Philip Cooke, PE	Project Director	Wastewater Treatment and Disposal	40
Albert Muniz, PE	Project Manager/Deep Injection Well Project Engineer	Deep Injection Well Project Engineer	400
Michael Wengrenovich, PE	Deputy Project Manager; Injection Well Design Services During Construction; Permitting; Injectivity Testing and Performance Operation	Injection Well Design Services During Construction; Permitting; Injectivity Testing and Performance Operation	1,500
Lauren Kuzbyt	Well Resident Observation	Geology	3,000
Jorge Valdes	Well Resident Observation	Geology	3,000
Caroline Smith (JLA)	Well Resident Observation	Geology	1,500
Claudio Zuccarelli (JLA)	Well Resident Observation	Geology	1,500
John Largey (Drilling Geo)	Well Resident Observation	Hydrogeology	3,000
Rodney Miller, PE	Hydrogeology (Lead Geologist)	Hydrogeology	240
Monique Durand, PE	Design Services During Construction; Well Resident Observation (Backup Staff)	Project Engineer	40
Tara VanEyk, PE	Well Resident Observation (Backup Staff)	Project Engineer	40
Marta Alonso, PE	Permitting	Permitting	40

Municipal Staff Support Anticipated for this Type of Engagement

With typical construction projects at the SRWWTP, the City provides inspection staff and relies on the Construction Administration Services consultant to provide technical inspections during key project milestones. Because of the specialized nature of deep injection well construction, a thorough working knowledge of the drilling process is needed full-time to interpret lithology formations as they are encountered and confirm drilling is continuing according to plan. Our experienced deep well inspection personnel have performed these duties on South Florida projects. In addition, our inspectors will also be tasked with ensuring Buy American and Davis Bacon requirements are met and documented. However, because the project will take place at an active plant site, support and input from Operations and ESSD management staff will be critical during construction to avoid interrupting plant processes. We anticipate support in the form of attendance at progress meetings twice per month, processing of approved contractor pay requests, and typical liaising with FDEP SRF personnel during any construction progress or document file inspections they may wish to make.

Subconsultants

Drilling Geo

Role: Well Resident Observation

Drilling Geo provides water well technical services related to the construction and testing of water production wells and Class I, Class V, and Class VI deep injection wells. Services include all aspects of well construction oversight and testing including collecting, logging and describing geologic samples; collecting and analyzing conventional cores; witnessing and verifying quality control of geophysical logging, straddle packer and single packer pumping tests, collection of water samples, casing installation, cementing operations, inclination surveys, hydrostatic pressure tests, video surveys, radioactive tracer surveys, and short-term injection tests.

Drilling Geo provides water well technical services related to the construction and testing of water production wells and Class I, Class V, and Class VI deep injection wells.

Drilling Geo also assists with the planning and implementation of Class I injection well mechanical integrity testing as well as assisting with review of monitor and injection well hydraulic data as well as monitor well and injectate stream water quality parameters to aid in the assessment of external mechanical integrity of injection well systems. Previous Class I injection well projects performed by firm owner, John Largey, include:

- City of Hollywood Wastewater Treatment Plant: Two municipal deep injection wells and associated monitor well.
- Seminole Tribe of Florida Hollywood Reservation: Two industrial deep injection wells and associated monitor well.
- Seminole Tribe of Florida Brighton Reservation: One industrial deep injection well and associated monitor well (in progress)
- North Broward Regional Wastewater Treatment Plant: Two municipal deep injection wells and associated monitor well.

JLA Geosciences, Inc.

JLA Geosciences, Inc.
HYDROGEOLOGIC CONSULTANTS

Role: QA/QC; Well Resident Observation; Hydrogeology

Located in Palm Beach County, JLA Geosciences, Inc., has in-depth knowledge of hydrogeology, water supply development, and wastewater disposal. JLA staff includes registered professional geologists with nationwide experience in geology, geochemistry, hydrogeology, and groundwater flow modeling. The principals' groundwater resources experience includes work on over 50 different wellfields including 30 major municipal and smaller private utilities, expertise in RO treatment, wastewater evaluation, and injection well services. JLA has completed work on over 60 Floridan Aquifer wells since 1985 and hundreds of other wells located throughout South and Central Florida. The firm's knowledge of aquifer systems and groundwater flow enable JLA to make the right decision in helping clients manage water supply and disposal needs.

JLA has completed work on over 60 Floridan Aquifer wells since 1985 and hundreds of other wells located throughout South and Central Florida.

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Tab 6 – Approach to Performing the Work

Section 6

Approach to Performing the Work

Hazen is committed to performing construction administration, testing, and operational permitting within schedule and cost limitations as well as meeting any special needs of our clients.

Deep injection well drilling projects have an inherent complexity that require careful monitoring throughout to ensure success. To this end, we will tailor our project approach to meet the unique project scheduling, management, and budgetary control measures associated with their construction. Our Project Manager, **Albert Muniz, PE,** will be responsible for ensuring that the overall schedule for the project is met within the approved budget. Hazen subscribes to a strong project manager approach where all lines of communication are via the Project Manager. This is designed to provide one person who is answerable to the City at all times. Our project management framework results in direct lines of communication and responsibility and allows for simplified and centralized project coordination.

Our Project Manager, **Albert Muniz, PE,** will be responsible for ensuring that the overall schedule for the project is met within the approved budget.

Additionally, this is a State Revolving Fund (SRF) loan project. Our previous experience with SRF projects, particularly those with the City of Hollywood, such as the Headworks Rehabilitation and Replacement, the 2002 WWTP Upgrade, and the design and construction of Deep Injection Well Nos. 1 & 2 at the SRWWTP, demonstrate that careful documentation and open lines of communication available to the utilities' accounting personnel allow for efficient reimbursement. Hazen's familiarity with Buy American and Davis-Bacon Act provisions will help ensure compliance. Our selected SRF experience is highlighted below.

Hazen has successfully obtained and administered funding on many SRF projects.

City of Hollywood

- Headworks Rehabilitation and Replacement Project
- 2002 WWTP Upgrade
- Deep Injection Well Nos. 1 and 2

City of Hallandale Beach

- Provided assistance in obtaining and securing SRF for water treatment plant improvements

City of Plantation

- Assisted in obtaining SRFs for various water and wastewater pipeline replacement projects

Sarasota County

- Assisted Sarasota County in obtaining approximately $45M in SRF funding for anticipated projects

City of Arcadia

- Assisting Arcadia in obtaining SRF loans, Principal Forgiveness, and Grants for a project estimated to be over $25M in wastewater collection system improvements

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Step 1 - Scope Definition

Our approach begins with you. We propose to first meet with the City's key personnel in a pre-scope meeting to identify and document the City's goals and objectives for this project, then prepare a detailed scope of work as well as negotiate a mutually agreeable budget for that scope to form the basis of our contract. Our approach is to execute the agreed scope efficiently, collaboratively, and with attention to detail.

Our Project Manager will keep you informed on the status of projects and will be responsive to any questions or concerns you may have.

Step 2 - Hazen Project Control Plan

Once a notice to proceed is given, Mr. Muniz will develop a Project Quality Control Plan along with a detailed work plan, and meet with all of the City's stakeholders to go over this plan. He will meet with our Task Leaders to establish specific milestone dates for all deliverables, including permitting tasks.

These controls and our commitment to careful planning and following through with the plan, along with the depth and experience of our resources, will help ensure the timely completion of this project within the required budget. Key elements of this Plan include quality assurance, project schedule development, and budget tracking and projecting.

CONDUCT SCOPING MEETINGS
Work closely with the City to develop a concise scope of work to ensure a clear understanding of the City's expectations, deliverables, and specific milestones.

MONITOR SRF REQUIREMENTS
Conduct staff interviews and material deliveries to confirm compliance.

CONDUCT MEETINGS/CLIENT WORKSHOPS
Regular staff and team meetings are typical to focus on project progress and specific issues.

PERFORM QA/QC REVIEWS
Perform early and regular QA/QC reviews to incorporate any lessons learned from previous projects, and reduce project costs by avoiding costly changes late in the project.

MEET EARLY WITH AGENCIES
Meet early with regulatory agencies to avoid permitting surprises that may delay construction activities or operation permit issuance.

ENSURE PROPER PROJECT CLOSEOUT
All work must be satisfactorily installed, as-builts completed, and permitting requirements met at project closeout. All certifications and warranties must be in place and plant personnel trained as necessary.

DEVELOP PROJECT SCHEDULE
Schedule will be updated regularly to ensure the project remains on schedule with the right resources.

USE WEB-BASED DOCUMENT MANAGEMENT SYSTEM
Maintain a web-based electronic document management system accessible by the entire project team. This maximizes the team's efficiency and reduces overall project costs.

DEVELOP MAINTENANCE PLAN
Meet early with the City 's O&M staff to review the sequence of construction and develop a detailed maintenance of operation plan (MOP) to avoid unforeseen service interruptions.

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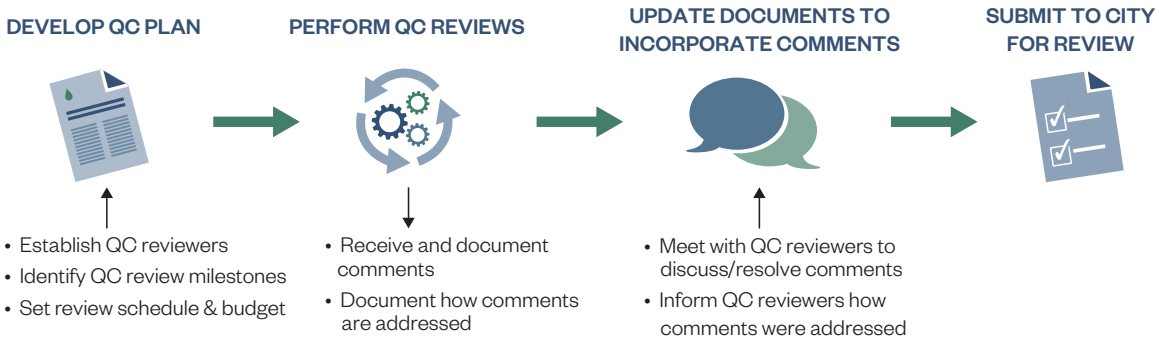
Quality Assurance

One of the most important aspects of our Project Control Plan is our Project Quality Assurance/Quality Control (QA/QC). Hazen has a corporate QA/QC policy that is implemented on all projects. Our Project Manager will work closely with our QA/QC team throughout all phases of the project to ensure that this policy is followed. Multi-million dollar projects managed by our proposed Project Manager are a testament to how well our QA/QC and management approach benefits our clients in that the average change order amount for construction costs on these projects has been minimal.



Project Schedule, Budget and Cost Management

Hazen has been serving public clients for over six decades and understands the importance of being fiscally responsible. Providing designs that focus on clients' needs has been our trademark. Applying engineering knowledge to solve clients' needs in terms of budget, schedule, and performance is critical to a project's success. Hazen will work closely with the City to help ensure schedules and budgets are met. Examples of our ability to meet schedules and budgets appear in the table on the next page.

These similar projects provide testimony to the efficiency and thoroughness Hazen provides to our clients. Hazen is committed to producing high quality, cost-efficient products adhering to performance schedules.

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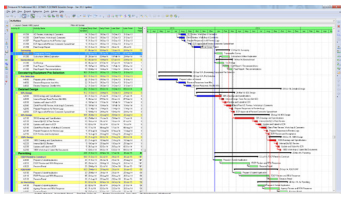
Client	Project	On Budget	On Schedule
City of Hollywood	Clarifier 5-8 Flow Distribution Box	✔	✔
City of Hollywood	Aquifer Recharge Pilot Study	✔	✔
City of Hollywood	PLC System Upgrade	✔	✔
City of Hollywood	Headworks Rehabilitation and Replacement	✔	(1)
City of Miramar	East WTP Renovations	✔	✔
City of Hollywood	McKinley Street Interceptor	✔	✔
City of Fort Lauderdale	Intracoastal Waterway Horizontal Directional Drill	✔	✔
City of Sunrise	Biosolids Management Improvements	✔	✔
Broward County	WTP 3C Ground Storage Tank and Pump Station	✔	✔
Broward County	Master Pump Station 440 Modifications	✔	✔
City of Delray Beach	Plant A Secondary Clarifiers and Stormwater Rehabilitation	✔	✔
Miami-Dade Water and Sewer Department	South District WWTP High-Level Disinfection Project	✔	✔

(1) Construction schedule extended due to field and scope changes



We know that unforeseen issues can come up during a project, and we adapt resources and personnel accordingly to ensure a responsive and quick resolution to any issue that may arise. An example of a typical project schedule is shown above.

Project Schedule

To ensure that schedules are met in accordance with the City's time frame, a detailed project schedule in Microsoft Primavera will be developed as part of the Project Control Plan, which will be maintained over the course of the project. The project schedule will detail the steps required to complete the project utilizing a critical path methodology based on the contractor's progress.

Our Project Manager, Albert Muniz, PE, will be responsible for ensuring that the overall schedule for each assignment is met.

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Budget Control

Cost control for this project will also be the responsibility of the Project Manager, who will use our company project tracking software tool, Deltek Vision. Mr. Muniz will have the ability to check project costs and labor expenses on a daily basis, if needed. He will also track progress of team members as tasks are performed to verify progress matches the budgeted hours for each task during construction activities.

The City will be provided a detailed invoice each month along with a status report so that the City can verify progress of each assignment on a monthly basis and be kept informed of any delay or possible cost issue before problems occur.

> "Hazen firm and staff consistently demonstrated professionalism, expertise, flexibility, responsiveness... Hazen and Sawyer recommended equipment that resulted in a savings of over $15 million to the City."
>
> *City of Tallahassee, FL*

Cost Management

The Hazen team has designed, permitted, and constructed numerous deep injection wells and associated conveyance piping and controls for these wells, which provides us with an understanding on how to effectively deal with issues that could arise and how to resolve them to avoid impacting the construction schedule and project cost. Our team will be proactive in addressing potential issues within our specifications, requiring plans and methods to mitigate or avoid the associated risks and be clear that the contractor must correct issues at their sole cost, including any delay costs. The following are typical issues and the avoidance techniques and resolution that can be anticipated on this project with regards to deep injection wells:

Potential Issue	Typical Avoidance	Typical Resolution
Pilot or reamed borehole off center during borehole alignment testing	We will witness the borehole alignment tests and identify tests that are out of specified or permitted requirements requiring the Contractor resolve at no additional cost to the City.	Contractor will provide a plan to plug back affected borehole section and re-drill with drill collars to ensure straightness of borehole.
Casing collapse during cementing operations	We will review the Contractor's cement plan prior to cementing activities to minimize this risk.	Contractor must drill the collapsed casing and cement out of the hole or drill a replacement well at their cost.
Double borehole during reaming resulting in flow path of fluid behind cemented casing	We will closely monitor drilling speeds and the weight on bit during reaming activities, as well as monitor cement volume placement in cuttings if reaming a cemented borehead so that these adhere to specification requirements.	When identified, stop drilling and devise a plan to cement the double borehole portion at no additional cost to the City. Proceed with drilling and slow drilling speed and weight on bit.
Class I/V UIC Permitting Delays for Injection Wells	Understanding that the UIC FDEP are short staffed along with having new folks in leading roles, we will work closely with them to address any concerns or questions early on before the permit application is submitted.	Having early meetings with the local and Tallahassee UIC FDEP staff has shown results in faster review times and much less RAIs.
Unsuccessful back filling caverns within borehole with gravel	We will monitor gravel and cement placement techniques to adhere to the specifications.	Start placing small batches of cement intermittent with small lifts of gravel at no additional cost to the City.

