

Statement of Qualifications

City of Hollywood Florida

# Water Treatment Plant and Wastewater Treatment Plant Projects

RFQ-041-23-JJ

February 2023

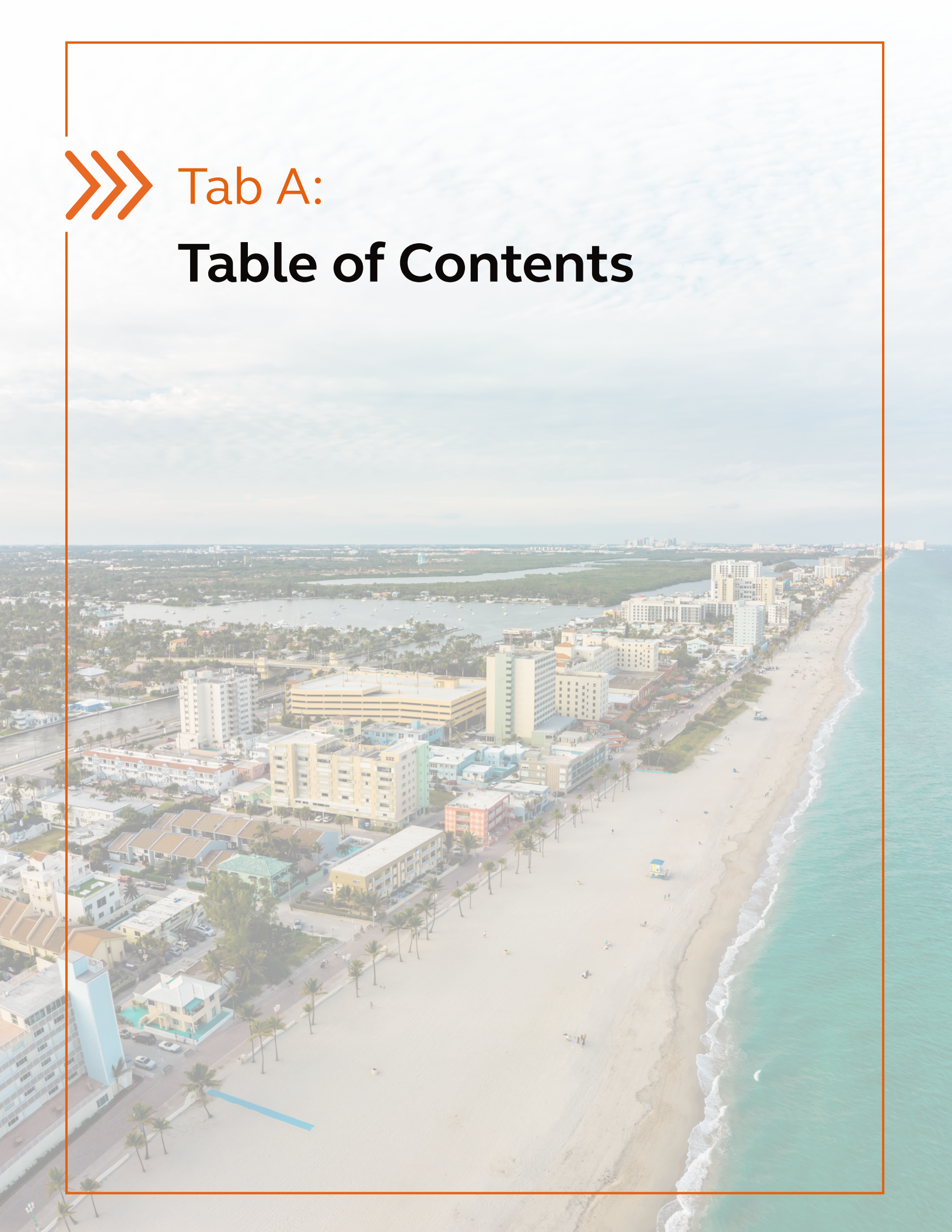






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# Table of Contents

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Tab B:

# Executive Summary





February 28, 2023

Attn: Jean Joinville, Sr. Purchasing Agent  
City of Hollywood  
City Hall  
2600 Hollywood Blvd., Room 221  
Hollywood, FL 33020

Subject: **RFQ-041-23-JJ, Water Treatment Plant and Wastewater Treatment Plant Projects**

Dear Mr. Joinville and Selection Committee Members,

Arcadis U.S., Inc. (Arcadis) is pleased to submit our qualifications to continue to provide as-required professional engineering services for Water Treatment Plant and Wastewater Treatment Plant projects for the City of Hollywood (City). We are proposing to assist the City in the following areas of your Capital Improvement Program:

- Service Area 1 – Wastewater Treatment Plant Projects
- Service Area 2 – Water Supply and Treatment Projects
- Service Area 3 – Infrastructure Projects

Over the past two decades, Arcadis and our teaming partner, McKim & Creed, have provided professional engineering consulting services under Continuing Contracts in support of the City's Water Service Area Capital Improvement Program. Our history with you has taught us valuable lessons on the level of service, timeliness, and quality you expect from your consultants. Stemming from this institutional knowledge and enduring partnership, we consider ourselves to be exceptionally qualified to expand our services to assist the City in Wastewater Treatment Plant and Infrastructure projects. Arcadis is one of the leading firms in south Florida providing "outside-the-fence" buried infrastructure services and we bring an unmatched level of expertise in wastewater process and treatment. By selecting Arcadis, the City will obtain a robust and integrated team with hands-on knowledge of your water treatment plant, deep capabilities to support your needs at the wastewater treatment plant, and capacity to successfully deliver any infrastructure project.

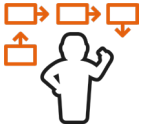
Together, we have learned from past challenges and achieved great accomplishments - as demonstrated in every project we have recently completed for the City. We have listened to you, made you a priority, and brought you stronger teams to deliver high-quality project outcomes that have exceeded your expectations. As we look forward, we welcome the opportunity to continue working with you, while continuing to provide the following benefits to the City:



#### **A Talented, Local, and Experienced Leadership Team**

Our **Contract Manager/Principal in Charge, Leah Richter, PE**, and our proposed **Wastewater, Water, and Infrastructure Project Managers (Tim Ware, PE, Sean Chaparro, PE, and Joan Fernandez, PE**, respectively) are all Florida-based certified project managers and principal engineers. Each has recent, valuable, and successful experience working with the City and other municipalities and utilities across Florida, making Arcadis' local leadership team unique to the City in its depth and breadth of skills and experience. While they specialize in their proposed roles, they possess diverse project delivery and management expertise and can assist each other as necessary, providing continuity and familiarity to the City. The City can be sure that your projects will be led by dedicated professionals who understand what it takes to develop and successfully deliver projects that meet the City's needs and achieve schedule and budget goals.





### **A Strong and Established Florida Team with Full, In-House Service Capabilities to Best Support Continuing Contracts**

Our Florida Team works seamlessly as one team across our eight Florida offices; our three south Florida offices alone provide access to more than 75 engineering and other professional staff to meet all your water, wastewater and infrastructure needs. While full project leadership, management and delivery capabilities exist locally in Plantation (our Broward County office), the resources and expertise of our staff across the state provide a stronger depth of capabilities, a more diverse and greater reach of experience, and access to an unsurmountable wealth of knowledge that will benefit the City in solving its most pressing challenges. We have a client focused approach to assembling project teams that is not based on where staff sit, or what profit center they belong to. Our project teams are flexible and agile and combine our strongest local staff with our best and brightest experts regardless of where they are located. We provide added design and consulting value to our Florida clients through our Tampa design center which houses all necessary disciplines to best support and deliver on Continuing Contracts. Having completed hundreds of projects through more than 35 Engineering As-Needed / Continuing Consulting Services Contracts in the past five years, the City will benefit from an experienced and established multi-disciplinary team that has proven time and again it knows how to deliver.



### **A Recognized National Team with Diversified Technical and Consulting Capabilities**

The City has recently embarked on a comprehensive master planning update effort which, when completed later this year, will lead to a fully developed CIP in construction upgrades, expansions and improvements to implement over the next planning horizon. The City will likely require the breadth of services that a large and technically diverse design and consulting firm like Arcadis can provide. Such services could include national regulatory guidance and support, asset management, project funding and financing services, rate studies and other business advisory services, and sustainability and resilience services to name a few. Through our proposed team, the City will gain access to not only our national subject matter experts, but also our specialized Florida staff (many based in south Florida) who bring a deep understanding of state-level challenges and opportunities, and focus on providing the highest level of consulting services to maximize benefits for Florida municipalities and utilities.

The City of Hollywood has long been, and remains, a highly valued client to us. We are proud to celebrate our longstanding relationship with the City and to be able to say that we have successfully completed many critical projects at your water treatment plant and for your water system, including most recently, the Water System Master Plan Update mentioned above. Through this experience, we have come to understand your preferences and standards, expectations for project ownership and schedule and budget adherence, and desire for innovative high-quality outcomes.

We are pleased to be able to present this Statement of Qualifications for your consideration for selection of a new consulting agreement with the City - one that would represent a renewal of the relationship we have developed with you. We very much look forward to continuing to provide you an exceptional level of service on your water, wastewater, and infrastructure projects. Please do not hesitate to contact us should you have any questions.

Sincerely,  
Arcadis U.S., Inc.

Leah K. Richter, PE  
Contract Manager / Principal in Charge / Vice President  
Leah.Richter@arcadis.com  
T: 954.525.2499

Melissa L. Pomales, PE, ENV SP, PMP  
Florida Area Leader / Senior Vice President  
Melissa.Pomales@arcadis.com  
Cell: 305.761.0232



# Executive Summary

## Firm Background Information

Arcadis began operation in 1888, when the organization was founded in the Netherlands as an association for wasteland redevelopment. Arcadis NV evolved throughout the 20th century, expanding its global reach and range of service offerings through strategic initiatives and targeted acquisitions.

Arcadis was established in the United States in Delaware as Geraghty & Miller in 1967. The first public offering occurred in 1988. In 1993, Geraghty & Miller was acquired by Arcadis NV. In 1998, Geraghty & Miller was renamed Arcadis.

*Our 100-year history of water engineering in Florida dates back to the development of the railroad along the east coast by Henry Flagler and the initial water supply in West Palm Beach.*

## Additional Firm Information

Arcadis is the leading global company providing consulting, design, engineering, and management services in water, wastewater, reclaimed water, stormwater, utility management, conveyance, and distribution systems. We work in partnership with our clients to enhance sustainability and quality of life. Our most defining characteristics are a staff of talented and passionate people, a unique combination of capabilities covering the whole asset life cycle, deep market sector insights that work to our clients' advantage, and a commitment to integrate health and safety, and sustainability into the design and delivery of each and every customized solution. As your consultant of choice through this continuing professional services contract, Arcadis U.S., Inc. (Arcadis) brings over 150 years of water, wastewater, and reclaimed water utility planning, design, advisory, and management experience; the necessary breadth, depth, and expertise through our local Florida staff and national resources; and the forward-thinking and sustainable solutions that only a global company can provide. **Our key leadership team is based in the City of Plantation, Broward County, a short drive away from the City's facilities. This close proximity simplifies in-person meetings and quick responses to project needs.**

**Arcadis North America at a Glance**

**6,000+**  
staff

**>120**  
offices

**ENR's Top 500 Sourcebook Top Design Firms In Environment**

**# 5**  
Water Treatment

**# 5**  
Water Treatment, Desalination Plants

**# 7**  
Water Supply

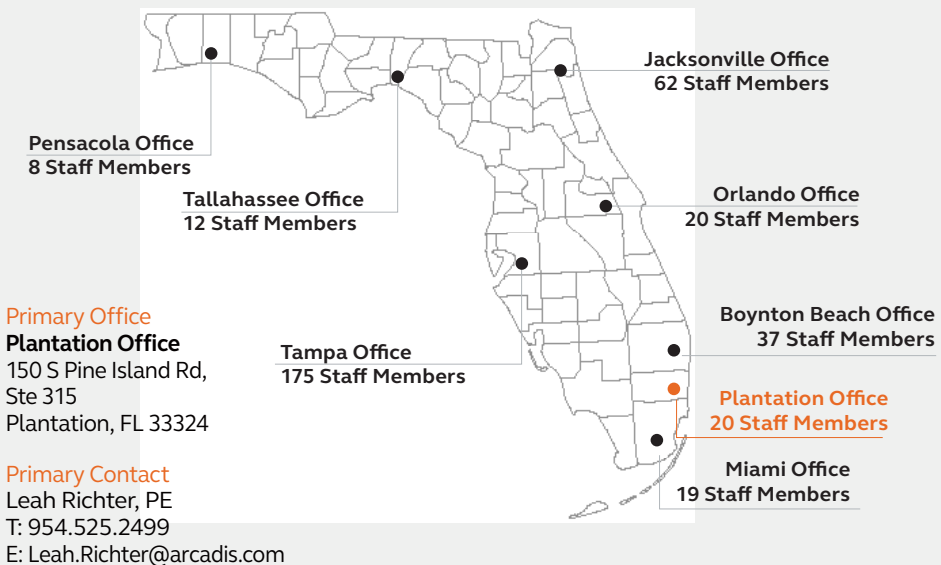
**# 12**  
Sanitary and Storm Sewers

**# 15**  
Sewer and Waste

**# 16**  
Wastewater Treatment Plants

**# 9**  
Dams and Reservoirs

## Arcadis is Local

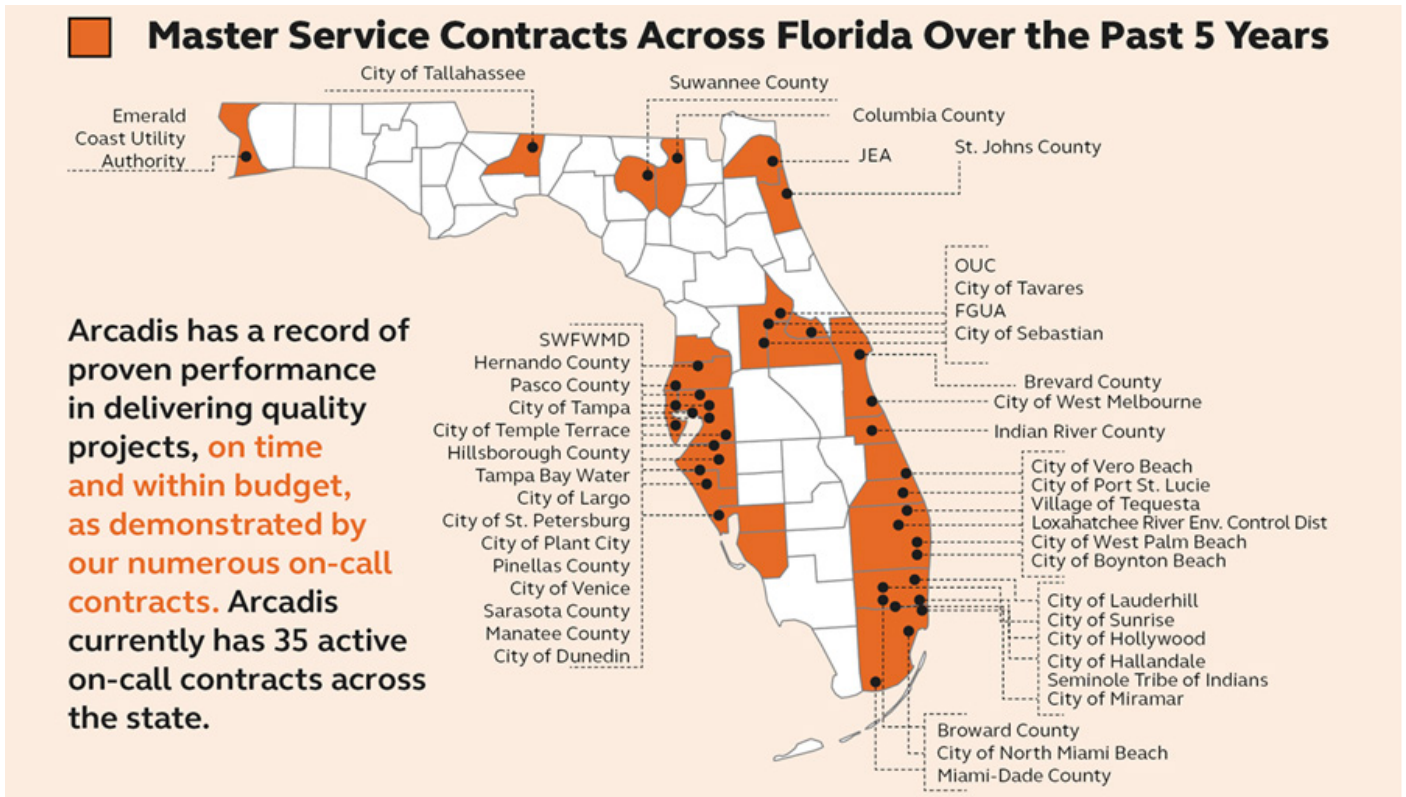


**Our South Florida practice is supported by over 350 professionals among 8 Florida offices.** Arcadis has performed a thorough review of resources in the State to ensure that local knowledge and established **local relationships can be leveraged to bring the City exemplary services.**



## Experience with Miscellaneous Engineering Services Contracts

Arcadis has a record of proven performance in delivering quality projects, on time and within budget, as demonstrated by our numerous on-call contracts. Many of our clients have demonstrated their high level of trust in Arcadis by retaining the firm under continuing service agreements spanning several years. Arcadis currently has 35 active on-call contracts across the state. Our large staff of experts with diverse backgrounds and technical abilities enables us to optimally staff numerous concurrent projects and respond to client requests on short notice.



**Partnership.** Arcadis has 20 years of experience working with the City of Hollywood. Since the early 2000's, Arcadis has worked closely with the City in supporting its mission of delivering clean, safe drinking water to its residents, customers, and tourist. From locating and permitting of new Biscayne and Floridan wells to upgrading the WTP's treatment to leverage advances in technology and developing your most recent Water Master Plan, Arcadis has helped the City navigate growth, emerging needs, and continually updated regulations.



**Project Team.** Our water consulting and engineering services encompass the entire water cycle: water supply, treatment and distribution; wastewater collection and treatment; water reuse; wellfields and system modeling; urban water, stormwater and drainage; and natural water systems (rivers, coasts, integrated water resources and ecosystems). Our Florida-based staff includes experienced professionals who practice across multiple engineering disciplines including Electrical, Structural, Environmental, Mechanical, Chemical, Civil, Stormwater and Treatment/Process. Having all of these disciplines right here in Florida facilitates close project coordination, fosters a collaborative team environment, reduces project costs, and increases project benefits for the City.



**Integration.** Arcadis stands above the competition in providing engineering services, as well as utility management and consulting services all under one roof. Our core team of engineers is backed by the largest water consulting and business advisory practice in the industry with 250 professionals in the U.S. and over 2,000 worldwide. Arcadis is the only design and consultancy firm that brings unmatched expertise in utility management, asset management, financial and funding support, utility innovation, workforce and equity consulting, and resiliency. Our seamless work across multiple disciplines will continue to provide the City with a unique big picture perspective, from a reliable, trusted, and committed partner, to navigate the challenges in the years to come.



**Innovative Leaders.** We are innovation leaders and stand at the forefront of the water sector's digital transformation. Stemming from our long history of providing services to municipalities and utilities of all sizes across the U.S. and in Florida (including the City) and recognizing the significant benefits that technology provides, we have developed and refined numerous digital tools that optimize and improve reliability, performance, efficiency, and safety across the asset lifecycle. The City will benefit from these tools as we apply them appropriately in the planning and development of sustainable and optimized designs to best meet your needs and achieve your project goals.

## Key Project Contacts

Arcadis has the team capable of delivering high-quality projects on time and on budget, and has both the experience and tools necessary to support the City in solving its most pressing challenges. Through the submittal of this Statement of Qualifications, Arcadis proposes to work with the City in the areas of (1) Wastewater Treatment, (2) Water Supply and Treatment, and (3) Infrastructure.



**Leah Richter, PE**  
Contract Manager and  
Principal in Charge

Ms. Richter has a diverse 25 year background in program management, business advisory and financial consulting services and civil engineering. She specializes in assisting municipal clients in South Florida with managing their planning, operational and capital program needs. Her experience includes project management and delivery, vendor procurement, contract compliance, regulatory permitting, public outreach, annual reporting to bondholders/trustees, litigation support services, environmental compliance and operation and maintenance evaluation. She serves as the Project Manager for the Miami Dade County Water and Sewer Department Bond Engineering and Financial Services contract. **Ms. Richter currently serves as the Principle in Charge for the breadth of services Arcadis provides for the City as well as is Arcadis' Southeast Florida Operations Leader and is located in our Plantation office, just minutes from the City to provide rapid response to any request.**



**Tim Ware, PE**  
Service Area 1 Wastewater  
Treatment Plant

For many years, Arcadis has been a leader in developing solutions to difficult wastewater treatment problems. Our success stems from a thorough understanding of the physical, chemical, and biological characteristics of wastewaters combined with an in-depth knowledge of treatment processes that is essential to the successful design and operations of treatment facilities. Mr. Ware has 19 years of experience as an engineer, project manager, operator and facility manager for water and wastewater collection and treatment systems. Prior to a career in consulting, he worked within municipalities and in contract operations evaluating, operating, and managing large water and wastewater treatment plants, collection systems and pumping stations. He has completed multiple projects through Continuing Engineering Services contracts as both a project manager and lead technical staff depending on the task. **Mr. Ware has experience working with facilities within Florida and throughout the U.S. on a wide variety of tasks and projects. He is a professional engineer in Florida and holds a Florida Wastewater Operator B license.**



**Sean Chaparro, PE**  
Service Area 2 Water  
Supply and Treatment

Arcadis provides a full range of drinking water consulting services – from investigations, planning, and feasibility studies, through design, permitting, and project implementation, construction, and start-up. Arcadis has been an industry leader in introducing innovation and advancing state-of-the-art of water treatment. Mr. Chaparro has experience in municipal drinking water process planning, design, and special evaluations. Experience in drinking water treatment includes water quality planning, treatment process evaluations, facility planning, Safe Drinking Water Act compliance assessments, corrosion control treatment evaluations, plant optimization evaluations, chemical feed system evaluations, and residuals handling and disposal evaluations and design. He has worked on master planning projects and process evaluations for water treatment plants ranging from less than 1 MGD to over 340 MGD. **Mr. Chaparro has worked with the City on numerous projects such as the ongoing Water System Master Plan and WTP Membrane Replacement projects.**





**Joan Fernandez, PE, IAM**  
Service Area 3  
Infrastructure

Arcadis has been an industry leader providing professional services in civil engineering infrastructure improvements in Florida, including but not limited to roadway geometry enhancements, stormwater systems, water distribution, wastewater conveyance, and reclaimed water systems. Ms. Fernandez has over 17 years of experience in project management, planning, design, permitting, procurement and construction management of infrastructure projects including water distribution, collection systems, pump stations, and stormwater. During her professional career, she has worked closely with various internal and external stakeholders staff at all levels, consultants, and contractors in conducting contract negotiations, presentations, workshops, and project implementation. Ms. Fernandez continues to be involved in the development and delivery of Capital Improvement Projects (CIP) for various clients valued at more than \$15 million including the City of Hollywood, Miami-Dade Sewer and Water Department (M-D WASD), Orlando Utilities Commission (OUC) and the Puerto Rico Aqueduct and Sewer Authority (PRASA). **Ms. Fernandez has worked with the City on numerous projects such as the AWIA Risk and Resilience Plan, Emergency Response Plans, water main replacement funding supporting evaluations, Deep Injection Well permit renewal and MIT projects.**

## Our Trusted Partners

Arcadis shares the City's commitment to support Local / CBE / SBE businesses. We are committed to using the following local, well-qualified, and strategically selected certified subconsultants to meet project goals and objectives, specialty needs and provide additional depth of resources locally.