Potential Issue	Typical Avoidance	Typical Resolution
FDEP coordination delays which shut down drilling activities.	Provide FDEP an early updated schedule for events needing FDEP observation or approval and project specifications will require the Contractor to adhere to schedule and notification requirements.	If drilling activities must be shut down pending FDEP approvals, the Contractor will be required to cover any associated costs.
Difficulty in clearing well for video logging	We will monitor water pumping rate to ensure it is being pumped from well within the specified rate to clear well in a timely manner and will specify alternate methods be used if needed.	If a borehole is difficult to clear, assist in finding geophysical logging methods that can be used to obtain a visual log of the borehole that is within the contract.
Not meeting requirements of well construction permit	We will continually review the construction permit and specifications to avoid any non-compliance issues which will be the Contractor's responsibility to resolve.	If a non-compliance issue has been identified, we will contact FDEP and resolve the issue and stop drilling activities if activities do not conform.
Leaking drilling pad or vehicles resulting in contamination of the shallow monitoring wells	We will periodically conduct site walks to visually inspect the drilling pad integrity for leaks (along with obvious equipment fluid leaks) as well as require samples of the drilling pad water for analysis.	If a leak has been identified the condition will be rectified by over pumping impacted shallow monitoring wells and removing leaking vehicles or equipment immediately.
Leaking packer elements after set within borehole	We will preempt the issue by observing inflation of the packers at ground surface to verify element integrity and confirm packer seal prior to installing in borehole.	If a packer has been confirmed to leak, the packer will be required to be reconstructed with pre-tested replacement packers.
Unsuccessful casing pressure test.	We will observe a preliminary pressure test to identify any leaks.	If leaks are identified, the casing will need to be sealed by the contractor at no additional cost to the City.
Meter or gauge failure during testing	We will verify recent calibration sheets on flow meters and pressure gauges.	Replace with calibrated meter or gauge well ahead of scheduled tests.
Inaccurate inputs for geophysical logging and packer testing	We will verify input parameters and correct prior to geophysical logging and packer testing.	Use a conversion to revise data produced by inaccurate input parameters.
Improper disposal of formation cuttings and flush water	We will periodically verify specified disposal protocols being met.	Require contractor to remedy the situation and report incident to FDEP at their cost.
Insufficient analysis of hydraulics especially with surge potential	Pipeline hydraulic models are developed and used to size pumps and pipelines. Hazen has numerous pipeline design specialists that will utilize Pipeflow® Expert, Hazen Q and 3D Autocad for plan and profiles for detailed design.	Using these programs will help develop an efficient pipeline design and pump stations that minimize issues with headloss and utility conflicts.

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Step 3. Construction Administration

The proper monitoring and management construction progress for deep injection well drilling cannot be underestimated. Our experience finds that attention to detail as each formation is reached is critical to the ultimate success of a well installation. The implementation of a detailed drilling and testing program is needed to collect the data necessary for design of the well and identification of underground features. Hazen has had an excellent record in evaluation and interpretation of test data collected, the subsequent selection of casing depths, determination of confinement, and identification of the USDW. It should be noted that each casing depth selection must be supported by a technical package that includes all the justification needed for FDEP to approve the request in a timely manner with minimal inquiries from FDEP.

Upon site or local permitting by the contractor, delivery and set-up of site trailers is complete, clearing, grubbing and survey activities start, the installation of vibration monitors is completed, and we will begin weekly summary reports to FDEP prior to the commencement of initial drilling activities. With the arrival of the drilling rig, full-time observation follows the setting of the 74-inch pit pipe and subsequent reams. Through the setting of the 66-inch and 56-inch casings, monitoring of lithology by our resident observers is imperative to make certain appropriate casing seat depths are chosen. Once the clay layers of Hawthorn Formation is reached, squeezing of the clay layers activated by the drilling fluid escalates drilling risks, necessitating constant attention and communication with the drill team.

Judicious evaluation of the cut cores, deviation surveys, water quality of drilling fluids, and geophysical logs help to establish the location of the Upper Monitoring Zone as well as target packer depths for determination of confinement characteristics and associated formation capacities. As drilling and casing setting progresses to the 36-inch (final) casing, pressure tests in addition to the cut cores, water quality, and geophysical test results are needed to confirm confinement. After completing the open hole into the boulder zone, the 24-inch FRP casing can finally be set and a full mechanical integrity test (MIT) performed.

Once the MIT has passed, the wellhead is installed, and the well can undergo a short-term injection test. We will coordinate with the City and the contractor for the location of effluent that is least invasive of plant operations. Upon acceptance, the construction of the dual zone monitor well and the next deep injection well can commence.

Step 4. Project Closeout

Once the wells have been successfully tested and accepted, the requisite documents are submitted to FDEP in order to obtain approval for operational testing under the existing Well Construction Permit. The Well Completion Report summarizes the drilling and testing conducted and required as a permit condition. An updated Operations and Maintenance Manual provides guidance to operators as they commence operation. During this period, operators learn how to operate the injection well system including any revisions to monitoring and reporting. Operational testing, typically a minimum period of six months, can commence upon construction of the new injection well pump station. We have found that owners have welcomed assistance during this period as the critical time during the project when facilities are “turned over” to the operators. Availability and accessibility to quickly respond to questions and issues are critical for maintenance of continuous operation. Upon completion, we are then able to submit the application for an Operations Permit.

Tab 7 – Current and Projected Workload and Time Schedule to Complete Project

Section 7

Current and Projected Workload and Time Schedule to Complete Project

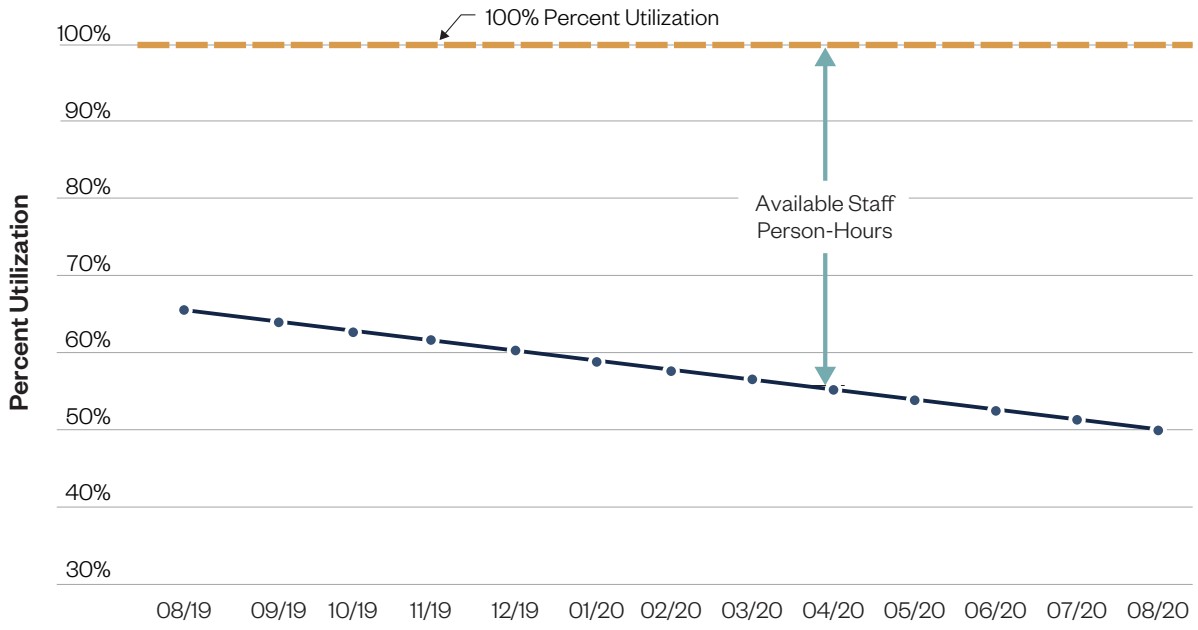
Hazen's current and projected workload is such that we do not anticipate any work that would prevent us from completing your assignments within schedule.

Hazen management has a conservative approach of typically undertaking new assignments only when workload permits. Should we be selected for this contract, we commit that the individuals identified on the organizational chart will serve the City. The figure below illustrates our team's projected current and future workload capacity. We do not anticipate any work that would prevent us from completing your assignment within schedule.

Should we be selected for this contract, we commit that the individuals identified on the organizational chart will serve the City.

Should unforeseen circumstances occur, our team has the necessary support and backup staff at all levels with experience in all aspects of engineering. If additional resources are necessary to support our team, Hazen maintains sufficient staff in our seven Florida offices and also has the capacity to draw upon our firmwide staff members should an unforeseen circumstance occur or if specific expertise is required at the City's request.

The current and projected workload for our Hollywood and Boca Raton offices is shown on the next page.



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Summary of Current Workload

Below is a summary of Hazen's Hollywood and Boca Raton offices workload for projects >$200,000 with anticipated completion dates.

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Our projected workload (contracts recently awarded) appears below.

Projects
City of North Miami Beach Engineering Services (MIT)/Operation Permit
City of Plantation Continuing Consulting Engineering Services for Wastewater and Water Utilities Engineering Within Environmental and Sanitary Disciplines (RFQ 015-19)
City of Boca Raton Engineering Services for Wastewater Treatment Plant Upgrades (2019-013)
South Florida Water Management District Engineering Services for Restoration and Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R) Projects

Volume of Work with City of Hollywood

Hazen's volume of work previously awarded to the firm by the City of Hollywood in the last five years appear in the table below. We will be happy to provide additional information upon request.

Project Name	Completion Date
Clarifiers 5 & 6 Rehabilitation	Ongoing
RAS Pump Station No. 1 Replacement	Ongoing
Citywide Vulnerability Assessment	Ongoing
North Central Sewer Expansion - Phase III	Ongoing
Water Supply Plan Update 2020	Ongoing
Reuse System Expansion Phase 1	07/2018
Injection Well Rehabilitation and MIT 2017	07/2018
RAS Pump Station No. 2 Replacement	01/2018
FDEP SRWWTP Permit Renewal	11/2017
Basin H11, H15W & H31 Phase II	07/2017
Reuse Water System Expansion 2	09/2016
Headworks Upgrade	09/2016
RAS Pump Station No. 2 Replacement	08/2015
Wastewater Improvement Study	09/2015
Ocean Outfall Rule Change Pilot Assistance	05/2015
WWTP Facility Permit Renewal	09/2014

Project Schedule

While the drilling contractor's schedule is not currently available, the contract documents suggest sequential drilling of Injection Well No. 3, the Monitor Well, then Injection Well No. 4 and allow for 840 days to complete construction. The preliminary schedule on the following page abides by the proposed contract timeframe. The difficult nature of well construction is facilitated by 24-hour per day operations during drilling activities. Because of this, construction observation is also essential around-the-clock to verify all aspects of the installation are within specifications.

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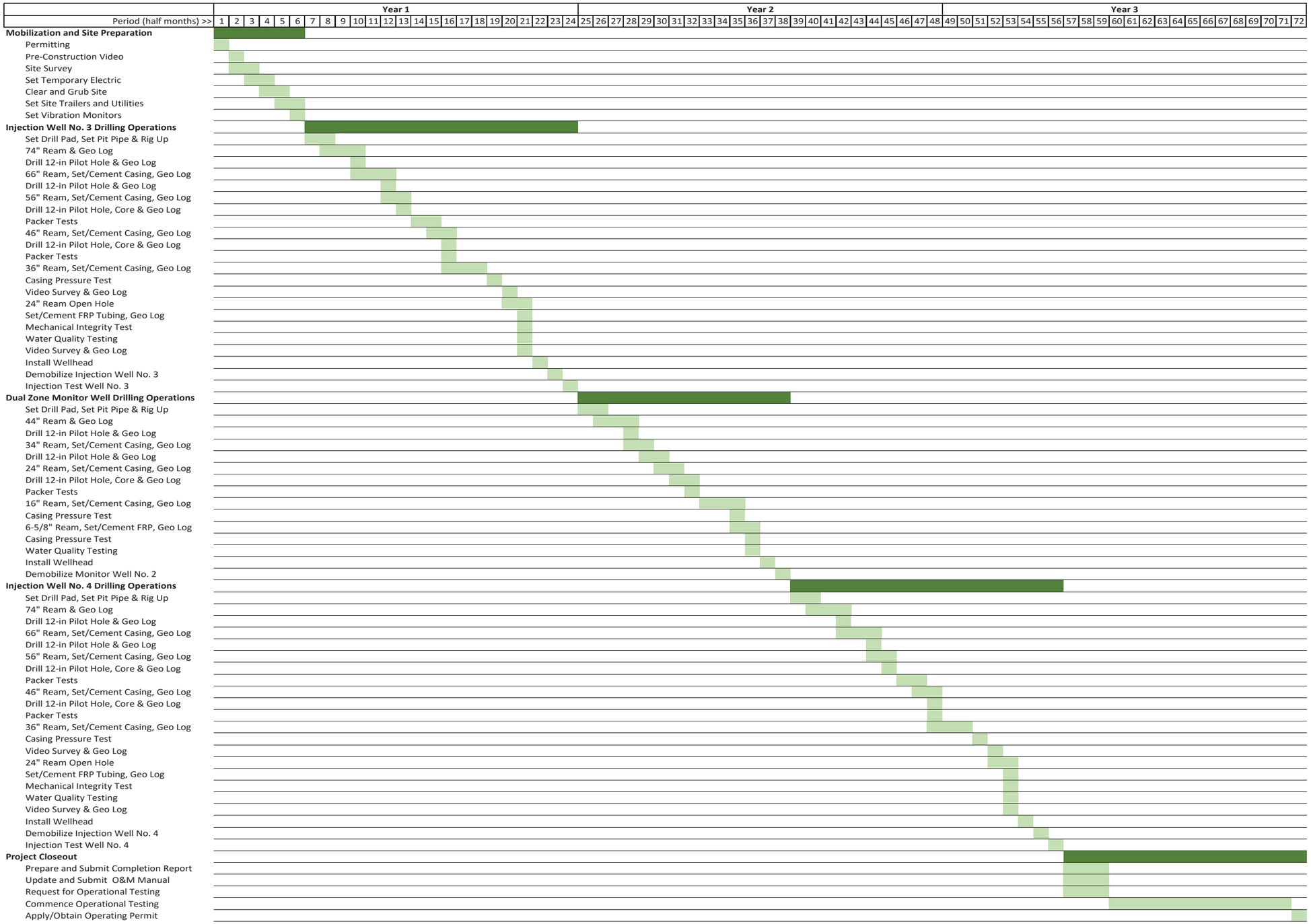
Project Schedule



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Appendix A Resumes of Principal Staff

Albert Muniz, PE

Project Manager/Deep Injection Well Project Engineer

Albert Muniz, PE, has extensive experience related to water resources, including water supply, effluent disposal and deep well injection programs, aquifer storage and recovery (ASR), wellfield design and evaluation, saltwater intrusion analysis, permitting, and regulatory development.