- McKim & Creed, Inc.
- Launch Consulting, Inc. (SBA, DBE, WBE, SWaM)
- Tobon Engineering (CBE, SBE, MBE)
- Stoner & Associates
- Blood Hound
- Corrosion Probe

*Our subconsultants are discussed further in Tab H: Sub Consultant Information.*

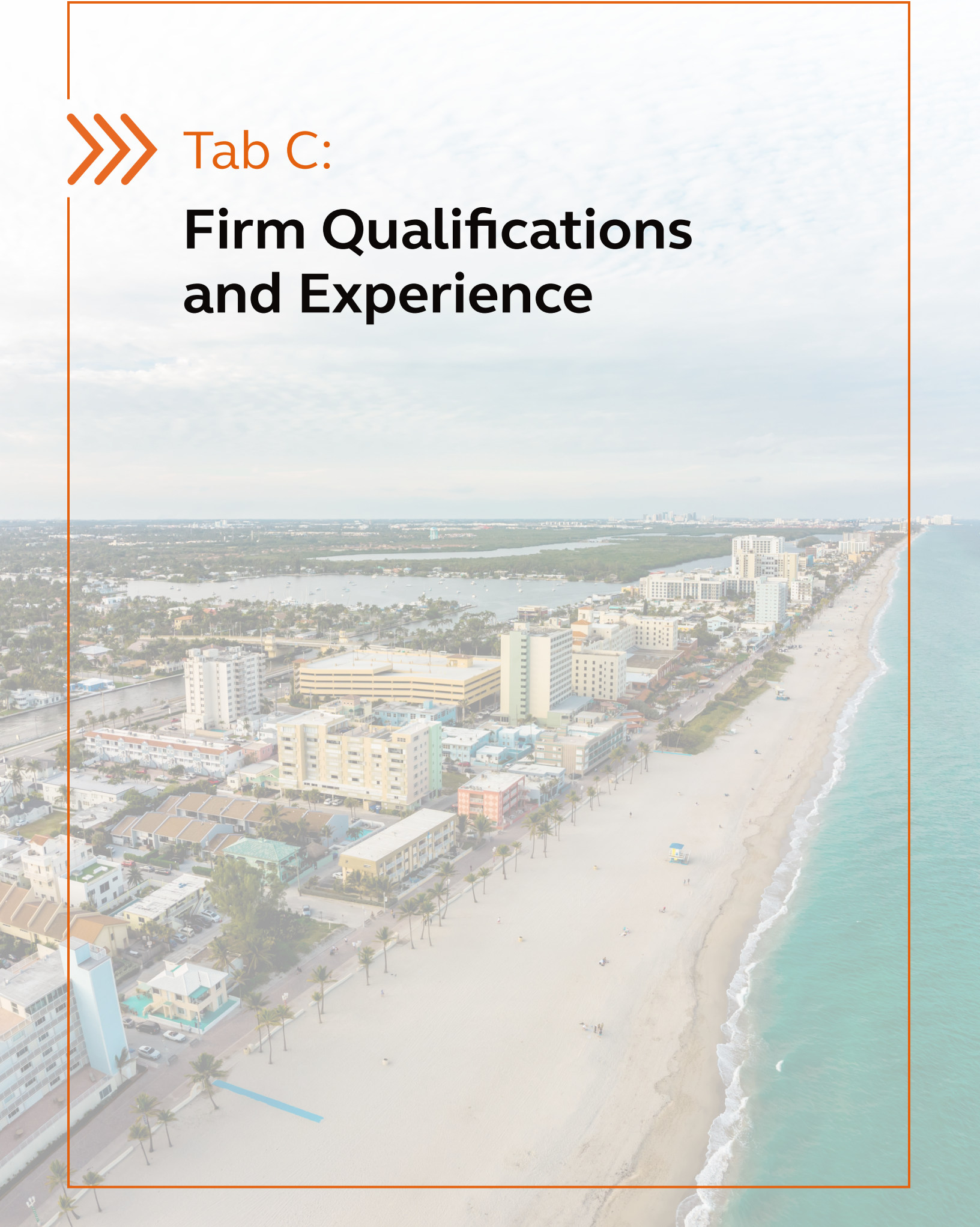






Tab C:

# Firm Qualifications and Experience





# Firm Qualifications and Experience

## Arcadis History and Background

Arcadis U.S., Inc. is a leading global, natural, and built asset design and consultancy firm working in partnership with our clients to deliver exceptional and sustainable outcomes through the application of design, consultancy, engineering, and project management services.

For more than 150 years, Arcadis has provided consultation services with a concentration in water, wastewater and the environment. We have been providing engineering and project management services across industries, including water and wastewater. Our team includes professionals that span the industry from all regions of the United States.

**We have a profound understanding of regional and local circumstances and we also offer the City of Hollywood the capabilities of a large, diversified firm.** Our staff are adept at solving the difficult issues that face public utilities today, including difficult rehabilitation projects, constrained budgets, future capacity needs, customer expectations, and tight schedules. We work with our clients to overcome these challenges. This experience, coupled with our local personnel and national experts, will bring fresh ideas to the City.

With more than 35,000 people worldwide, approximately 6,000 U.S. professionals and support personnel, and more than 270+ staff members among our eight Florida offices, Arcadis has the capacity to provide the resources necessary to meet your project’s objectives. **This contract will be managed from our office in Plantation, FL, which is less than a 20-minute drive from the City.**

Since our internal company founding in 1888, Arcadis has served as a trusted partner to communities worldwide, developing innovative ideas and solutions for some of the most complex problems and projects. With more than 120 offices across the United States, we have experienced staff working and residing near you – your community is our community and we are vested in the success of your projects.

Arcadis has 20 years of experience working with the City of Hollywood. Beginning in the early 2000’s, Arcadis has worked closely with the City in supporting its mission of delivering clean, safe drinking water to the City’s residents and customers. From locating and permitting of new Bisquane and Floridan wells to upgrading the WTP’s treatment to leverage advances in technology, Arcadis has helped the City navigate growth and continually updated regulations. As a leader in the water industry, Arcadis works closely with Federal and industry to help shape policy and anticipate future needs.

## Arcadis At-a-Glance

Over  
**6,000**  
U.S. employees

Working in  
**120+**  
offices across the U.S.

More than  
**\$4.2**  
billion in revenues

Over  
**35,000**  
team members  
worldwide

### Firm Ownership

Arcadis U.S., Inc., is owned 100% by Arcadis North America, Inc., a Colorado corporation

### Project Office

150 S. Pine Island, Suite 315, Plantation, FL 33324

### Corporate Headquarters

630 Plaza Drive, Highlands Ranch Colorado, CO 80129

### Contact Person

Leah K. Richter, PE

T: 954.525.2499

E: Leah.Richter@arcadis.com

### Organizational Structure

Arcadis U.S., Inc. is a corporation registered in the State of Delaware, and a subsidiary of Arcadis N.V., a Dutch company (founded in 1888).

In the last 5 years, the value of Contract Awards to Arcadis is approximately \$3,820,000. Recent successes and completed projects with the City includes:

1. Water System Master Planning through 2045 and beyond (to be completed in 2023)
2. Design and Construction for the HSPS upgrades
3. Pilot Testing and BODR development for MS/RO Facilities
4. WTP Filter Upgrades Evaluation
5. Four Log BODR and Pilot Testing (DBPs)
6. Four-Log Disinfection Upgrades (to be completed in 2023)
7. AWIA Risk and Resiliency Assessment and Emergency Response Planing
8. Hurricane and Emergency Electrical Outage Planning
9. ABPS Pump Station Upgrades (to be completed in 2023)
10. MIT Testing for IW-1
11. Hydraulic Modeling and System Calibration Updates
12. Condition Assessments of all Water Facilities assets
13. Condition Assessment of all linear assets



## 1. Wastewater Treatment

For many years, Arcadis has been a leader in developing solutions to difficult wastewater treatment problems. Our success stems from a thorough understanding of the physical, chemical, and biological characteristics of wastewaters combined with an in-depth knowledge of treatment processes that is essential to the successful design and operations of treatment facilities. Arcadis has evaluated and/or designed processes for a wide array of wastewater treatment systems including but not limited to sludge handling, nitrification, aerated lagoons, high purity oxygen activated sludge, biophysical activated sludge, trickling filters, chemical pretreatment, and oxidation, incineration, ammonia stripping, air stripping of organics, granular activated carbon, ion exchange, membrane filtration, and reverse osmosis.

Most of our projects involve work on existing facilities, which are more complex than a new design, because of the need to match existing construction and maintain flow and treatment during plant modifications. We developed considerable skill in completing this type of work, eliminating significant disruption to normal operations.

*In the past 10 years, Arcadis has completed more than 50 retrofit/upgrade projects nationwide.*

## Florida License

**State of Florida  
Department of State**

I certify from the records of this office that ARCADIS U.S., INC. is a Delaware corporation authorized to transact business in the State of Florida, qualified on February 26, 1998.

The document number of this corporation is F9800001104.

I further certify that said corporation has paid all fees due this office through December 31, 2022, that its most recent annual report/uniform business report was filed on January 18, 2022, and that its status is active.

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

*Given under my hand and the Great Seal of the State of Florida at Tallahassee, the Capital, this the Third day of June, 2022*

  
**Secretary of State**



Tracking Number: 6909654938CU

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

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

## Process Engineering and Detailed Design

Arcadis provides a broad range of diagnostic services for plant processes, with the overall objective of evaluating a facility, process, or piece of equipment to develop the lowest-cost solutions that will adequately address insufficiencies and preclude future problems. Our plant evaluation strategy typically includes innovative approaches to result in significant improvements without the need for major equipment replacement. Our hands-on experience often enables us to provide effective, low-cost design alternatives that not only reduce capital

In the past five years Arcadis has conducted more than 75 studies at treatment plants ranging in size from 0.75 mgd to 200 mgd including evaluation, design, and construction the new green field **Hamlin WRF** in Orange County, Florida.





construction costs but also allow a facility to meet more stringent regulations through operations enhancements. These operational evaluations often reveal additional capacity capabilities and can yield important information for design modifications to specific unit processes, resulting in an increase of overall plant capacity.

*In the past five years Arcadis has conducted more than 75 studies at treatment plants ranging in size from 0.75 mgd to 200 mgd.*

### Plant Operations

Increased regulatory pressure and inflation have made optimizing the operation of existing facilities essential. We have licensed operators on-staff who direct services including troubleshooting, equipment and operations evaluations, process training, energy supply and conservation, laboratory services, operations and maintenance, and process hazards analysis and risk management plan development.

We have experience in evaluating and solving a variety of operational problems such as hydraulic overloads, sludge bulking, solids handling issues, inadequate instrumentation and control, insufficient aeration, odors, equipment malfunctions, and clarifier short-circuiting. Our Project Manager for Wastewater, **Tim Ware, PE**, holds a Florida Wastewater Operator B License.

Arcadis also provides biosolid management and waste disposal services. **Arcadis has some of our industry’s leading experts that have envisioned and implemented biosolids management programs at the largest and most innovative utilities in the nation.**

## OUR EXPERIENCE IN THE LAST 10 YEARS

**100+**  
TREATMENT PLANT DESIGNS

**11.5 BILLION**  
GALLONS PER DAY

**25+**  
WASTEWATER MASTER PLANS

**\$5 BILLION**  
IN CAPITAL INVESTMENT

**50+**  
ASSET MANAGEMENT PROJECTS

**15+**  
WWTP HYDRAULIC & PROCESS CAPACITY EVALUATIONS

**5 BILLION**  
GALLONS PER DAY

**25+**  
LTCP PLANNING PROJECTS

### Wastewater Experience Matrix

Client and Project	Plant Size (mgd)								
		BNR	Tanks/Clarifier	Pump Systems	Solids	SCADA	Electrical	Design	Construction
Allegheny County Sanitary Authority: Woods Run WWTF Expansion / Pittsburgh, PA	600		✓	✓		✓	✓	✓	✓
Williamsport Sanitary Authority: Central Plant / Williamsport, PA	21	✓	✓	✓	✓	✓	✓	✓	✓
Williamsport Sanitary Authority: West Plant / Williamsport, PA	11	✓		✓	✓	✓	✓	✓	✓
The Metropolitan District: Hartford WPCF / Hartford, CT	90	✓	✓	✓	✓	✓	✓	✓	✓
City of Akron: Akron WRF / Akron, OH	220	✓	✓	✓		✓	✓	✓	✓
Arlington County: Arlington County WPCP / Arlington County, VA	40	✓	✓	✓		✓	✓	✓	✓
The Harrisburg Authority: BNR Study / Harrisburg, PA	37.7	✓						✓	
DC Water: Blue Plains WWTP / Washington, DC	370	✓	✓	✓	✓			✓	✓
Chesterfield County: Falling Creek WWTP Upgrades / Richmond, VA	10.1	✓	✓		✓	✓	✓	✓	✓
NYCDEP: Newtown Creek WWTP Upgrades and Biofilter Demo / Brooklyn, NY	310	✓	✓	✓	✓	✓	✓	✓	✓

Client and Project	Plant Size (mgd)	BNR	Tanks/Clarifier	Pump Systems	Solids	SCADA	Electrical	Design	Construction
NYCDEP: Wards Island WWTP / New York, NY	275	✓	✓	✓	✓	✓	✓	✓	✓
NYCDEP: Coney Island WWTP / New York, NY	110		✓	✓	✓	✓	✓	✓	✓
Northeast Ohio Regional Sewer District: Southerly WWTC Primary Treatment Improvements and CEPT / Cleveland, OH	400		✓	✓	✓	✓	✓	✓	✓
Monroe County: Northwest Quadrant WWTP / Monroe County, NY	22		✓		✓	✓	✓	✓	✓
Monroe County: Frank E. Van Lare WWRF / Monroe County, NY	135		✓	✓	✓	✓	✓	✓	✓
Philadelphia Water Department: Southeast WPCP / Philadelphia, PA	140		✓			✓	✓	✓	✓
Great Lakes Water Authority: Detroit WRRF / Detroit, MI	750		✓	✓		✓	✓	✓	✓
City of Ann Arbor: WWTP / Ann Arbor, MI	29.5		✓	✓	✓	✓	✓	✓	✓
Massachusetts Water Resource Authority: Deer Island Treatment Plant / Boston, MA	540		✓			✓	✓	✓	✓
Chesterfield County: Proctors Creek WWTP / Chesterfield County, VA	27.5		✓	✓	✓	✓	✓	✓	✓
Milwaukee Metropolitan Sewerage District: Jones Island WRF / Milwaukee, WI	300		✓			✓	✓	✓	✓
City of Phoenix: 91st Avenue WWTP / Phoenix, AZ	230	✓	✓	✓	✓	✓	✓	✓	✓
City of Phoenix: 23rd Avenue WWTP / Phoenix, AZ	57	✓	✓	✓	✓	✓	✓	✓	✓
City of Columbus: Southerly WWTP / Columbus, OH	440		✓	✓	✓	✓	✓	✓	✓
City of Columbus: Jackson Pike WWTP / Columbus, OH	70		✓	✓	✓	✓	✓	✓	✓
Howard County Bureau of Utilities: Little Patuxent Water Reclamation Facility / Howard County, MD	25	✓	✓	✓	✓	✓	✓	✓	✓
Harford County: Sod Run WWTP ENR Upgrades / Harford County, MD	20	✓	✓	✓	✓		✓	✓	✓
East Valley Water District: Sterling Natural Resource Center Progressive D-B / Highland, CA	8	✓	✓	✓	✓	✓	✓	✓	✓





Arcadis' WW practice is led by **Ifetayo Venner, PE**, who is also currently serving as the President for WEF. Under her leadership, our industry leading subject matter experts and supporting disciplines provide the full-suite of waste water evaluation, design, and construction while leveraging the latest technological innovations and delivery approaches. Our services include consideration for the whole project lifecycle that begins with early design thinking/visioning sessions through long-term operations:

1. Demand and Influent Water Quality Evaluations
2. Processing Modeling & Piloting
3. Headworks, Screenings, Grit Removal Processes
4. Primary/Secondary Treatment
5. Advanced Treatments
6. Alternative Disinfection & Chemicals Systems
7. Reuse and Effluent Disposal
8. Facility Support - Electrical and SCADA, HVAC, Building Automation
9. Operations/Optimization Evaluations
10. BIM, VR, AR and Digital Delivery

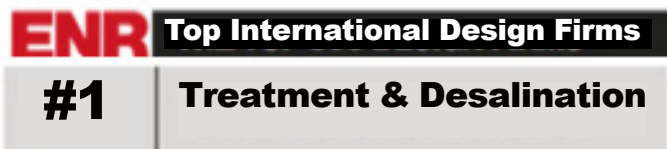


## 2. Water Supply and Treatment

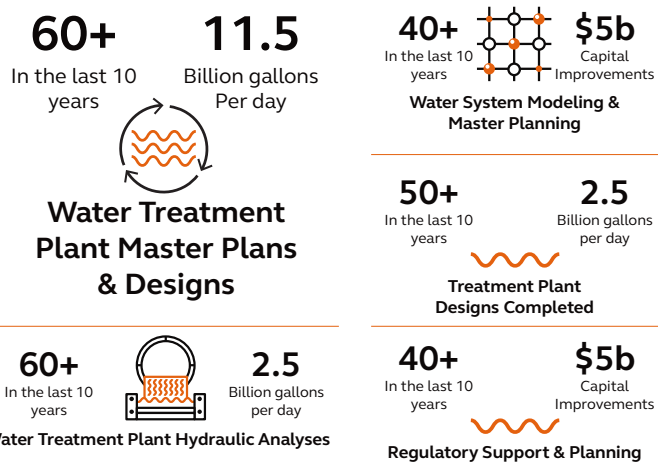
### Water Treatment

Arcadis provides a full range of drinking water consulting services – from investigations, planning, and feasibility studies, through design, permitting, and project implementation, construction, and start-up. Arcadis has been an industry leader in introducing innovation and advancing state-of-the-art of water treatment. Our past successes have included the pioneering of the use of new technologies to address increasingly stringent drinking water regulations in the face of rising public demand. **Throughout the past 5 years, Arcadis has worked on more than 400 drinking water projects for more than 150 municipal agencies.**

Our facility designs have incorporated intake structures, water transmission mains and tunnels, pumping stations, and treatment plants. Arcadis' projects include the design of water treatment, storage, transmission, and distribution facilities ranging in size from one to 1,800 mgd.



Arcadis is nationally recognized for the quality of our work in water supply and treatment engineering. We provide a comprehensive range of drinking water related services encompassing water supply system master planning, treatability studies involving both conventional treatment processes and innovative technologies, regulatory

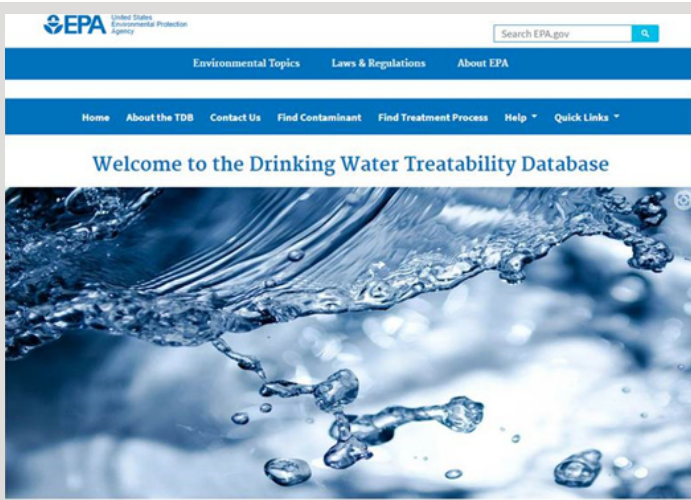


compliance assistance, pilot-scale demonstration of technologies; and evaluation, design, construction administration, operations and maintenance, startup assistance, and staff training services for all types of water facilities. We are confident that our experience will allow us to develop cost-effective, practical facilities that emphasize operability, dependability, and an ability to respond to both short-term changes in water quality and long-term changes in water quality regulations.

Arcadis' strong plant design experience gives us the capability to perform evaluations of existing facilities and provide conceptual, preliminary, and final designs for any new facilities that may be required in a water improvement program. Our treatment facility design experience includes the full array of water treatment facilities (including conventional treatment, ozonation, membranes, UV, GAC, desalination, emerging contaminants), pumping stations, residuals handling and disposal, water storage facilities, distribution systems, and groundwater supply. From awarding winning treatment projects such as the Carlsbad Desalination Plant to smaller City and County sized facilities such as the Frederick Water Membrane Treatment Plant, Arcadis national and local team is focused on one outcome: meeting our client's goals through innovative solutions and solving the challenges that are unique to your facilities and service area.



Carlsbad Desalination Plant (50 MGD) was design by Arcadis and 2017 ACEC National Grand Award Winner.



**PFAS UPDATE:** Arcadis developed the two initial stages of the USEPA Treatability Database (TDB). The TDB is an interactive database housed on a USEPA website that presents referenced information on the control of contaminants in drinking water. It provides users with current information on more than 30 treatment processes and over 120 regulated and unregulated contaminants, including 26 PFAS chemicals. The TDB can be used to identify effective drinking water treatment processes, to plan for future treatment plant upgrades, and to assist regulators in Best Available Technology and Contaminant Candidate List (CCL) decisions.

Our industry leading experience in evaluating drinking water taste and odor problems, screening treatment alternatives, and selecting the most appropriate and affordable treatment technology for a water utility's unique circumstances. Our services include assistance in conducting customer surveys and panel tests, identification of the origins of taste and odor problems, bench- and pilot-scale testing and cost estimating of treatment alternatives, testing of odor control equipment, and design of treatment systems and monitoring programs. Our Drinking Water Quality Expert, **Rebecca Slabaugh** and **Stephanie Bishop and Sean Chaparro**, recently completed bench scale testing to validate the feasibility of transition to 4-log disinfection with free chlorine and that doing so would not create a DBP concern with the distribution system.