Education

BS, University of Florida, Civil/ Environmental Engineering, 1980

Certification/License

Professional Engineer: FL, NY

General Contractor: FL

Areas of Expertise

- Project Management
- Deep Well Injection
- Water Supply Wells
- Water Resource Planning
- Groundwater Modeling

Experience

- 38 total years
- 23 years with Hazen

Professional Activities

Adjunct Professor at Florida Atlantic University

American Water Works Association

National Society of Professional Engineers

Florida Engineering Society

National Water Well Association

Tau Beta Pi - Chair, AWWA Groundwater Committee

Mr. Muniz is recognized as a leader in his field and has served as a technical member on many committees including the Governor's Commission for a Sustainable South Florida and as Chair of the AWWA Groundwater Committee. In addition to project work, Mr. Muniz has over 60 publications including three books.

Mr. Muniz has extensive experience in the permitting, design, and construction of injection well systems in South Florida, having worked on 22 systems. Sixteen of the injection well systems have been municipal designed wells similar to the system proposed at the North County Water Reclamation Facility. Mr. Muniz has worked on every aspect of injection well work from permitting through construction and mechanical integrity testing. Mr. Muniz has also been a leader in advancement of design features such as cementing of the annular space between the final casing and tubing for industrial designed wells.

Peele-Dixie Deep Injection Well, Fort Lauderdale, FL
Hazen designed a new 12-mgd finished water capacity nanofiltration water treatment plant for the City of Fort Lauderdale. Mr. Muniz was the Engineer-of-record and Project Manager for the design, permitting, and services during construction of the deep injection well needed for disposal of concentrate produced by the new WTP.

Deep Injection Well System Design, Loxahatchee River District, FL
Mr. Muniz worked with District staff and the FDEP to successfully secure a permit that allows blending of concentrate produced from a nanofiltration water treatment plant with reclaimed water to expand the quantity of irrigation quality water available. This strategy was approved and supported by the FDEP, and allowed the District to continue to use their existing deep injection well system without converting the injection well to an industrial design (i.e., addition of a tubing and packer). This result-

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ed in significant cost savings and allowed the District to keep the existing disposal capacity intact.

City of Naples Injection Well System Design, FL
Mr. Muniz has designed an injection well system that stores reclaimed water in a saline environment for later retrieval to meet irrigation demands. This system has pioneered the concept of successfully storing and recovering both reclaimed and surface water in waters containing more than 10,000 mg/L total dissolved solids.

Collier County South County WTP 8-mgd RO Expansion, FL
Mr. Muniz also served as Project Engineer on the Collier County South County WTP 8-mgd RO Expansion where Hazen was a subconsultant to another national firm. Mr. Muniz managed the permitting and design, and oversaw construction and testing of the injection well system for Collier County's South County Regional Water Treatment Plant RO expansion project.

Consumptive Use Permitting Projects, Collier, Broward, Miami- Dade Counties, FL
Mr. Muniz has managed or is currently managing many Consumptive Use Permitting projects in Florida, including Collier County, Pompano Beach, Broward County, Fort Lauderdale, Miramar, Plantation, Hallandale Beach, and Cooper City. Mr. Muniz has worked with regulators from EPA, DEP, and the SFWMD during rule making for injection wells including ASR systems. These efforts led to reclassification of ASR wells to facilitate implementation of both treated and untreated systems. Mr. Muniz was instrumental in working with these agencies to obtain raw water permits for Miami-Dade County and Broward County. These two systems were the first permitted untreated ASR systems in Florida.

City of Hollywood Groundwater Modeling, FL
Mr. Muniz managed one of the most innovative projects in the state, consisting of the creation of a groundwater divide to prevent further inland movement of the saltwater interface by injecting reclaimed water along the coastline. Plans consisted of shallow injection of reclaimed water near the saltwater interface to create a hydraulic gradient, which would allow continued use of the City's coastal wellfield.

Alternative Water Supply Plan, City of Stuart, FL
Mr. Muniz played a key role in the development of the City of Stuart's alternative water supply (AWS) plan. Based on his expertise in the design and construction of water supply wells along with deep injection wells, Mr. Muniz played an extensive role in the conceptual planning of the proposed Floridan Aquifer wellfield and deep injection well and dual-zone monitor well improvements presented in the AWS plan. Additionally, he provided expertise in the development of the groundwater model used to assess future changes in Floridan Aquifer water quality.

General Consulting Engineering Services, South Central Regional Wastewater Treatment and Disposal Board (SCRWT&DB), Cities of Boynton Beach and Delray Beach, FL
As Project Director, Mr. Muniz has provided oversight on various projects including reclaimed water expansion to 24 mgd, process air piping, secondary clarifier rehabilitation, headworks and stormwater improvements, RAS, sludge, filter expansion, and deep injection well system.

Wastewater Consulting, Palm Beach County, FL
Mr. Muniz directed study, design, permitting and construction administration (CA) and/or management (CM) services on numerous wastewater projects. Elements of select projects are: SRWRF Phase I; Regional Pump Stations 9S and 5; Sludge Management Plan; Indirect Water Reuse Feasibility Study; Telemetry Information Management System Phase I and Phase II; SRWRF Phase II; SRWRF Reclaimed Water System Expansion; SRWRF 16-mgd Reclaimed Water Filter Expansion; System 9N Regional Pump Station; Master Wastewater Pump Station 5229 Upgrade; Winsberg Farm Wetlands Restoration (a.k.a. Green Cay Wetlands); Central Region Operations Center; SRWRF 5-mgd Capacity Upgrade and Century Village North Reclaimed Water Production Facility.

Education

BSCE, Clarkson College, New York, Civil Engineering, 1979

Certification/License

Professional Engineer: FL

Areas of Expertise

- Injection Well Design
- Construction Management
- Permitting
- Civil Design
- Mechanical Systems Design
- Pipeline Design
- Pump Station Design
- Condition Assessments

Experience

- 40 total years
- 39 years with Hazen

Professional Activities

American Society of Civil Engineers

American Concrete Institute

American Water Works Association

National Association of Corrosion Engineers

Society for Protective Coatings

Water Environment Federation

Florida Engineering Society

Michael Wengrenovich, PE

Deputy Project Manager; Design Services During Construction; Permitting; Injectivity Testing and Performance Operations

Michael Wengrenovich, PE, has served as lead design engineer and/or construction manager for numerous deep injection well projects.

He has provided design, permitting, and/or construction management services on over 30 injection wells in Florida. Mr. Wengrenovich also has extensive experience in construction management and hydrogeological services.

Injection Well Operational Permitting, City of Hollywood, FL
Mr. Wengrenovich was responsible for obtaining the FDEP Injection Well Operating Permit at the WWTP. Services included performing a review of wells within the area of review, updating the Injection Well O&M Manual, reviewing injection and monitor well data, and developing a plugging and abandonment plan and cost estimate associated with the owner's statement of financial responsibility. Water quality data reviewed included the waste stream, upper monitor zone, and lower monitor zone. Operating data reviewed included injection well operating pressures and flow and monitor well levels. Mr. Wengrenovich was also responsible for verification of mechanical integrity testing (MIT) of the injection wells.

Construction of Injection Wells 1 and 2, City of Hollywood, FL
Mr. Wengrenovich was responsible for the design, permitting, procurement, and construction services for the two 24-inch injection wells constructed at the City of Hollywood Southern Region WWTP. He assisted the City in the procurement contract for construction of the wells that was negotiated with Youngquist Brothers. During construction of the wells, Mr. Wengrenovich was responsible for quality control and assurance during construction.

Deep Injection Wells, Seminole Tribe of Florida (STOF), Hollywood Reservation, FL
Two injection wells for the Hollywood Reservation WTP/WWTP were constructed. The wells were designed as tubing and packer-type injection wells and they now accept both secondary treated municipal wastewater effluent and concentrate from the membrane water treatment plant. This alternative design calls for a cemented-in-place 16-inch FRP tubing within a 24-inch diameter steel casing. A dual zone Floridan Aquifer monitor well is also included in the project. A permit application for this

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project is currently under review by the U.S. Environmental Protection Agency (EPA). This is the first Class I injection well being permitted by EPA District 4. The permit application will also meet Florida Department of Environmental Protection (FDEP) requirements for a Class I injection well and the requirements of the South Florida Water Management District (SFWMD). As Project Manager, Mr. Wengrenovich provided design and permitting services. He will also provide assistance with procurement and construction management services.

Broward County Injection Wells 7 and 8, Pompano Beach, FL

Two additional 24-inch diameter injection wells and one dual zone Floridan Aquifer monitor well were constructed at the North Regional WWTP. These wells are being added to the largest injection well wellfield in Broward County. As Project Manager, Mr. Wengrenovich provided planning, design, permitting, procurement, and construction management services for all the wells at the site.

Broward County Injection Wells 5 and 6, Pompano Beach, FL

Two additional 24-inch diameter injection wells were added to the Broward County North Regional WWTP effluent disposal system. The project also included design of a deep test monitor well and a more typical dual zone Floridan Aquifer monitor well MW-3. The project was conducted in two phases with construction of test MW-4 in the first phase. Based on information obtained during the drilling of MW-4, the confinement at the site was re-evaluated, which allowed for the drilling of IW-5, IW-6, and MW-3. Mr. Wengrenovich provided planning, design, permitting, procurement, and construction management services for all the wells at the site.

Deep Injection Well, Seminole Tribe of Florida, Brighton Reservation, FL

One injection well for the Brighton Reservation membrane WTP is under construction. It has been designed as an alternative design tubing and packer type injection well with a cemented-in-place 9-5/8-inch FRP tubing within a 20-inch diameter steel casing. A dual-zone Floridan Aquifer monitor well is also included in the project. As Project Manager, Mr. Wengrenovich provided design and permitting services. He will also provide assistance with procurement and is responsible for overseeing construction.

Broward County Injection Wells 1 through 4, Pompano Beach, FL

Mr. Wengrenovich provided planning, design, permitting, and procurement and assisted with construction management services for the wells at the North Regional WWTP. The project consisted of four 24-inch diameter injection wells and two dual zone Floridan Aquifer monitor wells.

City of Miramar Injection Wells, Miramar, FL

Hazen designed the effluent disposal system for the City of Miramar Wastewater Reclamation Facility. Mr. Wengrenovich served as Project Manager for the planning, design, permitting, procurement, and construction management of two 24-inch diameter deep injection wells and associated dual zone monitor wells.

Injection Well Operational Permitting, City of Plantation, FL

Mr. Wengrenovich was responsible for renewing the FDEP Injection Well Operating Permits for the four injection wells located at the East WTP, Central WTP, and Regional WWTP, and for performing mechanical integrity testing at these wells.

Injection Well Mechanical Integrity Testing, FL

Mr. Wengrenovich was responsible for verifying mechanical integrity of injection wells at several locations throughout southern Florida. Testing services were performed at the Broward County North Regional WWTP, Miramar WWRF, Plantation Central WTP, Plantation East WTP, Plantation Regional WWTP, Margate WWTP, Hallandale Beach WTP, Sunrise Sawgrass WWTP and Sunrise WTP, Hollywood Southern Region WWTP, Fort Lauderdale Peele-Dixie WTP, and the SCRWT&DB WWTP.

24-inch Diameter Test Injection Well, City of Fort Lauderdale, FL

Mr. Wengrenovich was responsible for resident observation on the 24-inch diameter test injection well, three 24-inch diameter deep injection wells, and associated three-zone Floridan Aquifer monitor well.

J. Philip Cooke, PE

Project Director

J. Philip Cooke, PE, has managed general consulting projects for Hollywood since 2006, with over $25 million worth of wastewater projects in the past 7 years.

He has more than 30 years of experience directing the planning, permitting, design, and construction management of water resource and water and wastewater-related projects. Mr. Cooke's typical assignments range from conceptual layout, design, and construction management to environmental and analytical monitoring and permitting of projects. He has participated in water and wastewater assignments for both municipal and industrial clients. He has extensive experience obtaining construction and operating permits with local, State of Florida, and federal regulatory agencies.

Mr. Cooke has extensive City of Hollywood experience, and has participated in numerous projects for the City's wastewater plant, wastewater collection and transmission system, and reuse transmission system. These projects include: 2002 WWTP Upgrade, McKinley Street Interceptor, Ocean Outfall Rehabilitation, Wastewater Master Plan, Reuse System Master Plan, Reuse System Expansion Phases I and II, and the Cryogenic Oxygen Generation System Upgrade. Additionally, Mr. Cooke drafted the City's Sewer Overflow Response Plan and negotiated an emergency response and repair plan with FDEP and Broward County EPGMD in 2008 when the ocean outfall pipeline was damaged by a developer on Hollywood Beach. Rapid assessment of the damage, mitigation of the impacts, and effective restoration of critical infrastructure ensured that public health and the environment were protected at all times.

Wastewater Master Plan, Hollywood, FL

Mr. Cooke served as Project Manager and Lead Engineer for the City of Hollywood's most recent utilities master plan. Completed in 2007, the Wastewater Master Plan identified capital improvements to meet the needs of the City of Hollywood service area through the year 2025. Improvements were analyzed and recommended for the four primary operational components of the City's wastewater utility: collection/transmission, treatment, effluent disposal, and residuals management. The Master Plan considered a range of factors including population growth, re-development, aging of existing infrastructure, septic to sewer conversion, and new regulations. When the State of Florida passed critical legislation pertaining to the continued use of the open ocean outfall in June 2008, the Master Plan was then amended in October 2008 to evaluate impacts and recommend a compliance approach.

Education

ME, University of Florida, 1990, Environmental Engineering

BS, University of Florida, 1989, Environmental Engineering

Certification/License

Professional Engineer: FL, NY

Areas of Expertise

- Water and Wastewater Treatment
- Design, Permitting, and Construction of Pipeline Projects
- Environmental Resource Permitting
- Hydraulic Modeling
- NPDES Permitting

Experience

- 30 total years
- 29 years with Hazen

Professional Activities

American Society of Civil Engineers

Water Environment Federation

American Water Works Association

Construction Management Association of America

Hazen

McKinley Street 66-inch PCCP Pipeline, City of Hollywood, FL

Mr. Cooke served as Project Manager and Engineer-of-Record for the new McKinley Street wastewater transmission main, responsible for predesign, routing, and detailed design. This 6,400-foot-long, 66-inch interceptor is the main conduit for raw wastewater to enter the City's 55.5-mgd regional wastewater treatment plant. The project involved jack and bore crossings under the FEC railroad and US 1, and extension of system force mains ranging in size from 4 inches to 54 inches, which allowed the existing 60-inch interceptor along Taft Street to be removed from service for rehabilitation. Mr. Cooke provided technical services during construction completed in 2011.