**Rebecca Slabaugh is a nationally recognized expert in LCRR compliance.**

**Sean and Stephanie worked on a treatability database for various contaminants including PFAS.**

Our staff has experience with the variety of technologies and chemicals used to minimize or eliminate taste and odor problems, including:

- Advanced oxidation processes
- Chemical Scrubbers
- Biological filtration
- Ozone

- Granular and powdered activated carbon
- Potassium permanganate
- Chlorine dioxide
- Pipe coating

As part of the Master Planning 2045 for the City, Arcadis has completed the conceptual design and planning for over 25 projects that will ensure the City effectively upgrades aging facilities while it maintains the level of services to its customers.

Our team, led by **Celine Hyer**, recently completed a condition assessment of all the City's Water system assets, WTP performance evaluations, and risk scoring for all of the City's linear assets. The team understands the risk profiles for every asset and system in the WTP including raw water wells, lime softening, membranes to pumping stations and storage tanks in the distribution system. We have already started with conceptual design and implementing the replacements and rehabilitation needed to ensure the City's water assets can continue to reliably operate for 25 more years and beyond.



Membrane Piloting and BODR

In fact, our water membrane experts, **Michael Pilutti and Brent Alspach**, recently oversaw pilot testing for the City's MS Trains and validated the use of new cutting edge antiscalant and innovative membrane pairing. The result is the elimination of acid feed and improved membrane operating pressures. **These innovative applications will result in over \$300,000 annually for the City's O&M costs.**

Experience also includes membrane softening and microfiltration as alternatives to conventional treatment processes. Our ongoing Florida water treatment projects include work for the communities of Tampa, St. Petersburg, Hillsborough County, Lee County, and Tampa Bay Water.

### Water Supply and Disposal Wells

Arcadis is nationally recognized for the quality of our work in water supply and disposal wells. We provide a comprehensive range of drinking water related services encompassing water supply system master planning, performance of treatability studies involving





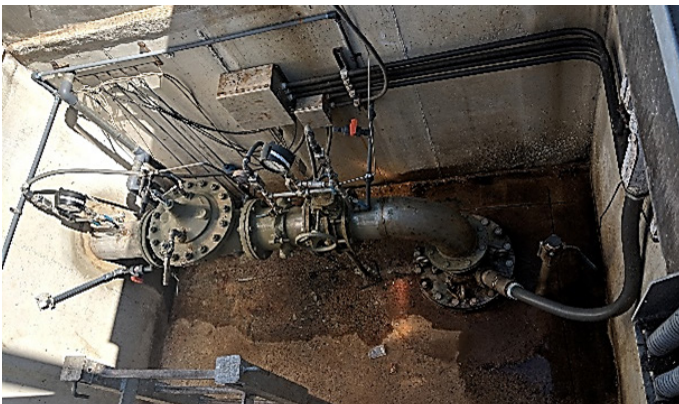
Spiractor and Filtration Feasibility Study

both conventional treatment processes and innovative technologies, regulatory compliance assistance; and evaluation, design, construction administration, operations and maintenance, startup assistance, and staff training services for all types of water facilities including treatment works, reservoirs, storage tanks, transmission mains, and pumping stations. We are confident that our experience will allow us to develop cost-effective, practical facilities that emphasize operability, dependability and an ability to react to both short-term changes in water quality and long-term changes in water quality regulations.

Our staff has designed both new and upgraded facilities for hundreds of water supply systems throughout the country. We recognize the unique nature of facility upgrades and the need to keep the facilities on-line throughout the construction phase.

Water supply is an issue many municipalities face on an annual basis. Whether it is satisfying Safe Drinking Water Act requirements, meeting peak summertime demands or protecting a supply from a source of contamination, we have experience in helping municipalities find solutions to these challenges:

- Supply/Demand Forecasts
- Resource Development/Protection



Raw Water Wells - Floridan Well Master Plan

- Permitting and Agency Coordination
- Ground Water Modeling
- Siting and Geohydrological Testing
- Design and Construction
- Transmission and Distribution Mains
- Sanitary Survey and MIT testing
- Water Treatment Waste Management (DIW)
- Reporting and Compliance

Our project team has specialized expertise in the areas of surface water supply, reservoirs, wellfield, water treatment, storage and pumping, development trends, and CIP planning. Arcadis and the WTP staff recently completed the 5-year MIT testing for IW-1 in December 2022.

### Finished Water Pump Stations

Arcadis has designed pump stations for all types of water supply facilities. Our projects include both the design of new facilities and the rehabilitation and/or expansion of existing facilities and encompass raw water pumps for both wells and surface water supplies. In addition, many of the filtration plants that we have designed include pumping facilities - some of significant size. We have designed numerous pump stations to boost pressure in



Hollywood WTP DIW



High-Service Pumping Station Completed in 2019

high-service zones to transport or distribute treated water to individual customers or districts, cities, and towns. We have provided expert assistance on virtually all types of pumping problems and developed solutions for problems associated with impeller wear, vibration, cavitation, and water hammer.

**Storage Systems**



Arcadis has provided engineering services for hundreds of water storage facilities in sizes up to 6+ billion gallons. We have evaluated, designed, and implemented reservoirs, prestressed concrete reservoir covers, floating covers, prestressed and cast-in-place concrete tanks, elevated and ground-level steel tanks, clearwells, and treatment facilities for storage systems. All of our water distribution analyses, whether for small communities or large municipalities, address the concerns associated with water storage facilities. Our water storage evaluations

encompass variables such as multiple vs. single tanks, baffling options, construction materials and coatings, construction sequencing, hydraulic balancing, capital costs, long-term operations and maintenance (O&M), climate and soil conditions, public sentiment and aesthetics. These evaluations form the basis for the design of facilities that meet peak demand and emergency service requirements at minimum cost while maintaining sensitivity to the community and environment through carefully planned architectural design.



**Relevant Regulatory Development Experience**

Role	Literature Review	Bench- and Pilot-scale Studies	Technology and Cost Document	Guidance Manual(s)	Federal Advisory Committee	Technical Working Group	AWWA Support
Stage 1 Disinfectants and Disinfection Byproducts Rule	✓	✓	✓	✓	✓	✓	✓
Stage 2 Disinfectants and Disinfection Byproducts Rule	✓		✓	✓	✓	✓	✓
Arsenic Rule	✓		✓			✓	✓
Radionuclides Rules	✓		✓				
Lead and Copper Rule	✓			✓			✓
Lead and Copper Rule Revisions	✓	✓	✓	✓		✓	✓
Revised Total Coliform Rule	✓		✓			✓	
Groundwater Rule	✓		✓				
Atrazine	✓						
Unregulated Contaminants Monitoring Rule / Candidate Contaminant List	✓				✓	✓	✓



Similar Water Treatment Plant Planning & Design Experience	Softening	Membranes	Chemical Systems	Hydrogen Sulfide Treatment	Water Supply Evaluation	Planning	Process Optimization	Regulatory Support	Design
City of Hollywood, FL	✓	✓	✓	✓	✓	✓	✓	✓	✓
Broward County Water and Wastewater Services, FL						✓	✓	✓	✓
City of Sunrise, FL					✓		✓	✓	✓
Miami-Dade Water and Sewer Department, FL						✓		✓	
Charlotte County, FL	✓	✓				✓		✓	✓
City of Venice, FL				✓		✓	✓		
Tallahassee, FL						✓			
Tampa Bay Water, FL						✓	✓	✓	✓
Jackson County Utility Authority, MS		✓				✓		✓	✓
City of Wheeling, WV		✓				✓		✓	✓
City of Sugar Land, TX		✓				✓		✓	✓
El Paso Water Utilities, TX		✓				✓		✓	
Fort Bend County Water Control and Improvement District No. 2, TX		✓				✓		✓	✓
Guadalupe Blanco River Authority, TX		✓				✓		✓	✓
Pecan Grove Municipal Utility District, TX		✓				✓		✓	✓
San Patricio Municipal Water District, TX		✓				✓		✓	✓
City of Scottsdale, AZ		✓				✓		✓	✓
City of Elkhart, IN					✓	✓		✓	✓
City of Fort Wayne, IN	✓		✓	✓	✓	✓	✓	✓	✓
City of South Bend, IN			✓		✓	✓	✓	✓	✓
City of Bay City, MI	✓				✓	✓	✓	✓	
City of Minneapolis, MN									
Liberty, MO	✓					✓	✓	✓	
City of Grand Forks, ND	✓					✓			
Butler County, OH	✓					✓			
City of Columbus, OH	✓		✓		✓	✓		✓	✓
City of Dayton, OH	✓				✓	✓			✓
City of Delaware, OH	✓	✓				✓		✓	
City of Delphos, OH	✓		✓		✓	✓		✓	✓
City of Fairborn, OH	✓	✓			✓	✓		✓	
City of Findlay, OH	✓		✓			✓		✓	✓
City of Harrison, OH		✓				✓			
City of Lancaster, OH						✓			
City of Lebanon, OH						✓			
City of Oregon, OH	✓		✓			✓	✓	✓	✓
City of Marysville, OH	✓					✓	✓	✓	
City of Mason, OH	✓					✓			
City of Miamisburg, OH	✓	✓				✓		✓	✓
City of Newark, OH	✓					✓		✓	
City of Toledo, OH	✓		✓			✓	✓	✓	✓
City of West Carrollton, OH	✓	✓							
City of Westerville, OH	✓							✓	
Columbiana, OH	✓								✓
Del-Co Water Company, OH	✓		✓			✓		✓	✓
Greene County, OH	✓	✓			✓	✓		✓	✓
Huber Heights, OH	✓	✓				✓			
Warren County, OH	✓	✓				✓		✓	✓
Wausen, OH	✓					✓	✓	✓	
Chino Basin Desalter Authority, CA		✓				✓		✓	✓
City of Santa Monica, CA		✓				✓		✓	✓
Poseidon Water, CA		✓				✓		✓	✓
San Diego County Water Authority, CA		✓				✓			
Consolidated Mutual Water Company, CO		✓				✓		✓	✓
Saratoga County, NY		✓				✓		✓	✓



## 3. Infrastructure

### Water and Reclaimed Water Transmission and Distribution Pipelines

Arcadis engineers have evaluated, designed, and provided construction administration services for a variety of pipelines for the transmission of water from supply sources to treatment plants and the distribution of water to consumers. We perform pipeline repair/rehabilitation as well as design and installation of new pipelines based on each community's existing systems and specific needs.

Types of transmission lines that our engineers have designed include open channels; covered conduits; and cast iron, ductile iron, steel, reinforced concrete, asbestos cement, polyvinyl chloride (PVC), and polyethylene pipe. Pipelines ranging in length from a few hundred feet to over 40 miles and in diameters ranging from 4 to 98 inches have been designed and installed under our direction.

We have designed distribution systems of various sizes to serve diverse community water supply customers. Our pipeline design studies have included detailed consideration of delivered capacity required, working pressure, required surge protection, air release and vacuum, allowable loss of head, pipe grade, location, soil conditions, trench bedding, depth of cover, characteristics of water, and materials of construction. We perform water distribution analyses using programs that produce solutions to hydraulic equations for head losses in any system of connected pipes with or without source pumps (parallel and series operation), booster pumps (parallel and series operation), reservoirs or tanks, minor loss devices, pressure regulators (pressure reducing valves), nozzles and check valves.

### Water Pump Stations

Arcadis has designed pump stations for all types of water supply facilities. Our projects include both the design of new facilities and the rehabilitation and/or expansion of existing facilities and encompass raw water pumps for both wells and surface water supplies. In addition, many of the filtration plants that we have designed include pumping facilities - some of significant size. We have designed numerous pump stations to boost pressure in high-service zones to transport or distribute treated water to individual customers or districts, cities, and towns. We have provided expert assistance on virtually all types of pumping problems and developed solutions for problems associated with impeller wear, vibration, cavitation, and water hammer.