SRWWTP Headworks Rehabilitation and Replacement, City of Hollywood, FL

Project Manager and Design Engineer for the SRWWTP Headworks project. This project involved the rehabilitation of headworks facility, replacement of the bar screens, grit pumps, and slide gates, 72-in diameter plant pipe lining, grit pipe replacement, bypass pumping, specialty coatings, structural/architectural modifications and lighting upgrades.

Cryogenic Oxygen Generation System Upgrade, City of Hollywood, FL

Mr. Cooke provided engineering analysis, technical support, and project management for upgrades to the Cryogenic Oxygen System Upgrade at the City's Southern Regional WWTP. The wastewater plant uses the high purity oxygen activated sludge system for treatment of a permitted annual average of 55.5 million gallons of wastewater per day. The expansion of the cryogenic system consisted of replacement of dual 1,250 hp main air compressors and cooling tower, main reversing heat exchanger, vaporizers, updated instrumentation and controls, and rehabilitation of the existing liquid oxygen storage tanks. Mr. Cooke also directed the development of the City of Hollywood's Wastewater Master Plan, which evaluated biological nutrient removal and water reuse alternatives utilizing the existing HPOAS system.

Hollywood Intracoastal Waterway HDD Projects, City of Hollywood, FL

As Project Engineer, Mr. Cooke drafted the design criteria package for two subaqueous horizontal directional drill (HDD) projects at the City of Hollywood's E-02 and E-03 lift stations and served as Technical Advisor for the City during construction. Each lift station included two sewer force mains and a water main. Each of the six 18-inch pipelines installed under the Intracoastal Waterway was approximately 800 feet in length, and all were successfully installed. The project provided redundant force mains serving the barrier islands and consisted of six Intracoastal Waterway crossings totaling over 6,000 feet.

MDWASD Port of Miami Government Cut Utility Relocation Projects, Port of Miami, FL

As Permitting Manager, Mr. Cooke provided permitting services (local, state, and federal) for water and wastewater pipelines related to the $70 million Port of Miami Dredging Program. The project involved relocation of a 20-inch water main and a 54-inch sanitary force main crossing underneath Government Cut. The relocation of the water main was accomplished via a 1,600-foot HDD for a 30-inch high-density polyethylene pipe. The relocation of the sanitary was accomplished by a 1,200-foot and 700-foot microtunnel.

Bear Cut and West Bridge Widening and Water Main Relocations, Miami-Dade County, FL

Mr. Cooke managed environmental permitting for the widening of Biscayne Bay's Bear Cut and West Bridges and the relocation of a 12-inch water main (previously permitted by the Department) across each being implemented via the design-build delivery approach. Permits for all project components were obtained ahead of schedule, offering the best opportunity for timely completion. The relocation was accomplished by two sub-aqueous crossings via a 1,300-foot HDD for West Bridge and 3,000-foot HDD for the Bear Cut Bridge.

Patrick Davis, PE

QA/QC

Patrick Davis, PE, a Vice President with Hazen, has served as Project Director on over $900 million of public works construction and has been involved in an engineering capacity on over $1.6 billion of constructed local public works projects.

Education

BSCE, University of Massachusetts, Dartmouth, 1980

Certification/License

Professional Engineer: FL, NY, MA, VA, NC

Areas of Expertise

- Planning, Permitting, Design, Procurement, and Construction Management of Wastewater, Water and Stormwater Facilities
- Water Resource Planning
- Project Management
- Conventional and Alternative Delivery Systems Procurement, International Procurements

Experience

- 39 total years
- 37 years with Hazen

Professional Activities

American Society of Civil Engineers

American Water Works Association

ASHRAE, NSPE, TAPPI

National AWWA Dual Distribution Committee

Water Environment Federation

Mr. Davis has worked on a multitude of City of Hollywood utility projects since 1984, and brings a wealth of institutional knowledge to this assignment. With 36 years of Florida-specific experience, Mr. Davis has assumed a leading role in assisting public utilities and providing regulatory advice on water supply and treatment issues, as well as all facets of wastewater regulations. A current focus of his consulting practice is the development of alternative water supply projects to ensure adequate supply to meet the growing potable water demand across the nation.

He is regarded as an expert on wastewater effluent management issues, notably those related to toxicity and Class I injection well disposal, and reuse (filtration/high level disinfection). He co-authored "History and Status of Class I Injection Wells; SFWMD Website; and "Exploratory Deep Injection Well Program: Key to Growth in Southeast Florida".

Multiple Deep Injection Well Projects, FL

Mr. Davis has served as Project Director on several Class I deep injection well projects over the past two decades, including: Fort Lauderdale (4 wells); Loxahatchee River District; BCWWS (8 wells in multiple projects); Miramar (2 wells); Hollywood (2 wells); RCA Corp. (industrial well); and Plantation (tubing & packer repair). This experience has afforded Mr. Davis the opportunity to interface with many key decision makers affecting UIC decisions (Class I and Class V). Since 1996, Mr. Davis has represented several South Florida utilities in crafting strategies to ensure continued use of Class I wells, even in the case of suspected migration from the injection horizon.

Southern Regional Wastewater Treatment Plant Upgrades, City of Hollywood, FL

The City of Hollywood is the lead agency for the Broward County Southern Region. Hazen worked on a field demonstration test/paper uprate to about 55.5 mgd. Hazen also worked on the 2002 Upgrade. Primarily, Oxygenation and clarification facilities were upgraded and expanded.

Hazen

These upgrades were intended to improve reliability and to allow capacity uprating to somewhere between 50 mgd and 55 mgd (depending upon results of the ongoing paper uprate of the Oxygenation Trains). Hazen and Sawyer provided design, permitting and bidding assistance, and engineering services during construction for the improvements.

City of Hollywood Implementation of 8-mgd Reclaimed Water System, FL

Mr. Davis conducted effluent reuse filter full-scale test studies. He directed the implementation of the City of Hollywood 8-mgd reclaimed water system. Mr. Davis also directed a hydrodynamic salinity barrier study for the City to recycle 4 to 20 mgd of reclaimed water. Mr. Davis was in charge of the toxicity removal study for the City of Hollywood related to reuse (organo-phosphate removal).

North Regional Wastewater Treatment Plant (NRWWTP), Broward County Water and Wastewater Services (BCWWS), FL

Mr. Davis served as Project Manager, Deputy Project Manager, or Project Director on several major projects at the NRWWTP since 1986. This includes the expansion from 66 mgd to 80 mgd (performed in joint association with another national firm) and the entirety of the expansion from 80 to 100 mgd. Mr. Davis designed the existing 10-mgd reclaimed water system at the site.

City of Fort Lauderdale Pipeline Project, FL

Mr. Davis served as Project Manager of a 54-inch diameter pipeline project through Port Everglades to the injection well site.

Pump Station Projects, Multiple Clients, FL

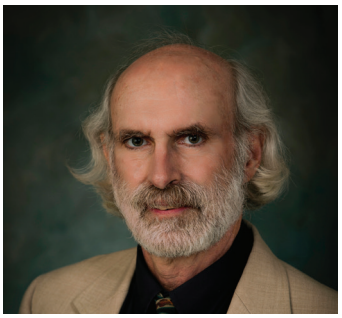
Mr. Davis had directed the design and construction management of several large regional pump stations including the Tamarac P.S. 455 (in-line booster), Sunrise P.S. 410, Coral Springs P.S. 460, Broward County Injection Well P.S., Broward County Reuse Pump Station, and many others for the Loxahatchee River District, Broward County, City of Miramar, City of Hollywood, City of Fort Lauderdale and City of Tamarac. Additionally, Mr. Davis has directed pump station and pipeline designs at water and wastewater treatment plants throughout the eastern United States, including the Deer Island WWTP in Boston, Massachusetts.

Wastewater Treatment Projects

Mr. Davis directed the Miramar $70 million wastewater treatment program, which included effluent filtration; the Broward County Water and Wastewater Services $65-million wastewater treatment program and the recent $115-million upgrade to 100 mgd. Most recently, he served as Office-in-Charge of the Miami-Dade Water and Sewer Department's $618-million High Level Disinfection Program at the South District WWTP in Miami, Florida.

Phillippi Creek Septic System Replacement Project (PCSSRP) Program Management, Sarasota County, FL

Mr. Davis served as Officer-in-Charge for the program management phase of the $140 million Phillippi Creek Septic System Replacement Project (PCSSRP). The PCSSRP included design and construction of improvements for 16 wastewater project improvement areas identified under the 50 square mile Phillippi Creek Study area including approximately 2,800 connections for vacuum sewer collection systems. As Program Manager, Hazen oversaw the program's public information program and assisted County staff with the development of technical standards and operational procedures as they pertain to the use of alternative sewer collection systems (i.e. vacuum and low pressure sewers).



Paul Stout, PhD, PG

QA/QC

Paul Stout, PhD, PG, has over 34 years of 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. Work on these projects has involved groundwater modeling, aquifer performance testing, wellfield design, and well construction. While employed in academia, Dr. Stout received funding from state and federal agencies such as the U.S. 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.

Principal Hydrogeologist, Palm Beach County, FL
Development and application of SEAWAT variable-density groundwater model to address historical and potential future saline intrusion for the Town of Lake Worth. Results supported application for SFWMD Consumptive Use Permit renewal.

Principal Hydrogeologist, Village of Wellington, FL
Applied updated MODFLOW model to evaluate future water supply options for the Village including impact evaluation; prepared CUP modifications application; respond to SFWMD requests for additional information.

Principal Hydrogeologist, City of Vero Beach, FL
Provided assessment of historical groundwater contamination in the vicinity of the City's public water supply wellfield including groundwater modeling analyses of historical and potential future conditions, VOC fate and transport modeling.

Principal Hydrogeologist, City of Fort Lauderdale, Broward County, FL
Assist in preparation of Comprehensive Utility Strategic Master Plan for the City of Fort Lauderdale. Provided input for multiple tasks addressing hydrogeologic aspects related to the City's current and future water supply, including: external issues such as regulatory changes and SFWMD water supply plans; adaptation to potential influence from future

Education

MS, Geology, Duke University, 1979

BA, Geology, Colgate University, 1977

Doctor of Philosophy, Earth Sciences, Scripps Institution of Oceanography, University California, San Diego, 1985

Postdoctoral Associate, Marine Geology/Geophysics, University of Miami, RSMAS, 1986

Postgraduate Research Geochemist, Marine Science Institute, University California, Santa Barbara, 1987

Assistant Research Scientist/ Adjunct Assistant Professor, Institute of Coastal & Marine Resources/Geology Department, East Carolina University, 1988

Adjunct Faculty, Palm Beach State College, 2003

Certification/License

Professional Geologist: FL, NC

Areas of Expertise

- Hydrogeology

Experience

- 34 total years
- 16 years with JLA

Professional Activities

Geological Society of America

American Chemical Society

American Geophysical Union

Sigma Xi, the Scientific Research Society

climate change and sea level rise; assessment of existing water supply infrastructure and recommendations for addressing future needs, provided by sources such as the Biscayne Aquifer, Floridan Aquifer, and Aquifer Storage and Recovery; and evaluation of opportunities to expand reclaimed water use and other approaches to secure credits/offsets to increase CUP allocations.

Principal Hydrogeologist, Town of Jupiter, FL
Perform groundwater flow modeling to support moving of two surficial aquifer and two upper floridan aquifer public water supply wells in the Town of Jupiter's wellfield No. 4. Modeling was used to support letter modification of Town of Jupiter's SFWMD water use permit.

Principal Hydrogeologist, South Martin Regional Utility (SMRU), Martin County, FL
Provide groundwater modeling of SMRU's north and south wellfields including preparation of a MODFLOW groundwater model to simulate existing SAS withdrawals by SMRU and ELUs and evaluate impacts to SMRU's wellfield operations.

Principal Hydrogeologist, Mongolia Water Supply Viability Assessment, City of Ulaanbaatar, Mongolia
Performed groundwater modeling to evaluate potential water supply options for the City of Ulaanbaatar and surrounding areas in Mongolia. This involved expansion and refinement of existing regional and focused-area MODFLOW models; model simulations assessed the viability of expanding existing wellfields and developing new wellfields; evaluated the efficacy of artificial aquifer recharge (AAR), potential underground dams, and three large above-ground dam complexes within the Tuul River Basin.

Principal Hydrogeologist, Martin County, FL
Principal Hydrogeologist for numerous projects involving Martin County Utilities Consolidated System, which includes FAS and SAS wellfields. Duties included groundwater modeling to perform impact evaluations in support of consumptive use permit applications; hydrogeologic investigations; aquifer testing; expert witness testimony; design, construction and maintenance of SAS and FAS wells. The 20-year CUP for Consolidated System was authorized by SFWMD in July 2015.

Principal Hydrogeologist, Town of Jupiter, FL
Evaluation of potential water supply options for proposed public park for Town of Jupiter Parks and Recreation. Provided recommendation for supply from on-site lake supplemented with municipal supply. Prepared and submitted application for CUP authorized by SFWMD in January 2016.

Principal Hydrogeologist, Palm Beach County, FL
Development and application of MODFLOW groundwater model to assist with securing CUP from SFWMD for dewatering to install stormwater discharge infrastructure for residential area adjacent to Intracoastal Waterway in Boynton Beach.

Principal Hydrogeologist, Town of Lake Worth, Palm Beach County, FL
Application of SEAWAT variable-density groundwater model to evaluate potential influence of climate change and sea level rise on water supply facilities.

Principal Hydrogeologist, City of West Palm Beach, Palm Beach County, FL
Developed and completed stream gauging investigation of the West Palm Beach M-Canal using an Acoustic Doppler Profiler to evaluate potential seepage gains/losses. Incorporated study results into MODFLOW model to develop estimates of additional regional system flow deliveries to Grassy Waters Preserve to offset withdrawals from the G-161 structure to supply flow to the Loxahatchee River.

Principal Hydrogeologist, Palm Beach County, FL
Hydrogeologic services, including groundwater modeling, and field investigations to assist the City of West Palm Beach with existing and future long-term water supply options. Included modification of Consumptive Use Permit, development of Drought Management and Long Term Water Supply Plans.

Principal Hydrogeologist, South Florida
Hydrogeologic consulting services to support permitting and construction of Floridan Aquifer supply wells for both new and existing power plants for major energy utility in South Florida. Included aquifer performance testing, groundwater flow modeling, development of monitoring programs, and unsaturated zone groundwater flow and transport modeling.

James Andersen, PG

QA/QC

Jim Andersen has been responsible for the construction and completion of hundreds of water supply wells in South Florida including over 100 in the Upper Floridan Aquifer.

He has extensive experience in hydrogeology, groundwater water resource investigations, wellfield design, construction, development, well problem evaluations and well rehabilitation. He has an extensive groundwater experience, 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 supervision of various types of drilling.