### Wastewater Collection

Arcadis and its predecessor organizations have been involved in the evaluation, planning, design, and construction of collection and conveyance systems for over 100 years. Our engineers have provided these services to a wide range of municipal, industrial, and private clients, developing new or replacement systems as well as evaluating and upgrading existing systems. Our range of services related to wastewater collection systems includes:

- Condition assessments and analysis; risk-based R&R prioritization
- Studies of sewer systems to quantify infiltration and inflow (I/I), eliminate bypasses and increase hydraulic capacity
- Studies of separate sanitary sewer overflows (SSOs) and their impacts on water quality
- Capacity, condition, and operation and maintenance (O&M) assessments to achieve efficient and effective collection system performance

### City of Hollywood Water Treatment Plant High Services Pump Station Upgrades Design and Construction Management Services



The City of Hollywood (City) Water Treatment Plant is the only source of potable water within its service area and, consequently, the high service pump station at the plant is a crucial element of the City's water system. The WTP has 10 high service pumps located in two different buildings - four are installed in the Aeration Building and the other six are located in the High Service Pump Station building. Arcadis evaluated the current pump array, and analyze demands and pumping capacity and prepared plans and specifications to upgrade the high service pump station - specifically replacing existing pumps and associated systems with state-of-the-art equipment to provide sufficient pumping capacity and high performance over the next 50 years. We also led the Construction Management activities during construction.



- Facility planning for the rehabilitation, upgrading, and expansion of wastewater collection systems in urban areas, or for the construction of new systems in unsewered areas
- Odor investigations and design of odor abatement programs for wastewater collection systems
- Pipeline routing studies and environmental assessments for new sewer systems
- Design, environmental monitoring, and construction phase services for new and rehabilitated trunk sewers, force mains, interceptors, and pump stations
- Development and implementation of asset management programs

### Pump Stations in Collection Systems

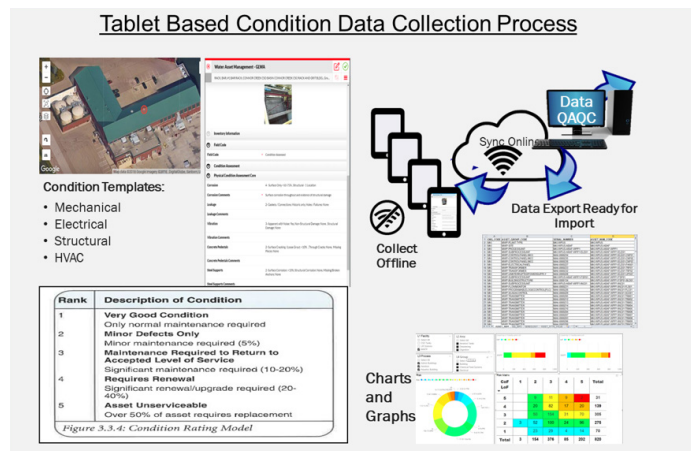
Arcadis has a long history of experience in the design of new wastewater pump stations and the upgrade of existing pump stations ranging in capacity from less than 0.5 mgd to over one billion gallons per day. Our projects have encompassed stormwater and sludge pumping facilities, lift stations, and influent and effluent pump stations. Our pump discharge designs have covered the full range of discharge scenarios including common headers, multiple headers, rivers of varying elevation, and ocean outfalls. Through our value engineering approach, we are able to provide our clients with designs that meet their needs while achieving the goal of minimizing construction and O&M costs.

Upgrading existing pump stations requires a special design approach because of the need to work within existing building/site constraints and to maintain continuous operation of the station during construction. We have developed the necessary skills to complete this type of work with minimal disruption to normal operations. In both new and upgraded facilities, our involvement continues beyond the planning, design, and construction stages to include configuration of computerized monitoring and control systems, startup guidance, assistance with operations, and staff training.

In designing the layout of pump stations and in configuring piping systems, trunk lines, force mains, and support systems, our engineers give consideration to the need for future expansion. Durability and reliability also are major considerations. We give particular attention to specifying materials and equipment that will give long life and require low maintenance.

### Business Advisory and Utility Management

Our Global Management Consulting Practice, which leads Arcadis' Business Advisory practice, is a dedicated global team of over 2,000+ consultants that provide management and advisory services globally, across multiple industries. We bring a business mindset to the asset intensive industries we serve and craft effective and sustainable solutions to improve business performance. We deliver hundreds of projects annually in Florida, for clients that



include: City of Hollywood, Miami-Dade Water and Sewer Department, water and sewer authorities and utilities, counties and local governments, and private industries. Arcadis is one of the preeminent Water Management Consulting firms in the country. We bring a range of consulting and technology experience to help our clients meet their strategic planning and management goals.

### Asset Management

Arcadis leads the implementation of comprehensive asset management programs across the globe leveraging frameworks such as ISO 55000. We have extensive expertise applying asset management techniques and strategies for well over 50 municipal clients across the U.S., including some of the largest water utilities and seven utilities right here in Florida.

We address all aspects of asset management, aligning business strategy with asset performance, implementing a

total expenditure approach, leveraging the most advanced tools throughout the asset lifecycle, and paying strong attention to organizational change management and organizational adoption

## Funding and Grant Management

We offer a proactive and innovative approach to funding and grant management that ensures proper expenditure of funding. Arcadis assists our state-level clients with the management of both state and federal pass-through grant funding, as well as with the application, management, and reporting of SRF loans. Grant management activities include technical assistance, eligibility reviews, project reporting and monitoring, processing agreements, requests for reimbursements, maintenance of records, and project/program closeouts. Arcadis is committed to helping our clients continually improve programs and processes. We offer methods to improve efficiency and effectiveness of state-level grant programs through the development of standard operating procedures. Over the past 10 years we have secured more than \$5 billion in federal grant and programmatic funding for stormwater, water, and wastewater projects.

*Arcadis recently assisted WASD staff in developing the applications and successfully obtaining two FEMA Hazard Mitigation Program grants for necessary improvements to several critical pump stations in the system, totaling more than \$35M.*

## Master Plans, Strategic Planning and Performance

Arcadis helps clients develop and implement strategic plans that ensure the assets and processes of your organization perform strongly. We have been leading the integration of digital innovation into business strategies to enable organizations of the future.

## Digital Consulting

The digital age has seen the business world transform beyond recognition. Arcadis is leading the application of digital breakthroughs and rapidly changing complexities to help our clients harness the performance of technological shifts. We are helping our clients leverage new ways to use technology and share information, including the implementation of enterprise-wide business intelligence tools, advanced analytics, enhanced sensors, new service delivery models, and an improved user experience.



## Financial Advisory and Rate Assessments

Arcadis routinely completes financial advisory engagements to support municipal utilities as part of their ongoing financial planning processes to meet revenue requirements, maintain competitive levels of service, manage debt, verify that rates and fees will meet the utility's pricing objectives, and address challenges such as affordability.

We serve as bond/consulting engineer to various utilities in Florida and across the U.S., supporting our clients meet agreements with bondholders and bond ordinances, and secure funding.

## Construction Administration & Management

A leader in providing construction management (CM), and Construction Engineering and Inspection CEI services, Arcadis successfully manages multiple on-call CM contracts for utilities around the nation. Our construction personnel and professionals include construction managers, inspectors, engineers, CPM schedulers, cost estimators, certified value engineering specialists, commissioning agents, claims specialists and LEED Accredited Professionals. Our Water CM practice specializes in the delivery of public utility infrastructure projects, including water/wastewater treatment, distribution, and collection. Arcadis will bring best practices gleaned from our extensive project and CM experience, delivering innovative solutions in close collaboration with City staff. We know the importance of planning, coordinating, and communicating with operations and maintenance staff so plant and collection and distribution systems continue to operate safely and reliably during construction.

As Construction Managers, we optimize cost, improve operability, improve the plans and specifications to obtain competitive bids and assure quality construction. Arcadis has extensive experience in the construction management of municipal utility projects and are well suited to meet your CM needs throughout this contract. This includes owners who desire to implement projects through alternative approaches such as design-build, design-build-operate, CM- at-Risk and Public Private Partnerships. We are well-suited to evaluate the advantages and disadvantages of the various delivery methods to assist the City in selecting the delivery approach that best meets your drivers for a project. Once selected, we can help you manage the implementation of the selected approach.



## Similar Project Experience

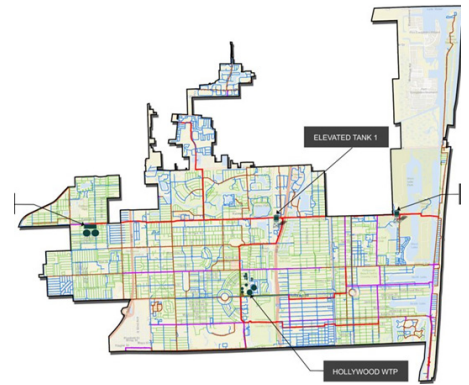
Arcadis brings a team of local and national expertise with extensive experience, knowledge and proven technical skills in the areas required by the County, specifically under the Water, Wastewater and Infrastructure categories. We are showcasing in the following pages a few recent project descriptions to illustrate our experience.

# Water Master Plan

## City of Hollywood, Florida

The City's current service area population is approximately 200,500 and is expected to grow modestly to 228,100 through 2040. The City's Department of Public Utilities operates or has service agreements for approximately 22 raw water wells (e.g., 14 Biscayne Aquifer wells and eight Floridan aquifer wells). At the WTP, the City currently treats an average 24.5 million gallons day (MGD) through the lime softening, membrane softening, or reverse osmosis processes prior to blending, storage and pumping into the distribution system. The distribution system includes approximately 700 miles of water main piping with diameters ranging from 2-in to 30-in diameter that are connected to two 1.0 million gallon (MG) elevated tanks and a booster station, the West Hollywood Pumping and Storage Facility (WHPS).

The City selected Arcadis U.S., Inc. to furnish professional engineering services for development the Water Master Plan that includes assessing the current condition and remaining useful life of the water system assets, understand the growth and needs for new assets, and then prioritizing projects that address aging infrastructure, consider climate change and sea level rise, improve reliability of service, enhance operational efficiencies, and provide for process optimization. The results of the evaluations and conceptual designs will be compiled into a comprehensive 20-year, "living" Water Master Plan that allows for seamless integration into City's Assets Management system and GIS allowing the City to routinely and dynamically revisit CIP projects risks and drivers into the future.



### Client

City of Hollywood

### Firm's Role

Prime

### Fee

\$1,265,885

### Contract Term

March 2021 - Ongoing

### Key Staff

Leah Richter  
 Tim Ware  
 Sean Chaparro  
 Joan Fernandez  
 Rebecca Slabaugh  
 Celine Hyer  
 Michael Pilutti  
 Brent Alspach  
 Lauren DaCunha  
 Stephanie Bishop  
 James Cooper  
 Chris Waters  
 Nhi Ngo

## EXTENSIVE KNOWLEDGE OF YOUR MOST VALUABLE ASSET



**We Understand the Unique Challenges at the WTP**

# General Consulting Services/On-Call

## City of Hollywood, Florida

Arcadis has been serving the City for nearly 20 years. Since the last Water Master Plan was developed in 2007, multiple facilities plan updates have occurred to address the needs at the WTP. Under the General Consultant Services Contract, Arcadis provides design, evaluation, and construction support for planned and emergent needs. A few recent projects include the following:

### WTP High Services Pump Station Upgrades Design and Construction Management Services

Arcadis U.S., Inc. (Consultant) evaluated the current pump array, and analyzed demands and pumping capacity and prepared plans and specifications to upgrade the high service pump station – specifically replacing existing pumps and associated systems with state-of-the-art equipment that will provide sufficient pumping capacity and high performance over the next 50 years. The design included six equally sized horizontal split case pumps each with a capacity of 8,000 gpm at 150-ft TDH each and two 12,000 gpm backwash pumps. The plans and specifications include:

Arcadis also provided Construction Management and Inspection services during the construction activities.