Mr. Andersen has served as a Florida Chamber of Commerce short course instructor for environmental permitting, has been an invited speaker for the Florida Department of Environmental Protection on contamination cleanup, a regular conference speaker for AWWA, AWRA, AGWT, AMTA and SEDA on topics such as Aquifer Storage and Recovery, hydrogeology, water use permitting and well design, construction and rehabilitation strategies. He serves on the Southeast Desalting Association and Palm Beach County Natural Resources Protection boards.

Principal Hydrogeologist/Project Hydrogeologist, Rehabilitation of Water Treatment Plant No. 3 & 9 Surficial Aquifer Production Wells, Palm Beach County Water Utilities Department, Delray Beach and Boca Raton, FL (2015-2016)
Provided hydrogeologic consulting services during construction phases for rehabilitation program of WTP 3 and 9. Project included four new replacement or re-drills of surficial aquifer production wells and electrical improvements. Replacement wells added 4 mgd capacity and are capable of at least 5.8 mgd firm capacity.

Principal Hydrogeologist/Project Hydrogeologist, FPL Turkey Point FLEX UFA Cooling Water Well, Homestead, Dade County, FL (2015)
Project design, construction and testing of one new 2,000 gpm, 20-inch diameter FRP Upper Floridan aquifer well. The well was constructed within the Unit 3&4 Protected Area to provide beyond-design-basis-event cooling water.

Education

Bachelor of Science - Geology; Florida Atlantic University, 1985

40 hour Hazardous Materials Health and Safety Training, Geraghty & Miller, 1989

Certification/License

Professional Geologist: FL

Areas of Expertise

- Hydrogeology
- Wellfield design, construction, development, well problem evaluations and well rehabilitation
- Groundwater water resource investigations

Experience

- 34 total years
- 16 years with JLA

Principal Hydrogeologist/Project Hydrogeologist, FPL Turkey Point Seawater Intake Wells for Supplemental CCS Supply, Homestead, Dade County, FL (2015)
Project design, construction, and testing of two new 12,000 gpm, 36-inch diameter Biscayne Aquifer seawater supply wells located on the Point. Combined with one smaller existing well, the project produced over 45 mgd of supplemental cooling water for the CCS during the 2015 summer months.

Principal Hydrogeologist/Project Hydrogeologist, FPL Turkey Point Units 3&4 Uprate Monitoring Plan Implementation, Homestead, Dade County, FL (2010, 2015)
Project included installing 16 cluster monitor wells in and around the Turkey Point Plant Cooling Canal System (CCS), including land-based, wetland-based, CCS-based and Biscayne Bay-based drilling systems. Project included collaboration/coordination with SFWMD, FDEP, Biscayne National Park, Miami-Dade, US Geological Survey, and FPL. Geotechnical work included continuous coring, aquifer system flow zone mapping, sophisticated geophysical logging, and cluster well construction to depths of 200 feet.

Principal Hydrogeologist/Project Hydrogeologist, ASR Permitting, Testing Services, City of West Palm Beach, West Palm Beach, FL (2009-2019, Ongoing)
Project scope of services included assisting the City in obtaining funding opportunities with cycle testing activities through various entities, assistance with obtaining FDEP Underground Injection Control (UIC) permit modification, UIC monitor well design, permitting, construction and bidding phase services, exploration of Limited Aquifer Exemption assistance through FDEP, ASR Cycle Testing assistance, and evaluation of the City's recovery discharge alternatives.

Principal Hydrogeologist/Project Hydrogeologist, Class V Reverse Osmosis Concentrate Injection Well Permitting and Design Services, La Gorce Country Club, Miami Beach, FL (2011-2012, Ongoing)
Project scope of services included all phases of injection well permitting and construction, including preparation of the FDEP injection well construction and testing permit (approved), well design and contractor bidding services, in addition to observation and testing during construction, mechanical integrity testing and well summary report preparation.

Principal Hydrogeologist/Project Hydrogeologist, Injection Well Mechanical Integrity Testing and Rerate Testing, Seacoast Utility Authority, Palm Beach Gardens, FL (2010)
Included permitting and FDEP UIC re-rating of a 24-inch, 3,320 feet deep domestic wastewater injection well and preparation of the MIT summary report. Mechanical integrity testing included an injection casing pressure test, high resolution temperature survey, video survey and radioactive tracer survey. JLA also performed rerating injection test of Injection well IW-1 including conducting a 24-hour injection test in order to permit the well at a higher rate. The successful test resulted in FDEP permitting the well at the higher rate of 10 fps.

Principal Hydrogeologist/Project Hydrogeologist, Rehabilitation of Deep Injection Well, Permit Modification Application and Rerating, Western Region Wastewater Treatment Plant, Palm Beach County Water Utilities Department, FL (2009)
Provided hydrogeologic consulting services in performing rehabilitation of existing deep injection well. Coordinated with contractors and maintained communication with Florida Department of Environmental Protection. Currently the project is in the phase of review and comment on well acidization plan and preparation of short-term injection testing plan for FDEP approval.

Monique Durand, PE

Design Services During Construction; Well Resident Observation (Backup Support)

Monique Durand, PE, has over 16 years experience in planning, design, permitting, and construction management of water and wastewater treatment facilities. She has worked on several projects for the City of Hollywood including Grit Removal System Basis of Design Report, McKinley Street Interceptor Project, and the Dixie Corridor Expansion.

Education

MS, Virginia Polytechnic Institute and State University, 2005, Environmental Engineering

BS, Midwestern State University, 2003, Environmental Science

Certification/License

Professional Engineer: FL

Areas of Expertise

- Water Supply Planning Evaluations
- Groundwater Rule Compliance
- Design and Construction Administration of Water Treatment Facilities
- Design and Construction Administration of Wastewater Treatment Facilities
- Construction Administration of Water Supply Facilities
- Taste and Odor Issues

Experience

- 16 total years
- 13 years with Hazen

Professional Activities

American Water Works Association

Water Environment Federation

Broward County Injection Wells 7 and 8, Pompano Beach, FL
Two additional 24-inch diameter injection wells and one dual zone Floridan Aquifer monitor well were constructed at the North Regional WWTP. These wells are being added to the largest injection well wellfield in Broward County. Ms. Durand served as Resident Observer, performing field inspection services including witnessing casing pressure tests, monitoring construction progress, and preparing reports for the regulatory agencies.

City of Hollywood Permit Compliance, FL
Ms. Durand served as Project Engineer for implementation of several Facility Permit Administrative Order tasks for the City of Hollywood Wastewater Treatment Plant. Specific tasks included development of a Disinfection and Toxicity Plan of Study, development of the Influent Flow Accuracy Study and the Total Nitrogen and Total Phosphorus Status Compliance Report. Project responsibilities included coordinating with regulatory agencies and client, performing site visits, participating in review meetings, and responding to requests for additional information submitted by regulatory agencies.

Grit Removal System Basis of Design Report, City of Hollywood, FL
Project Engineer for development of the design criteria for the City of Hollywood Headworks Upgrade Project, including the grit removal system and screening system. Tasks included conducting site visits, evaluation of alternative technologies, preliminary design calculations for equipment sizing and development of cost estimates for various alternative options.

McKinley Street Interceptor Project, City of Hollywood, FL
Project Engineer for design of a 66-inch gravity interceptor pipe. Project responsibilities included preparation of detailed design calculations for the gravity interceptor, interconnecting force mains and manholes,

Hazen

evaluation of utility conflicts to determine viable pipe routes, preparation of detailed design/bid drawings and technical specifications, and preparation of permitting submittals. Ms. Durand also participated in construction services.

Construction Management Services for City of Miramar Wastewater Reclamation Facility Expansion Program Basis of Design Report and Improvements, City of Miramar, FL

Ms. Durand participated as Field Engineer in field testing activities to obtain information to support subsequent design efforts such as Biowin™ wastewater process modeling. Tasks included process sampling, sample preparation including on-site filtering and flocculating of samples, and performing nutrient analysis of samples.

Design Criteria Package for Reclaimed Water Canal Crossing, City of Margate, FL

Ms Durand served as Lead Project Engineer for the design of replacement utility canal crossings, including one 30-inch water transmission main and one 24-inch sewage force main canal crossing. Project responsibilities included preparation of design criteria package to address utility conflicts, feasible pipe routes, tie-in connections, specification requirements for pipe size, material, air release valves, development of construction sequence restrictions, construction constraints, contingency planning and permitting requirements.

Water and Wastewater Services Basis of Design Report for Master Pump Station (MPS) Upgrades, Broward County, FL

This project involved the development of design criteria for upgrades to MPS 440, 450 and 456. MPS 450 and 456 involved the conversion from a wet well type to an inline booster pump station. She performed hydraulic evaluations, pump selection, pipe sizing, conceptual design of the pump station improvements, determined construction sequencing and permitting requirements as well as developed preliminary cost estimates.

Broward County Water and Wastewater Service Fine Bubble Modules A, B, and D, Broward County, FL

Ms. Durand served as Project Manager and Lead Project Engineer for the design, bid/award, and permitting of improvements to the aeration system for the Broward County North Regional Wastewater Treatment Plant. Project responsibilities included detailed design of associated improvements to convert from mechanical aeration to fine bubble aeration and upgrades to existing blower system, preparation of final detailed design/bid drawings and technical specifications and assistance with multidisciplinary design coordination. Ms. Durand was responsible for the preparation of permitting submittals to several regulatory agencies, including Broward County Environmental Protection and Growth Management Division, Florida Department of Environmental Protection and City of Pompano Building Department.

Broward County Outfall Cover Material Rehabilitation, Broward County, FL

Ms. Durand served as Project Manager and Lead Project Engineer for the construction management phase of the Broward County Ocean Outfall Cover Material project. Responsibilities included overall program and project management for construction administration and the long-term coral monitoring phase.

Broward County Water Treatment Plant 1A and 2A Filtration Systems and WTP 1A Disinfection System Modifications, FL

Ms Durand served as a Project Engineer for the limited construction management services for the Broward WTP 1A and 2A Filtration Systems and the WTP 1A Disinfection System Modifications. Construction services performed included review of shop drawings, evaluation of change orders, response to RFIs, coordination with the contractor and utility plant staff, attendance of project progress meetings, as well as performance of site visits and field inspections.

Marta Alonso, PE, ENV SP

Permitting

Marta Alonso, PE, has over 16 years of permitting experience, including environmental resource, potable water, wastewater, stormwater, air, hazardous material, injection well, tree removal, and municipal permits in Florida.

Education

MSE, Environmental Engineering, Johns Hopkins University, 2003

BSCE, Civil Engineering, Johns Hopkins University, 2002

Certification/License

Professional Engineer: FL, MD

Areas of Expertise

- Environmental Compliance and Permitting
- Environmental Management
- Injection Well Planning, Design, Permitting, and Construction
- Water and Wastewater Treatment
- Program Management
- Construction Management
- Project Funding/Planning

Experience

- 16 total years
- 12 years with Hazen

Professional Activities

American Water Works Association

Water Environment Federation

American Society of Civil Engineers

- Region 5 Governor Elect (2019-Present)

Water for People

Broward County Injection Well Construction, FL

Ms. Alonso worked as field inspector in the construction of two injection wells and one monitoring well at the Broward County North Regional Wastewater Treatment Plant.

Seminole Tribe of Florida Water and Wastewater Treatment Plant Injection Well Design/Permitting, Hollywood/Brighton, FL

Prepared Conceptual Design Reports and preliminary cost estimates for the injection well disposal systems of the Brighton Reservation Water Treatment Plant and the Hollywood Reservation Water and Wastewater Treatment Plants, and prepared subsequent construction and operation permit applications for the Environmental Protection Agency.

City of Margate Injection Well Operating Permit Renewal, FL

Ms. Alonso completed the operating permit renewal for the City's wastewater treatment plant injection well system.

Miami-Dade Ocean Outfall Legislation Program, Miami Dade Water and Sewer Department, FL

Ms. Alonso is currently serving as Regulatory Compliance Senior Technical Consultant/Permitting Lead on Miami-Dade Water and Sewer Department's $2 billion, 11-year program, which includes upgrades to the three existing wastewater treatment plants, including the addition of injection wells for effluent disposal. The scope of work consists of the delivery of a comprehensive, technically sound, long-term program that encompasses the planning, design, procurement, construction and commissioning of over 20 capital projects. Ms. Alonso's responsibilities on the program include: ensuring regulatory compliance of over 20 projects (in planning, design and construction), identifying and tracking the permitting requirements on the program, identifying environmental impact minimization measures on each project, identifying measures to accelerate the regulatory agency approval process, presenting the program components to local regulatory agencies, reviewing environmental assessments and reports, identifying project environmental considerations including pro-

Hazen

tected environmental resources and contamination sites, and progress reporting.

Southern Regional WWTP Nitrate Contamination Monitoring Plan, City of Hollywood, FL

Ms. Alonso served as project engineer for various projects in Hollywood, Florida, including the preparation of a potential nitrate contamination monitoring plan, as part of the City's wastewater treatment plant operating permit renewal. The plan included a schedule of implementation of recommended monitoring activities. A report was completed data collected at the City's reuse water storage facilities.

Miami-Dade Water and Sewer Department, Government Cut Utility Relocation Projects, Miami, FL

The Government Cut Utility Relocation Projects consisted of the design-build replacement of a portion of the existing 54-inch force main from south Miami Beach to Fisher Island, beneath the Government Cut Channel, via micro-tunnel, and the replacement of the existing 20-inch water main from Port Island to Fisher Island beneath the Fisherman's Channel, via Horizontal Directional Drill. Close coordination with the FDEP, ACOE, DRER and the Miami-Dade County Department of Health, as well as expedited permitting was required to meet strict deadlines.

Miami-Dade Rehabilitation of the Bear Cut and West Bridges/HDD Water Main Replacement, Miami, FL

Ms. Alonso served as the environmental compliance and permitting specialist on the fast-tracked design-build rehabilitation of the Bear Cut and West Bridges, which connect the City of Miami and the Village of Key Biscayne, a community with over 10,000 residents. The project was located within the limits of the Biscayne Bay Aquatic Preserve, which is a designated outstanding Florida water. Permitting, environmental protection and impact minimization were key aspects of the project. Ms. Alonso assisted in the design of a 20-inch water main replacement via horizontal directional drilling to replace the water main secured to the bridges.

Main Street Water Treatment Plant, JEA, City of Jacksonville, FL

Ms. Alonso served as project engineer during construction of the first phase of upgrades to the 16-mgd WTP, which included the rehabilitation of the 100-year old First Street Reservoir, replacement of the high service pump station, yard piping modifications, replacement of the chemical disinfection system, as well as associated electrical and instrumentation modifications. In preparation for the second phase of the project, Ms. Alonso prepared a feasibility analysis of the replacement of the Orange Street Reservoir, which included an evaluation of hydrogen sulfide removal alternatives. Both projects required assessment and consideration of the impacts to the Springfield Historic District.

City of Plantation Regional Wastewater Treatment Plant Odor Control System Replacement, FL

Ms. Alonso served as project engineer on the design, permitting, and construction of two packed tower odor control systems, one two-stage wet scrubber system to treat air from the headwork facility and one single-stage wet scrubber system to treat air from the clarifiers and the aeration basin drop box at the 18.9-MGD Regional Wastewater Treatment Plant. The project also included a foul air collection system at the headwork facility to direct foul air to the diffused aeration system currently being designed.

City of Plantation Central Water Treatment Plant Fuel Storage Tank Replacement, FL

Ms. Alonso served as project engineer for various projects in Plantation, Florida, including the design, permitting, and construction of a 10,000-gallon fuel storage tank to supply fuel to the WTP emergency generator. The project also included the removal of the existing fuel underground storage tank (UST), and soil contamination monitoring.

Rodney Miller, PG

Hydrogeology

Rodney Miller, PG, has more than 18 years of experience and provides expertise in the construction, testing, and contract administration of Class I injection well systems and Floridan Aquifer and Surficial Aquifer production wells.

Education

BS, Geology, Ashland University, Ashland, Ohio, 1999

BS, Environmental Science, Ashland University, Ashland, Ohio, 1999

Certification/License

Professional Geologist: FL

Areas of Expertise

- Hydrogeology
- Construction
- Testing
- Contract Administration
- Production Wells

Experience

- 18 total years
- 3 years with JLA

Mr. Miller's responsibilities include contractor coordination and overall contract/project management, well design, field observation, and technical reporting. Mr. Miller has directed numerous Class I injection well systems from design and permitting through operational testing and mechanical integrity testing. Mr. Miller has worked on Class I injection well systems throughout South Florida and is well versed and familiar with State regulations related to permitting of Class I systems.

Class I Injection Well and Monitor Well Construction Management and Operating Permit Application, City of Hollywood, FL
Professional Geologist for construction of one large-diameter injection well and associated dual-zone monitor well. Performed quality control and technical guidance services throughout all aspects of design, permitting, construction and testing. Prepared operation and maintenance manual and secured approval from FDEP to perform operational testing and secured operating permit.

Two Class I Injection Wells and Monitor Well, City of Sunrise, FL
Project Manager and Geologist for construction of two large-diameter injection wells and associated dual-zone monitor well. Prepared permit application, design, contract documents and technical specifications. Responsible for schedule, contract administration, construction management and regulatory compliance. Performed majority of field oversight. Prepared construction and testing summary report.

Conceptual Study, Siting Analysis, Design and Specifications for Class I Injection Well System; Palm Beach County, FL
Project Geologist for conceptual study, siting analysis, well design and specifications of a proposed Class I injection well system at Palm Beach County WTP #2 to assist Engineer in WTP expansion efforts. Summarized regulatory and monitoring requirements for siting an ASR well and injection well. Prepared design, construction cost estimates, and technical specifications for bidding purposes.

Class I Injection Well System Construction Management, Operating Permit Application, Mechanical Integrity Testing; City of Vero Beach, FL

Project Manager and Geologist for construction of Class I injection well and associated monitor well. Secured construction and operating permits; prepared design and technical specifications. Responsible for schedule, contract administration, construction management and regulatory compliance. Performed majority of construction oversight. Project Geologist for 5-year mechanical integrity testing operation.

Four Class I Injection Well Systems Construction Management and Operating Permit Applications (JEA WTP, Westport WWTF, Glades WWTF, Prineville WTP); City of Port St. Lucie, FL

JEA WTP and Westport WWTF: Staff Geologist for construction of two injection well systems. Performed field management and oversight activities and assisted with regulatory reporting and mechanical integrity testing oversight for construction and testing of injection well system. Assisted in securing operating permit. Project Manager and Professional Geologist for securing operating permit renewals and completing 5-year mechanical integrity testing operations.

Glades WWTF and Prineville WTP: Project Manager and Geologist for construction of Class I injection well systems. Secured construction and operating permits; prepared design and technical specifications for construction of two separate injection well systems for wastewater disposal (Glades WWTF) and for reverse osmosis concentrate disposal (Prineville WTP). Responsible for schedule, contract administration, construction management and regulatory compliance. Performed majority of construction oversight. Prepared construction and testing reports, O&M manuals and secured operating permits.

Six Floridan Aquifer Production Wells and Aquifer Performance Testing, Confidential Client, FL

Professional Geologist and client contact for construction of six large-diameter Floridan Aquifer production wells; five wells completed in the Upper Floridan Aquifer (UFA) and one dual-zone well completed in the UFA and Avon Park Producing Zone. Project includes a multi-well aquifer performance test and analysis. Project being completed under an aggressive 24 hours per day, seven days per week schedule. Responsible for construction management and field oversight.

Floridan Aquifer/ASR Test Wells Construction Management, City of Sunrise, FL

Project Manager and Geologist for the construction of two Floridan Aquifer test wells. Due to the complex water quality and hydraulic profile of the production aquifer, comprehensive testing and water quality analyses were performed. Aggressive development and acidization procedures were performed to maximize the performance of the wells. Wells were constructed and tested to provide the City flexibility to convert the wells to an ASR system at a later date. Performed majority of construction oversight and prepared final report.

Class I Injection Well System Construction Oversight, Operating Permit Applications, Mechanical Integrity Testing; Village of Wellington WTP, FL

Performed field management and oversight activities and assisted with regulatory reporting during construction of a Class I injection well system for disposal of reverse osmosis concentrate. Secured approval from FDEP to perform operational testing and secured operating permit. Project Manager and Geologist for securing operating permit renewals and performing multiple 5-year mechanical integrity testing operations.

Biscayne Aquifer Production Wells Construction Management, City of Sunrise, FL

Performed field oversight activities and assisted with regulatory reporting for the construction and testing of a Class I injection well.

John Largey

Well Resident Observation

John Largey is a geologist with over 30 years of experience in water resources and well drilling.

He has supervised and trained field staff during drilling and testing of numerous Class I and Class V injection wells, including two Class I municipal deep injection wells and associated monitor well at the City of Hollywood Wastewater Treatment Plant. His experience includes deep well design, permitting, and coordination of all aspects of deep well construction oversight and testing including geophysical log interpretation, selection of core depths, selection of packer test intervals, quantification of contractors' time and materials, coordination of field personnel assignments, interfacing with regulatory agencies, and preparation of daily field reports, weekly reports and compilation of the final Engineering Report.

Class I Deep Injection Well Construction Projects

Mr. Largey coordinated field activities related to construction and testing of numerous Class I municipal and industrial tube and packer injection wells and associated dual-zone monitor wells. His responsibilities included field administration, interfacing with regulatory agencies, as well as numerous Class I and Class V injection wells regulated by the Florida Department of Environmental Protection (FDEP). He has previously been responsible for well design and permit application preparation, training and supervising field staff during drilling and testing including collecting, logging and describing geologic samples; collecting, analyzing and preserving conventional cores; witnessing and verifying quality control of geophysical logging, straddle packer and single packer pumping tests, collection of fluid samples, casing installation, cementing operations, inclination surveys, hydrostatic pressure test video surveys, and mechanical integrity testing.

Previous Class I injection well projects include:

- City of Hollywood Wastewater Treatment Plant: Two municipal deep injection wells and associated monitor well.
- Seminole Tribe of Florida Hollywood Reservation: Two industrial deep injection wells and associated monitor well.
- Seminole Tribe of Florida Brighton Reservation: One industrial deep injection well and associated monitor well (in progress)
- North Broward Regional Wastewater Treatment Plant: Two municipal deep injection wells and associated monitor well.

City of Fort Lauderdale Floridan Aquifer Test Wells and Conceptual Plan for the Peele-Dixie Water Treatment Plant

Mr. Largey managed all aspects of construction of two 1,400-foot deep Floridan aquifer test wells including development of the basis of design,

Education

BS, Marine Science/Geology
Southampton College of Long Island University, 1979

Areas of Expertise

- Water Well Technical Services
- Wellsite Geologist

Experience

- 30 total years
- 5 years with Drilling Geo

drilling and testing plan as well as oversight of all field activities associated with well construction and testing.

West Bank and Gaza Infrastructure Needs Program Task Order 43 Well Drilling Project, United States Agency for International Development (USAID)

Mr. Largey served as Task Order Manager for the drilling, development and testing for Task Order 43 Well Drilling. The scope of the project included drilling, construction, and development of five deep water production wells located in the Eastern Basin, Mountain Aquifer of the West Bank, Palestine. Mr. Largey's duties included management of 10 field engineers, oversight, supervision and approval of all activities of the drilling contractor, including well drilling, well inclination surveys, casing seat selection, casing installation, casing cementation, geophysical logging, as well as oversight of well construction methodology, testing procedures, submittal review and request for information (RFI) evaluation and responses as well as technical analysis, review of contractor's pay applications, support, and documentation during the construction and testing of the wells.

Tampa Electric Company Polk Power Station Exploratory Class V Injection Well Construction, Mulberry, FL

Mr. Largey served as the Hydrogeology and Field Design Carbon Sequestration Technical Resource for carbon sequestration data collection and evaluations during the drilling of the deepest Class V permitted injection well in the state of Florida. Field activities related to construction and testing included well design modifications, formation lithology and permeability evaluation, preparation and review of cement plans, hydrologic testing plans, geophysical log interpretation, selection of core intervals, and recovery and preservation of recovered cores. Duties also included selection of straddle packer test intervals, oversight of straddle packer testing, and recovery and analysis of data.

South Collier County Regional Water Treatment Plant Production Wellfield

Mr. Largey participated in the wellfield design and managed all field activities related to construction and testing of 15 water production wells, appurtenances and piping installation. Administrative duties included oversight of all aspects of conventional mud rotary, reverse air, horizontal directional, and jack and bore drilling techniques.

Project 4203 – Potential Groundwater Quality Impacts Resulting from Geologic Carbon Sequestration, American Water Works Association Research Foundation (AWWARF)

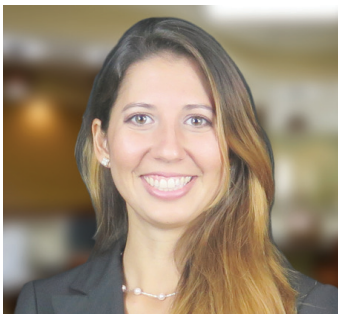
Mr. Largey served as the Lead Author of the Summary of Existing USEPA Underground Injection Regulations and Proposed geosequestration (GS) Class VI Regulations chapter. Topics covered include the history of the underground injection program; current permitting requirements; and proposed federal requirements under the UIC program for GS wells, and primacy.

Infiltration/Exfiltration/Inflow (IEI) Sewer Rehabilitation Program, Miami-Dade Water and Sewer Department (MDWASD), FL

Mr. Largey served as Senior Field Representative. Responsibilities included contract administration, payment, and change order evaluation. Responsibilities included serving as Senior Field Inspector responsible for scheduling and supervision of 20 field inspectors, performing contractor oversight of various inspection and rehabilitation methods, evaluation of field data in order to determine repair or replacement requirements, including removal of existing pipe and replacement with new material, cured-in-place liners and sectional liners. His duties also included quantification of multiple contractors' time and materials, review of field inspector's daily reports, preparation of contractor pay estimates, coordination of field personnel assignments, daily notification of crew location to MDWASD personnel and maintenance and updating of field information database and photographic records.

Senior Mud Logging Engineer

Mr. Largey served as a Senior Mud Logging Engineer responsible for subsurface logging and pore pressure interpretation of exploratory and production vertical and directional oil and gas onshore and offshore wells located offshore in the Gulf of Mexico, and onshore in South Texas, East Texas and Alaska. He was responsible for acquisition and compilation of critical information during the drilling process including interpretation and correlation of well logs.



Lauren Kuzbyt

Well Resident Observation

Lauren Kuzbyt's experience includes providing deep injection well construction inspection and oversight for various municipal injection wells projects in Broward and Miami-Dade counties.

Education

BS, Florida Atlantic University, Geology, 2017

Certification/License

Geographic Information System (GIS) Certificate (anticipated June 2018)

Areas of Expertise

- Injection Well Construction Inspections
- Groundwater Sampling
- Water Quality Tests

Experience

- 2 total years
- 1 year with Hazen

Her experience also includes involvement with weekly pad monitoring wells by measuring static water levels, and collecting and conducting initial water quality readings of surround surficial groundwater.

24-Inch Injection Wells, Seminole Tribe of Florida, Hollywood Reservation, FL

Ms. Kuzbyt serves as Construction Inspector responsible for construction oversight of the two injection wells for the Hollywood Reservation WTP/WWTP that are currently under construction. The wells have been designed as tubing and packer type injection wells so that they will be able to accept both secondary treated municipal wastewater effluent and concentrate from the membrane water treatment plant. This alternative design calls for a cemented-in-place 16-inch FRP tubing within a 24-inch diameter steel casing. A dual zone Floridan Aquifer monitor well is also included in the project. This project has been issued by the U.S. Environmental Protection Agency (EPA). This is the first Class I injection well being permitted by EPA District 4. The permit application will also meet Florida Department of Environmental Protection (FDEP) requirements for a Class I injection well and the requirements of the South Florida Water Management District.

City of Margate Wastewater Treatment Plant (WWTP) Injection Well Mechanical Integrity Testing, Margate, FL

Ms. Kuzbyt witnessed casing pressure testing, video logging, temperature logging, and radioactive tracer surveying for the injection wells at the City of Margate's WWTP. She collected and organized monitor well operating data, permit documents, and mechanical integrity testing reports as well as other documents for the purposes of ensuring the successful testing of injection wells and associated monitor well for the City.

Hollywood Injection Well Cleaning, Hollywood, FL

The program consisted of cleaning the wells with custom-designed wire brushes and airlift cleaning of the wells. Verification of cleaning was documented by injectivity testing, video surveying, and review of injection well operating data. Ms. Kuzbyt witnessed certain aspects of the construction of temporary facilities, cleaning, and verification of cleaning for the City of Hollywood.

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Jorge Valdes

Well Resident Observation

Jorge Valdes' experience includes participating in deep injection well construction inspection and oversight projects for various South Florida clients.

He has experience monitoring surface water and groundwater quality, processing water samples, interpreting lithologic cuttings and conventional cores from drilling operations, interpreting geophysical logs, aquifer pump testing, and construction inspection of deep injection wells.

Education

BS, Florida International University, Geosciences, 2017

Areas of Expertise

- Injection Well Construction Inspections
- Aquifer Pump Testing
- Surface Water and Groundwater Monitoring

Experience

- 2 total years
- 2 years with Hazen

Professional Activities

Geological Society of America

American Geophysical Union

Hollywood Injection Well Cleaning, City of Hollywood, FL

In order to improve injection well performance at the Southern Region Wastewater Treatment Plant (SRWWTP), the City of Hollywood elected to clean their two 24-inch diameter deep injection wells. The program consisted of cleaning the wells with custom-designed wire brushes and airlift cleaning of the wells. Verification of cleaning was documented by injectivity testing, video surveying, and review of injection well operating data. Mr. Valdes witnessed certain aspects of the construction of temporary facilities, cleaning, and verification of cleaning for the City of Hollywood.