**Fees: \$253,400**

### AWIA Risk and Resilience Assessment (RRA) and AWIA Emergency Response Plan (ERP)

Since 9/11, the United States Federal Government, the American Water Works Association (AWWA), and water utilities across the nation have worked together to protect the approximately 153,000 public drinking water systems

in the United States. America’s Water Infrastructure Act of 2018 (AWIA) mandates that water systems serving over 3,300 people must conduct an assessment of the risks to, and resilience of, its water system.

Arcadis assisted the City of Hollywood in carrying out the RRA to comply with AWIA requirements. The performed tasks included:

- Asset Characterization and Threat Characterization
- Consequence Analysis and Vulnerability Analysis
- Threat Likelihood Analysis
- Cyber Risk/Business Continuity and Finance Resilience Assessment
- Risk and Resilience Analysis
- Risk and Resilience Management
- Risk Assessment and Recommendations Report: Arcadis prepared draft and final risk assessment findings and recommendations summarized in the form of a report.

**Fees: \$84,040**

Following the completion of the RRA, Arcadis worked in close collaboration with the City of Hollywood to develop an ERP and comply with all requirements of AWIA. Arcadis led multiple interviews and conversations with stakeholders to develop the ERP components outlined above. Interviews were conducted to capture information relating to emergency management, operations and maintenance, procurement, public information and communications, and other key ERP elements. Arcadis worked with local emergency management agencies and engaged a large team of City of Hollywood staff



#### Client

City of Hollywood

#### Firm’s Role

Prime

#### Fee

Fees included under each description

#### Contract Term

Ongoing

#### Key Staff

Leah Richter  
 Sean Chaparro  
 Joan Fernandez  
 Michael Pilutti  
 Brent Alspach  
 Rebecca Slabaugh  
 Stephanie Bishop  
 Chris Waters  
 Lauren DaCunha  
 Celine Hyer  
 Dan Garcia  
 Sam Hobi  
 Jason Carter



Continued | City of Hollywood: General Consulting Services/On-Call



designed to produce two million gallons per day (MGD) of permeate while operating at 90% recovery. Due to the age and performance of the system, the City has a critical need to replace the MS system to improve system reliability and to meet treatment objectives and selected Arcadis to furnish professional engineering services for the project management, preliminary design, final design, permitting, and bidding phase services for the following:

- Train C – Removal of the existing 3-stage array and replacement with a new 2-stage array with a permeate capacity of 2.0 MGD
- New Booster Pump with variable frequency drive (VFD) for the MS skid
- New Sample Stations and instrumentation
- Associated electrical and instrumentation for new equipment
- Connection of the MS array to the existing feed, permeate, and concentrate headers including valves.
- Connection of the MS array to the existing clean in place (CIP) headers including valves.

As part of the design, Arcadis also performed a pilot testing concurrently with the design development, in order to validate model outputs for membrane selection and to optimize the performance of the replacement system. The pilot study also tested operations and fouling control without the use of acid feed to reduce future operating expenses for the plant by \$300,000 per year.

**Fees: \$396,039**

across different departments to align the City’s ERP with local, state, federal, and industry standards.

**Fees: \$84,040**

**Four Log BODR and Design**

The City selected Arcadis to complete the basis of engineering report (BODR) and the final design for the required water treatment plant (WTP) upgrades to implement the four-log disinfection. As part of this work, Arcadis completed the following services:

- Conceptual design for WTP upgrades including rehab and upgrades of chemical system upgrades
- Tank inspections for all sodium hypochlorite tanks
- Condition assessment of pumps and injectors
- Bench testing for disinfection by-products formation
- Underground utility survey
- Development of final design and construction bidding documents

**Fee: \$97,496 (BODR), \$372,679 (Final Design)**

**WTP Filter Upgrades Evaluation**

The City currently treats raw water from multiple wellfields in the Biscayne and Floridan aquifers using three major treatment processes which are lime softening (LS), membrane softening (MS), and reverse osmosis (RO). The treated water is blended, disinfected, and pumped into the service area. The LS system was originally constructed in 1967 with additional treatment capacity added in phases as the WTP was expanded. Arcadis evaluated the condition of the WTP’s 12 existing steel vessel filters (also referred to Automatic Valveless Gravity Filters (AVGFs) or self-backwashing filters) and assess the feasibility of replacement of the filters (in-kind) and ensuring equipment is still readily available. **Fees: \$72,850**

**MS Building Pilot Testing**

The City currently operates seven membrane softening (MS) trains that soften Biscayne aquifer water using nanofiltration (NF) membrane elements. Each membrane array consists of a 32:16:6 3-stage array,

# General Engineering Services

City of Tavares, Florida

Arcadis has provided as-needed engineering services for a variety of projects for the City of Tavares.

## Lift Station 49 Improvements

The City of Tavares retained Arcadis to perform a hydraulic assessment of the wastewater service area of Lift Station 49 which experienced considerable growth. LS 49 previously discharged wastewater into an existing 10-inch gravity sewer main along Mount Homer Road. The City was concerned with potential surcharging of the gravity system.

As a result of the hydraulic assessment of the service area, the recommendation was to relocate the wastewater from LF 49 into an existing 12-inch force main. In addition, Arcadis was retained to extend approximately 1,200 ft of 12-inch water main in the vicinity of LS 49.

Services provided by Arcadis included hydraulic modeling/calculations, facility planning, preliminary engineering, final design, permitting, funding assistance and administration, services during construction and startup assistance. **Fees: \$182,888**

## Lake Hermosa Region Potable Water System Facility Plan

Arcadis will prepare the Facility Plan required to apply for a low interest design loan under the State Revolving Funds program to implement the potable water system improvements needed to supply water to the Lake Hermosa Region. Potable water system improvements include a new packaged booster pump station, ground storage tanks, and water main to improve distribution system pressures and provide the necessary fire protection storage and pressure to the Lake Hermosa Region. **Fees: \$20,662**

## Lake Hermosa Water and Sewer Design

Detailed design, bidding and construction administration services to extend water systems to serve new and existing developments near Lake Hermosa. Water system developments include a new booster pump station/ground storage tank and installation of about 5,000 LF of new water main. **Fees: \$241,751**

## Funding Admin & Compliance for Downtown CRA Stormwater Improvement Project

Compliance for the various (SRF, etc.) programs funding the downtown CRA projects. **Fees: \$413,419**

## Downtown CRA Stormwater Improvements CA Services

Arcadis will provide construction administration services for the Downtown Community Redevelopment Area (CRA) AREA A Stormwater Treatment Improvements (AREA A SWTI). AREA A SWTI includes: converting wetland areas into a stormwater treatment pond; interceptor piping to the stormwater treatment pond along Ruby Street; and stormwater control structures with overflow outfall piping from Ruby Street to Lake Dora. **Fees: \$769,885**



### Client

City of Tavares

### Firm's Role

Prime

### Fee

Fees Included Under Each Description

### Contract Term

2012 - Ongoing

### Key Staff

Tim Ware  
Sean Chaparro  
Melissa Pomales  
Saurabh Srivastava  
Stephanie Bishop  
Nhi Ngo



# Engineering & Professional Consulting Services

## City of Venice, Florida

Arcadis has maintained an engineering and professional consulting services contract with the City of Venice (City) since 2005, under which it has successfully completed a number of services at both the 4.32 million gallon per day (mgd) Reverse Osmosis (RO) water treatment plant (WTP) and 6 mgd Eastside Advanced Wastewater Treatment Facility (AWWTF). To date, we have received approximately 19 task orders under this contract. Some of our tasks include:

**Water Master Plan:** Arcadis developed a comprehensive water master plan and 20-year Capital Improvement Plan (CIP). The project included an assessment of raw water supply, and treatment and distribution system needs (including creating and calibrating a distribution system hydraulic model). The resulting recommendations were prioritized and developed into a 20-year CIP. **Fee: 121,150.**

**Reverse Osmosis Water Treatment Plant Feasibility Study:** Arcadis conducted an assessment of the WTP to identify RO and WTP rehabilitation and renewal (R&R) project needs, including determination of the best approach for delivering the identified projects (e.g., design-build, design-bid-build, etc.). The evaluation included the pumps, electrical and controls

systems, treatment process, standby power, chemical feed systems and odor control system. **Fee: 148,200.**

**Structural Assessment:** Arcadis completed a structural condition assessment of the clearwells at the RO WTP to identify areas of concern in the exterior and interior of the clearwell, as well as the membrane roofing system to be repaired. Arcadis developed the repair recommendations and will develop bid documents for implementation of recommended repair work. **Fee: 23,180.**

**Pinebrook Booster Station:** Arcadis evaluated the City's Pinebrook Water Booster Station to improve control, reduce pressure variations within the City's distribution system and allow for the automatic operation of the station. Arcadis reviewed a variety of options to improve system operation recommending the addition of a second booster station with aboveground storage at the opposite side of the City's system to balance pressures and flows. **Fee: 69,3741.**

**Eastside WRF Permit Renewal:** Arcadis provided engineering services required to obtain a renewal of the operating permit for the Eastside Water Reclamation Facility. As part of this work, Arcadis prepared and gathered the necessary data and reports for the permit renewal, and prepared and submitted the required FDEP permit renewal application forms. **Fee: 50,994.**



### Client

City of Venice

### Firm's Role

Prime

### Fee

Fees included under each description

### Contract Term

Ongoing

### Key Staff

Sean Chaparro  
Ifetayo Venner  
Lauren DaCunha  
Stephanie Bishop  
Tina Nixon

# Continuing Professional Architectural and Engineering Services

## City of Hallandale Beach, Florida

Arcadis has been serving Hallandale Beach Public Works for nearly 20 years. Our current Professional Engineering Services Contract was recently renewed in 2022. Some of the task orders that Arcadis has completed to date include:

### Lift Station No. 6 Rehabilitation Engineering, Services During Construction and Post Construction Services

Wastewater is collected throughout the City and pumped by wastewater lift stations to the City of Hollywood's sanitary sewer system. The condition of the wastewater transmission and collection system was recently assessed to identify areas of deficiency and/or infrastructure that is approaching the end of its useful life.

With the existing lift station structure past the end of its service life, it is recommended that the station be rebuilt to meet current and future demand per client requirements.

This includes to furnish design, permitting coordination, bidding, support, and services during construction (SDC) for the rehabilitation of Lift Station No. 6.

Total budgeted cost: \$384,600.  
Duration: July 2021 – Ongoing.

### Telemetry System Engineering Services City of Hallandale Beach Public Works

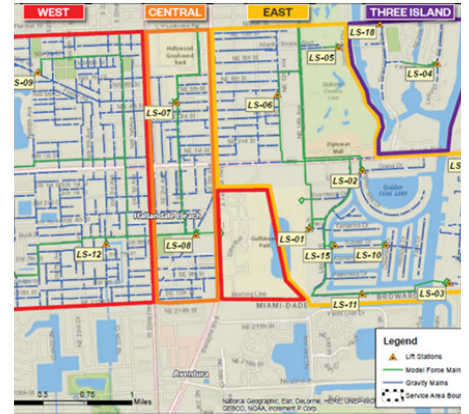
The City owns and operates twenty-six (26) remote sites that comprise of water, wastewater, and storm water facilities. These are unmanned facilities monitored and controlled remotely from the City's water treatment plant, using radio telemetry system. The water system consists of three (3) wells with raw water pumps and one (1) elevated tank. The wastewater system consists of fifteen (15) lift stations in the collection system. The storm water management system consists of seven (7) remote sites that include pump stations and gate structures.