16-Inch Injection Wells, Seminole Tribe of Florida, Hollywood Reservation, FL

Mr. Valdes served as Construction Inspector responsible for ensuring the contract documents are met and collecting the various geologic data that form the basis for construction of the two injection wells for the Hollywood Reservation WTP/WWTP that were constructed in 2018. The wells were designed as tubing and packer-type injection wells so that they will be able to accept both secondary treated municipal wastewater effluent and concentrate from the membrane water treatment plant. This alternative design calls for a cemented-in-place 16-inch FRP tubing within a 24-inch diameter steel casing. A dual zone Floridan Aquifer monitor well was also included in the project. This project was issued by the U.S. Environmental Protection Agency (EPA). This was the first Class I injection well permitted by EPA District 4. The permit application also met FDEP requirements for a Class I injection well and SFWMD requirements.

9⅝-Inch Injection Well, Seminole Tribe of Florida, Brighton Reservation, FL

Mr. Valdes serves as Construction Inspector responsible for ensuring compliance with the contract documents and collecting the various geologic data that form the basis for construction of one Class I injection well for the Brighton Reservation WTP. The well is designed as a tubing and

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packer-type injection well. This alternative design calls for a cemented-in-place 9⅝-inch FRP tubing within a 20-inch diameter steel casing. A dual zone Floridan Aquifer monitor well is also included in the project. This project was issued by the U.S. Environmental Protection Agency (EPA). The permit application also meets Florida Department of Environmental Protection (FDEP) requirements for a Class I injection well and requirements of the South Florida Water Management District (SFWMD).

City of Margate Wastewater Treatment Plant (WWTP) Injection Well Mechanical Integrity Testing, Margate, FL

Mr. Valdes witnessed video logging for the injection wells at the City of Margate's WWTP. The video logging was part of the mechanical testing of the injection wells at the WWTP.

Caroline Smith

Well Resident Observation

Caroline Smith has overseen the construction of multiple Upper Floridan Aquifer Wells and provided 24-hour onsite construction management and coordination.

Education

Master of Science, Geology, East Carolina University, 2015

Bachelor of Science, Geology, East Carolina University, 2013

Certificate of Hydrogeology and Environmental Science, East Carolina University, 2015

Areas of Expertise

- Field Construction Oversight
- Hydrogeology

Experience

- 3.5 total years
- 3.5 years with JLA

Ms. Smith provides experience in hydrogeologic field oversight during well construction and development phases; oversight for various drilling techniques including power auger, mud rotary, reverse air, Geoprobe, and core bores; geophysical log interpretation; implementation of well design and construction; hydrologic data collection; water quality profiling, field geologic analysis; and pump testing for Surficial and Floridan Aquifer projects in South Florida.

Hydrogeologist II, Six Floridan Aquifer Production Wells and Aquifer Performance Testing for New Power Plant, Okeechobee, FL (2016-2019)
Provided field construction oversight for construction of six large-diameter Floridan Aquifer production wells; five wells completed in UFA and one dual-zone well completed in the UFA and Avon Park Producing Zone. Project includes a multi-well aquifer performance test and analysis. Project being completed under an aggressive 24 hours per day, seven days per week schedule.

Hydrogeologist, FAS Well Construction for Existing Power Plant, Dade County, FL (2015-2016)
Provided field construction oversight for construction and testing of four new, 20-inch diameter FRP Floridan Aquifer wells for freshwater supply to reduce salinity in the cooling canal system by artesian flow; and one dual purpose well to provide emergency cooling of UFA water supply and provide the cooling canal system for freshening purposes. Designed for artesian flow and implemented an aggressive acid treatment program to meet design flow requirements of 14.4 mgd.

Hydrogeologist, Hydrogeologic Investigation Using Collected Sediment Cores for existing Power Plant, Dade County, FL
Provided hydrogeologic and geotechnical services by collecting 40 sediment cores from adjacent tidal canals. Recovered sediment cores were logged, visually classified based on lithology, and partitioned based on sediment types to perform falling head permeability tests. Responsible for collecting and sampling the cores for sediment to analyze the lithologic characteristics, vertical permeability, and thickness of unconsolidated canal bottom sediment.

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Claudio Zuccarelli

Well Resident Observation

Claudio Zuccarelli provides experience in hydrogeologic field oversight during well construction and development phases.

Education

Master of Science, Geology,
Florida Atlantic University, 2017

Bachelor of Science, Geology,
Florida Atlantic University, 2013

Areas of Expertise

- Field Construction Oversight
- Hydrogeology

Experience

- 2.5 total years
- 2.5 years with JLA

Mr. Zuccarelli is also experienced in performing comprehensive field evaluations of wellfields including assessment of well performance, water quality evaluation, and report preparation.

Field Hydrogeologist, FPL Turkey Point Biscayne Aquifer Ground Water Monitoring Well Construction, Homestead, Dade County, FL (2017-2019)
Coring oversight and sample collection through the Biscayne Aquifer System. Geophysical logging and interpretation of data to determine flow zones for monitoring well completion intervals. Construction and development of monitoring well clusters. Down-core lithologic descriptions and water quality testing. Completion report preparation.

Field Hydrogeologist, South County Water Treatment Plant, South Oslo Road Water Treatment Plant Floridan Aquifer Wells Rehabilitation Project (2017)
Provided field construction oversight during the drilling for replacement of Well No.4. Drilling and casing installation are currently ongoing and include the drilling of pilot holes, collection and description of lithologic samples, and geophysical logging to aid in well design. Well performance testing will begin upon well completion.

Field Hydrogeologist, Rehabilitation of Water Treatment Plant No. 3 & 9 Surficial Aquifer Production Wells, Palm Beach County Water Utilities Department, Delray Beach and Boca Raton, FL
Provided hydrogeologic consulting services during construction phases for rehabilitation program of WTP 3 and 9. Project included four new replacement or re-drills of surficial aquifer production wells and electrical improvements. Replacement wells added 4 mgd capacity and are capable of at least 5.8 mgd firm capacity.

Hydrogeologist, Town of Jupiter Surficial Aquifer Wellfield Testing, Jupiter, FL
Testing of the Town's in-service Surficial Aquifer (SA) production wells at their maximum designed, safe pumping rates. Includes evaluation of pump performance, pumping water levels, water quality, and specific capacity. SCADA system also evaluated. Analysis of results and evaluation of previous data provided to the Town with a comprehensive report identifying trends in production well performance and recommendations for rehabilitation.

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Tara VanEyk, PE

Well Resident Observation (Backup Support)

Tara VanEyk, PE, has participated in a variety of master planning, design, construction management, piloting, and effluent disposal projects for over 13 years.

Her background includes experience in construction management, master planning, treatment process assessment and piloting, water/wastewater/reuse treatment design and permitting, equipment sizing and selection, and cost estimating throughout the United States.

Broward County Northern Regional WWTP Facilities Improvements – Injection Well CM Services, FL

Ms. VanEyk performed construction management for expansion of Broward County's effluent disposal program, including two new injection wells at the NRWWTP. She also prepared the comprehensive Operation and Maintenance Manual for the expanded Injection Well and Booster Pump system.

City of Hollywood Southern Regional WWTP Improvements and Construction Management Assistance, FL

Ms. VanEyk continues to perform ongoing project management, design, technical services during construction, and regulatory assistance for plant projects such as phased clarifier rehabilitation, RAS pump station upgrades, and oxygenation tank improvements. Work also included preparation of regulatory compliance documents such as deep injection well permit renewal, deep injection well mechanical integrity testing documents, and plant performance.

City of Hollywood Clarifier Rehabilitation Design, FL

Project Manager and Design Engineer for rehabilitation of Clarifier Nos. 5 and 6 at the Southern Regional Wastewater Treatment Plant, including repair of effluent trough joints, interior coating, replacement of clarifier mechanism equipment and connection to SCADA system.

City of Hollywood Effluent Recharge Treatment Pilot Study, FL

Project Engineer for the first Floridan Aquifer Recharge pilot study in South Florida for the potential 21-mgd full-scale facility. As Lead Project Engineer and Operations Manager, Ms. VanEyk designed, permitted, constructed, operated, and maintained the City of Hollywood Reuse Pilot Study. Pilot process components included diversion of secondary effluent from the wastewater treatment plant clarifier, chlorine addition,

Education

MS, University of Colorado at Boulder, 2005, Civil Engineering

BS, University of Miami, 2004, Environmental Engineering

Certification/License

Professional Engineer: FL

Areas of Expertise

- Water Reuse Evaluation, Planning and Piloting
- Treatment Process Assessment/Evaluation
- Water, Wastewater, and Reuse Treatment Design & Permitting
- Reclaimed Water, Wastewater Master Planning

Experience

- 13 total years
- 10 years with Hazen

Professional Activities

WateReuse Association

- Conference Planning Committee

American Water Works Association

Florida Water Environment Association

- FWEA Reuse Committee
- Southeast Chapter Chair (2017), Vice Chair (2016), Secretary (2015)
- President, University of Miami Student Chapter (2003-2004)

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deep bed media filtration, ultrafiltration, ion exchange (selective for TOC, Ammonia, and Phosphate), Ozone-AOP, UV-AOP, and GAC filters operating in biological mode. Piloting of the tailored treatment approach demonstrated acceptable emerging contaminant oxidation using treatment technologies that are more cost-effective and have a smaller carbon footprint than the traditional MF/RO/UV-AOP treatment strategy.

Broward County Water and Wastewater Services, Northern Regional WWTP Planning, Improvements and Regulatory Assistance, FL

Ms. VanEyk continues to perform ongoing facilities planning, design, permitting, technical services during construction, project closeout, and regulatory assistance for large-scale plant improvement projects, such as upgraded Septage Receiving Facility, headworks and grit removal facilities upgrades, conversion of existing aeration basins from mechanical surface aeration to fine bubble diffused aeration, expansion of reclaimed water filters, expansion of Broward County's effluent disposal program, Capacity Analysis Report preparation and operating permit renewal, among others.

City of Coral Gables Force Main Replacement & Pump Station Improvement Projects, FL

Ms. VanEyk has provided construction management services for the City of Coral Gables Old Cutler Road Force Main and Ponce de Leon Force Main Replacement projects. She performed field inspection to oversee construction and assist City staff with maintaining the expected quality of work on a fast-paced construction schedule according to the City's Consent Order agreement.

City of Plantation Regional WWTP Upgrades Permitting and Construction Management Services, FL

Ms. VanEyk performed project permitting, engineering services during construction, and coordination with County and City departments.

Appendix B Corporate Brochure/ Annual Report

Hazen

Water Environment Solutions

Hazen and Sawyer

Hazen and Sawyer develops practical solutions to water quantity and quality challenges around the globe. Backed by one of the industry's most comprehensive and advanced applied research portfolios, our engineering and scientific teams work exclusively with water.

From meeting existing regulations to mining resources found in wastewater and stormwater, Hazen helps clients of every size, from small communities to major metropolitan areas.

At Hazen and Sawyer, we strive to pinpoint the best solution to every challenge, often with innovative approaches developed through partnerships with the communities and businesses we serve. Our decades-long client relationships are a testament to our company-wide commitment - placing our client's interests first.

Our work is most often characterized by the **superior technical expertise** we provide clients to achieve their goals.

Our contribution to the Bogotá River Restoration Program included studying treatment alternatives, performing preliminary engineering design, and producing bid documentation for procurement of turn-key (design/build) contracts for the construction of two wastewater secondary treatment plants (160 mgd and 320 mgd).

To address operational problems and constraints at the 30-mgd Stamford Water Treatment Plant, Hazen and Sawyer designed and managed construction for a dissolved air flotation/filtration treatment system that expanded capacity, maximized use of existing facilities, and provided greater ease of operation.

As part of a regional effort to develop alternative water supplies, Hazen and Sawyer was part of a team hired to pilot and design a treatment process to recharge the Biscayne Aquifer – South Florida's primary source of drinking water – with highly-treated wastewater. The process successfully piloted included dual membrane (microfiltration/reverse osmosis), ion exchange, and UV-advanced oxidation technology.

Drinking Water

We are recognized leaders in the design of dissolved air flotation and UV disinfection treatment processes, and are breaking new ground in the use of advanced oxidation processes.

Maintaining a reliable drinking water supply can present a steady stream of challenges to providers. Some utilities struggle to keep up with population growth, others to maintain existing infrastructure while populations (and revenues) decline.

Hazen and Sawyer provides source-to-tap solutions that ensure the proper supply of high-quality finished water delivered at a reasonable cost. Our scientists and engineers include top researchers whose work identifies innovative treatment methods, operational tools, and water quality modeling techniques, bolstering the expertise and big-picture vision we bring to even the smallest project.

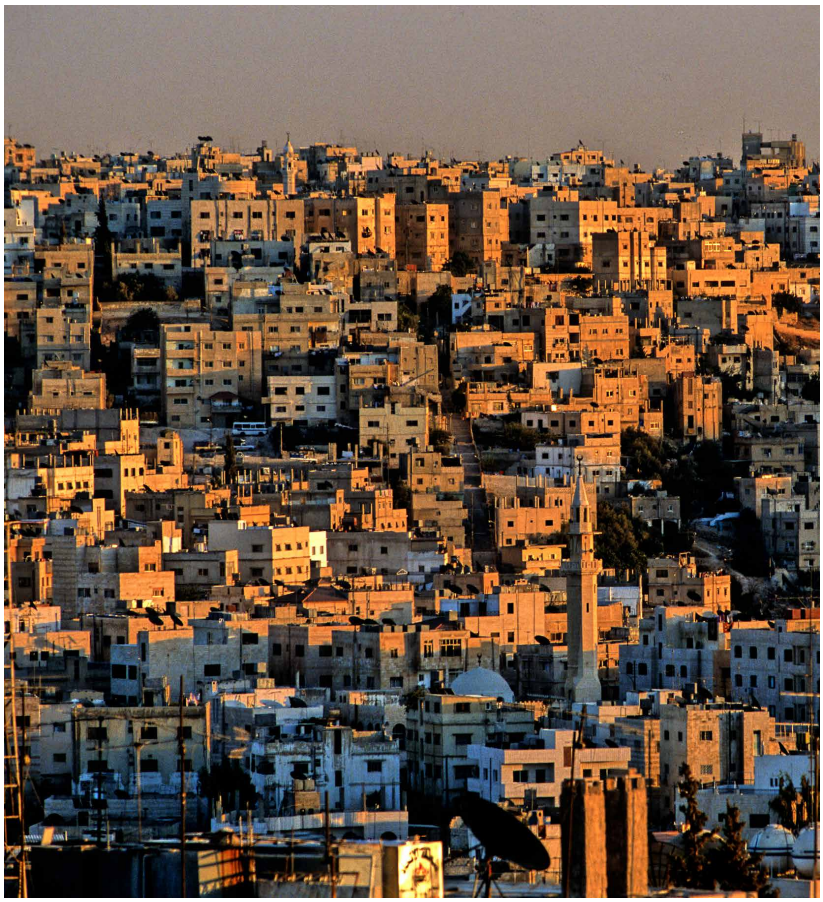
We can identify strategic alternatives to help you reliably meet current and future regulations, treat challenging ground and surface waters, prioritize infrastructure upgrades, evaluate disinfection options, and closely manage precious supply.

Treatment

Hazen and Sawyer has long been an acknowledged leader in water treatment process design. We designed and provided start-up assistance for the world's largest drinking water ultraviolet disinfection facility (2 billion gallons per day) and the world's largest dissolved air flotation facility (290 mgd) – both for the City of New York and its nine million drinking water customers.

Supply

Water supply evaluation for the City of Wilson revealed the need to augment supply, which we helped achieve by expanding the Buckhorn Reservoir and constructing a new roller-compacted concrete dam. Months after completion, the Buckhorn Dam successfully withstood two hurricanes, incurring no damage from extreme flows.



Distribution

Hazen and Sawyer has helped a wide range of clients deliver billions of gallons of high-quality drinking water to their customers, modeling and assessing water distribution systems and designing repairs, upgrades, and new conveyance and storage infrastructure. For a recent USAID-funded project, Hazen and Sawyer led a team in the design and construction management of a project to reduce water losses in Amman, Jordan, restructuring nearly half of Amman's water distribution system.

Wastewater

Our process modeling is considered among the most accurate in the world, ensuring our clients the most cost-effective, flexible, and robust process solutions to meet their needs.

Hazen and Sawyer specializes in helping wastewater utilities cost-effectively achieve required levels of treatment and plan strategically for the future.

Advances in technology now help us meet progressively lower numerical nutrient limits, and opportunities to recover energy and other valuable byproducts of the treatment process abound.

Decades of designing new plants, upgrades to meet lower nutrient limits, plant expansions, facility re-ratings, process optimizations, and independent research have all shaped our state-of-the-art approach to process modeling, design, and optimization.

We have used this approach to accommodate all kinds of regulatory environments, including effluent requirements less than 1 mg/L TN and less than 0.01 mg/L TP.

Treatment

For the Miami-Dade Water and Sewer Department, Hazen and Sawyer upgraded the South District Wastewater Secondary Treatment Plant to a 285-mgd High-Level Disinfection facility, one of the largest in the world. More than 70,000 cubic yards of concrete were poured as part of the construction program. Originally expected to take six years to complete, the planned $650M project was completed well under budget and ahead of schedule.

Energy Recovery

The recovery and use of energy sources such as biogas, fats-oils-and-grease (FOG), and waste heat represent significant opportunities for reducing net energy consumption and costs. With energy costs on a dramatic rise in South Africa, the 55-Ml/d Driefontein WWTP is among five Johannesburg Water facilities adding high-performance mesophilic anaerobic digestion to their process, increasing biogas production and on-site power generation.

Sidestream Nutrient Recovery

Technological advances enable treatment facilities to act as resource recovery operations, delivering valuable supplies of useful nutrients such as nitrogen and phosphorus. For the Hampton Roads Sanitation District, we have implemented the Ostara process, which provides a 90% decrease in orthophosphate and 40% decrease in ammonia in the dewatering waste stream returned to the liquid process, while generating a slow-release fertilizer that is sold commercially.

Wet Weather

*Hazen and Sawyer specializes in **maximizing the use of existing systems**, anticipating regulatory changes, and providing cost-effective permit compliance for the foreseeable future.*

Sanitary and combined sewers traditionally protect public health and the environment by channeling waste and stormwater to treatment facilities, where it can be processed and safely discharged. When wet weather overwhelms these systems, combined sewer overflows (CSO) create ecological and human health hazards.

Strategic use of green infrastructure – from constructed wetlands, ponds, and streams to green and blue roofs, permeable pavement, and infiltration swales – can dramatically reduce the load on a combined sewer system, reducing both capital and operating costs, or eliminate it completely.

Bringing innovation to traditional grey infrastructure, we have designed and built award-winning CSO treatment facilities that optimize disinfectant contact time, reducing facility footprint and capital costs.

Green Alternatives to Sewers

The Staten Island Bluebelt channels stormwater through natural treatment, sustaining native flora and fauna, and creating a beautiful space for local residents. Stormwater source controls and best management practices utilized for this project include extended detention wetlands, meandering streams, and outlet stilling basins.

Optimizing Existing Systems

After performing rigorous infrastructure characterization and modeling, Hazen and Sawyer helped Sanitation District No. 1 of Northern Kentucky prioritize projects to eliminate combined sewer and sanitary sewer overflows throughout their system, fostering an optimal balance of storage, conveyance, and treatment. The District's innovative consent decree with U.S. EPA was the first to address water quality on a watershed level.

Innovative High-Rate Treatment Design

Local regulations included a presumptive treatment design criteria that included 30 minutes of detention time to treat the 10-year, one-hour storm. We performed three studies confirming an innovative design for the 8.6-bgd Conner Creek CSO Facility that meets permit requirements with just five minutes of detention time. The reduced detention time resulted in a $330 million savings in construction costs.

Water Reuse

We have provided award-winning water reuse solutions since 1981. Our experience provides our clients a valuable perspective on project planning, design, construction, and operational support.

As populations swell in water-stressed areas – a trend forecasted to continue – it is clear that reuse will need to become a larger portion of our global water supply portfolio.

Foreseeing this need, Hazen has a team with unparalleled reuse experience, ranging from leading public outreach, to cutting-edge research of treatment technologies, to design and implementation of some of the most recognized advanced treatment plants in the world. Our position at the forefront of technology, regulations, and market developments helps us make the best strategic recommendations to our clients.

Direct Potable Reuse

The Colorado River Municipal Water District retained Hazen and Sawyer to perform a third-party evaluation of the performance and operation of the Big Spring Raw Water Production Facility (BSRWPF). This facility is one of two direct potable reuse plants currently in operation in Texas to provide a necessary supplement to dwindling water supplies in the face of drought conditions. The plant can produce up to 2.5 mgd of high quality recycled water using microfiltration, reverse osmosis, and advanced oxidation.

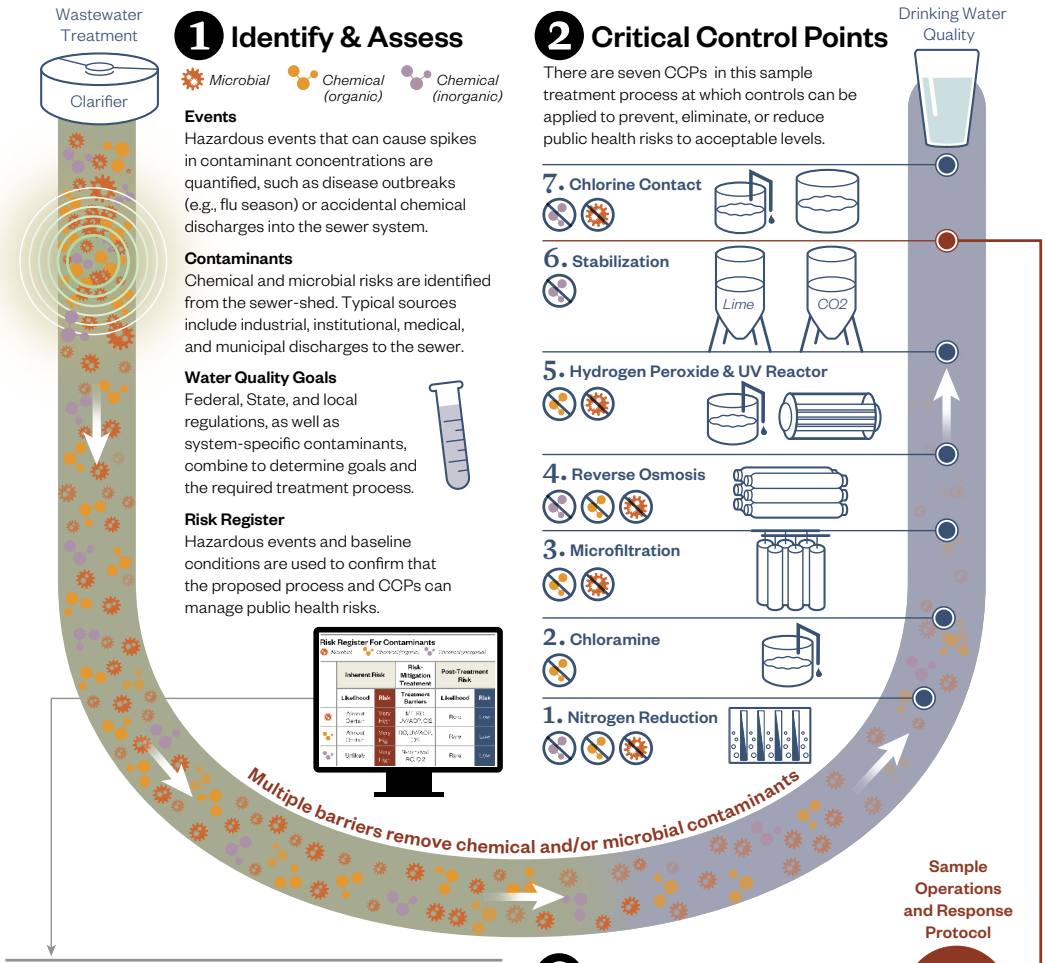
Indirect Potable Reuse

In response to Florida's Ocean Outfall legislation, the City of Hollywood, FL retained Hazen and Sawyer to investigate options for reuse required under the new law. The legislation requires 60% of the City's baseline flow that previously was discharged through the outfall to be reused for a beneficial purpose. We conducted IPR pilot testing to demonstrate acceptable emerging contaminant oxidation using treatment technologies that are more cost-effective and have a smaller carbon footprint than traditional options.

Industry Leading Research

Our Applied Research program positions us at the forefront of making water reuse a viable option in any number of applications, from direct potable reuse to non-potable irrigation to industrial reuse projects. Research projects inform communication with the public, master planning, and process evaluation, while ensuring that our designs are sustainable, energy-efficient, and cost-effective.

Higher contaminant levels in the feed water require potable reuse facilities to maintain rigorous health and safety protocols. Hazen will employ the Hazard Analysis and Critical Control Point methodology to identify water quality hazards to human health and ensure their effective removal. This is based on work Hazen has developed with the WateReuse Research Foundation on the landmark project "Critical Control Point Assessment to Quantify the Robustness and Reliability of Multiple Barriers of a DPR Scheme".



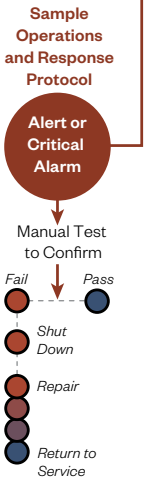
Risk Register For Contaminants

Microbial *Chemical (organic)* *Chemical (inorganic)*

	Inherent Risk		Risk-Mitigation Treatment	Post-Treatment Risk	
	Likelihood	Risk	Treatment Barriers	Likelihood	Risk
	Almost Certain	Very High	MF, RO, UV/AOP, Cl2	Rare	Low
	Almost Certain	Very High	RO, UV/AOP, Cl2	Rare	Low
	Unlikely	Very High	N-removal, RO, Cl2	Rare	Low

3 Operations & Response

CCPs are monitored with process-specific sensors or automated test sequences that return data to the operations staff via the plant SCADA. When a process monitor indicates an alert, additional manual testing and checks are triggered which may require corrective action. A critical alarm will result in an immediate process or equipment shutdown to protect public health. Corrective actions will then be taken by operations staff, and communicated via incident reporting procedures. Finally, operational procedures will ensure that the equipment or process is operating correctly to ensure safe return to service.



Hazen

hazenandsawyer.com

If you're trusted to protect public health or the environment, we can help.

Appendix C Financial Information (Confidential)

HAZEN AND SAWYER, D.P.C.

FINANCIAL STATEMENTS

Years Ended December 31, 2017 and 2016

- CONFIDENTIAL -

CERTIFIED PUBLIC ACCOUNTANTS

INDEPENDENT AUDITORS' REPORT

To the Stockholders and Board of Directors
Hazen and Sawyer, D.P.C.
New York, New York

We have audited the accompanying financial statements of Hazen and Sawyer, D.P.C. (the "Company") which comprise the balance sheets as of December 31, 2017 and 2016, and the related statements of income, changes in stockholders' equity and cash flows for the years then ended, and the related notes to the financial statements.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Company's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of Hazen and Sawyer, D.P.C. as of December 31, 2017 and 2016, and the results of its operations and its cash flows for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Hauppauge, New York
March 23, 2018

HAZEN AND SAWYER, D.P.C.
BALANCE SHEETS
December 31, 2017 and 2016

	2017	2016
ASSETS		
Current Assets		
Cash and cash equivalents	$ 6,693,402	$ 6,693,279
Accounts receivable	78,351,742	73,257,579
Stock receivable	1,097,483	1,206,438
Employee advances and loans receivable	16,124	46,615
Prepaid expenses	1,791,219	1,523,207
Other assets	15,000	15,000
Total Current Assets	87,964,970	82,742,118
Fixed Assets	4,439,593	3,139,174
Other Assets		
Stock receivable	1,728,695	1,766,666
Security deposits	253,034	222,599
	$ 94,386,292	$ 87,870,557
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current Liabilities		
Line-of-credit	$ 10,000,000	$ 10,000,000
Notes payable - stockholders	939,051	1,020,751
Accounts payable	16,085,264	12,417,950
Accrued expenses	23,022,287	22,876,520
Deferred revenue	7,032,087	8,517,025
Reserves on contracts	3,293,000	3,500,000
Total Current Liabilities	60,371,689	58,332,246
Long-Term Liabilities		
Notes payable - stockholders	1,214,295	1,215,728
Deferred rent	1,735,945	740,167
Deferred income taxes	650,000	650,000
	63,971,929	60,938,141
Commitments and Contingencies		
Stockholders' Equity		
Common stock	11,552,530	10,618,140
Retained earnings	18,861,833	16,314,276
	30,414,363	26,932,416
	$ 94,386,292	$ 87,870,557

See notes to financial statements.

HAZEN AND SAWYER, D.P.C.
STATEMENTS OF INCOME
Years Ended December 31, 2017 and 2016

	2017	2016
Gross Revenues	$ 244,020,900	$ 217,893,373
Direct Expenses:		
Subcontractor expenses	58,345,788	44,810,977
Other direct costs	4,756,193	5,576,758
	63,101,981	50,387,735
Net Revenues	180,918,919	167,505,638
Direct Labor	62,481,241	57,614,400
Gross Profit	118,437,678	109,891,238
General and Administrative Expenses		
Salaries	47,510,006	43,637,819
Employee taxes and benefits	37,617,566	34,017,478
Occupancy	8,727,051	7,784,738
Insurance	2,717,094	2,515,120
Depreciation and amortization	1,570,542	1,264,601
Other	16,447,613	16,701,017
	114,589,872	105,920,773
Operating Income	3,847,806	3,970,465
Other Income and (Expenses)		
Interest income	3,736	12,673
Interest expense	(153,189)	(157,407)
Total Other Expenses	(149,453)	(144,734)
Income Before Provision for Taxes	3,698,353	3,825,731
Provision for Taxes	161,720	226,713
Net Income	$ 3,536,633	$ 3,599,018

See notes to financial statements.