This task includes performing design, inspection, PLC programming, HMI configuration, and startup services for the twenty (20) remote sites and the SCADA at the water treatment plant.

Total budgeted cost: \$199,700.00.  
Duration: August 2021 – Ongoing.

“ Arcadis has always provided exceptional service, and highly professional staff to assist our needs. Would highly recommend. ”

Peter Kunen, PE, Asst. Director PW/City Engineer, City of Hallandale Beach



#### Client

Hallandale Beach Public Works

#### Firm's Role

Prime

#### Fee

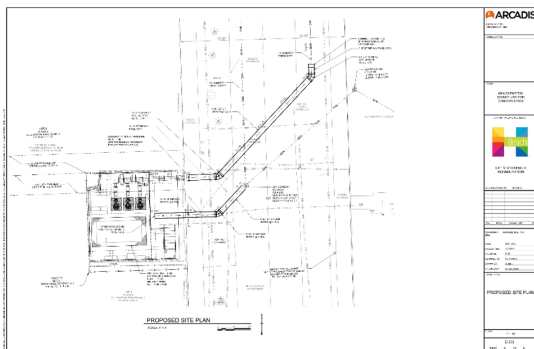
Fees included under each description

#### Contract Term

August 2021 - Ongoing

#### Key Staff

- Leah Richter
- Dan Garcia
- Seth Grimes
- Chris Waters
- Lauren DaCunha
- Nhi Ngo
- Sam Hobi
- Brian Duane
- Chris Matthews
- Eric Battle
- Ninad Deshpande
- Blood Hound (SUE)





# Engineering Services, Water Resources Engineering, Water/Wastewater Services

## City of Tallahassee, Florida

Arcadis has maintained an engineering and professional consulting services contract with the City of Tallahassee (City) for over 15 years, under which it has successfully completed a number of services for both their potable and wastewater treatment systems. Arcadis' long history and proven experience with the City have resulted in a profound relationship with utility staff and intimate knowledge of the City's needs and priorities. Some of our tasks completed under our as-needed engineering services contract include:

**Water Master Plan Update and Hydraulic Modeling.** Completed the City's Water Master Plan. Developed an all-pipes model (InfoWater) for the City, updated demand projections, developed and evaluated expansion alternatives to meet future growth, prepared a downtown infrastructure replacement program, and prepared a 20-year capital improvement plan to meet the City's future water needs. **Fee: \$157,024**

**Well 26 Water Treatment Operational Evaluation.** Well 26 is 4 mgd groundwater treatment plant consisting of chlorination and greensand filtration. Despite treatment, the City still occasionally experienced red water in the area served by this WTP. Arcadis evaluated facility operations and made operational recommendations to reduce hydraulic surges through the WTP and address potential seeding of iron bacteria in the water distribution system. **Fee: \$45,173**

**Well 23 Rehabilitation and Treatment Alternatives Evaluation.** Well 23 is a 4 mgd well which has been losing production capacity. Arcadis developed a well rehabilitation strategy (combination of mechanical and chemical cleaning) to restore well

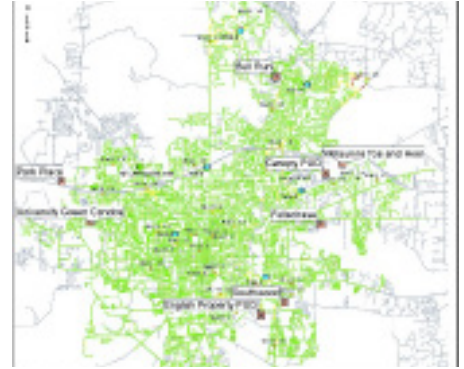
production capacity and evaluated treatment alternatives to address iron and manganese in the local groundwater. Arcadis also provided oversight of the well rehabilitation contractor. **Fee: \$373,536**

**Well 23 Pilot Study and Treatment Design.** Based on the results of the treatment alternatives evaluation, Arcadis conducted a greensand pilot study to refine the recommended Well 23 WTP design. **Fee: \$13,038**

**Water Distribution System Valve Exercise Program.** Arcadis evaluated the City's current water distribution valve exercise program and compared it to best practices for similar sized utilities. Because of the evaluation, the City has increased the number of valve inspections conducted annually and conducts more frequent inspection of critical valves. **Fee: \$15,769**

**Testing of Iron and Manganese Sequestration Alternatives.** Arcadis developed a bench-testing plan, assisted with development of a demonstration testing plan, and prepared a household flushing protocol to help address persistent color-related water quality issues in the northwest service area of its distribution system resulting from premise plumbing. The testing plan evaluated a number of iron and manganese sequestration products. **Fee: \$45,000**

**Iron and Manganese Sequestration Permit Application and PDR for Permanent Application of Seaquest at Well CW23.** Based on results of the bench testing evaluation, Arcadis prepared the permit application and preliminary design report for implementation of the selected sequestrant to address iron and manganese issues at Well 23. The permit application process included



**Client**  
City of Tallahassee

**Firm's Role**  
Prime

**Fee**  
Fees included under each description

**Contract Term**  
Ongoing

**Key Staff**  
Tim Ware  
Sean Chaparro  
Celine Hyer  
Lauren DaCunha  
Eric Battle  
Van Nguyen  
Sam Hobi  
Shantanu Dandane  
Eric Auerbach  
Brian Duane

full scale demonstration testing of the sequestrant over an extended period and coordination with FDEP through the approval of the sequestrant. **Fee: \$13,038**

# Utilities Engineering Consulting Services

## Pinellas County, Florida

Arcadis has been serving the County under the Utilities Engineering Consulting Services Contract since 2011. Some of the task orders that Arcadis has completed to date, include:

### **William E. Dunn Water Reclamation Facility Headworks Modifications -**

Replacement of existing headworks screens and washer compactors with 3 new units including the integration of washer compactors into the new screens. Installation of a new flow splitter box that incorporates the introduction of return activated sludge at the beginning of the splitter box to allow for complete mixing and flow balancing prior to treatment trains. **Fees: \$106,745**

### **William E. Dunn WRF Bypass Piping Assessment and Improvements**

- Rehabilitation or replacement of influent force main lines and installation of an emergency bypass pipe. Rehabilitation of 36" and 42" headworks effluent lines upstream of the treatment trains. **Fees: \$174,920**

**Lift Station 069 Odor Control** - Design and construction of an odor control system. The new biological trickling filter replaced existing equipment that had ceased operating effectively. Arcadis provided engineering design services and produced Contract Documents for the replacement system. **Fees: \$150,000**

**Lift Station 086** - Design services for lift station equipment and site rehabilitation including pump replacement, new risers, pipes and valves. Rehabilitation of station

structure and concrete coating. Electrical and control system upgrades and improvements to the supervisory control and data acquisition (SCADA) system. **Fees: \$149,000**

### **Odor Analysis for Pump Stations 016 and 069**

- In depth characterization of odors at PS016 and PS069 with vapor phase sampling and analysis, including recommendations for solutions to odor issues at a large master lift station, and investigate potential odor mitigation options at PS 069. **Fees: \$120,000**

### **Odor and Corrosion Study -**

Performed a detailed evaluation of various liquid phase odor and corrosion control treatment chemicals for use in the County's collection system and provided recommendations for optimizing treatment effectiveness. **Fees: \$120,000**

### **PS 016 Odor Control System**

**Replacement** - Provided design services for the replacement of the County's chemical scrubber system at a master pumping station. Developed a detailed alternatives evaluation of various odor control technologies, including conducting field odor data and pressure sampling. Subsequent project phases to include detailed design packages and construction administration services. **Fees: \$120,000**



#### **Client**

Pinellas County

#### **Firm's Role**

Prime

#### **Fee**

Fees included under each description

#### **Contract Term**

Ongoing

#### **Key Staff**

Tim Ware  
Ifetayo Venner  
Chris Tilman  
Van Nguyen  
Prabhu Chandrasekeran  
Shantanu Dandane  
Sam Hobi



# As-Needed Engineering

## Tampa Bay Water; Tampa, Florida

Arcadis has provided as-needed engineering services for Tampa Bay Water since 2000. Some of projects include:

**Booster Pump Station Piping Improvements.** Arcadis designed piping modifications to the booster pump header and transmission main cross connector **Fee: \$90,603.**

**Cypress Creek Water Treatment Plant Chemical Systems Upgrade.** Completed replacement of the sodium hypochlorite storage and feed systems at the Cypress Creek water treatment plant (WTP). **Fee: \$145,515.**

**Arc Flash Analysis at Tampa Bypass Canal Pump Station at Harney Road.** Arcadis completed an arc flash study for Tampa Bay Water at the Harney Road Pump Station. The pump station at Harney Road Pump was a 480 volt system protected by a 600A main breaker. **Fee: \$21,961.**

**South Pasco Transmission Main Evaluation of Condition Assessment.** Arcadis was retained by Tampa Bay Water to evaluate the assessment conducted by Pure Technologies, to perform a conceptual evaluation of rehabilitation alternatives and to provide recommendations to address the critical infrastructure in a high end residential neighbourhood. **Fee: \$29,104.**

**C.W. Bill Young Reservoir Seepage Assessment Services.** Will evaluate the effects of reservoir seepage on adjacent wetlands, streams and groundwater levels. **Fee: \$175,000.**

**Assessment and Preliminary Design of Tampa Bay Water Cathodic Protection System.** Implemented a cathodic protection program at two of the City’s facilities based on the five “high critical” areas and while on site, three “low critical” identified by the Tampa Bay Water (TBW) Cathodic Protection Maintenance. This approach will provide Tampa Bay Water with an assessment of the two sites, corrective alternatives and a clear understanding of actions to be taken at these facilities including the proposed design, construction costs, overall system functionality and schedule. **Fee: \$29,040.**



**Client**

Tampa Bay Water

**Firm’s Role**

Prime

**Fee**

Fees included under each description

**Contract Term**

Ongoing

**Key Staff**

Sam Hobi  
Chris Waters  
Stephanie Bishop  
Errol Dawkins

# Carlton EDR Phase 1 and 2

## Sarasota County, Florida

The T. Mabry Carlton Water Treatment Plant (WTP) is located in the southeastern portion of Sarasota County (County) in the T. Mabry Carlton, Jr. Memorial Preserve. The Carlton WTP is currently the County’s largest water producer with a rated capacity of 12 million gallons per day (MGD) maximum monthly average daily flow. The facility’s treatment includes degasification, pressure filtration, electro dialysis reversal (EDR), disinfection, and pH adjustment.

The majority of the original EDR equipment, including the EDR stacks and major electrical systems, was placed into service in 1995 and had exceeded its life expectancy and was in need of replacement. The County decided to rehabilitate and improve the Carlton facility and complete the analysis and expansion design in several phases. The design team, led by Arcadis U.S., Inc. (Arcadis Team), completed the following projects associated with this facility:

- Evaluation of EDR alternative configurations
- Evaluation of associated electrical and controls equipment, a capacity analysis and physical condition assessment of the pre and post treatment systems
- Development of a Preliminary Design Report for the process mechanical, structural, electrical, instrumentation, and HVAC design components of the various treatment systems and structures for the Phase I improvements at the Carlton WTF. This report also included assessment of EDR phasing alternatives
- Development of detailed design plans, specifications, cost estimate and implementation schedule for the process mechanical, structural, electrical and instrumentation design components of the various treatment systems and structures

for the Phase I Improvements. The Phase I Improvements include replacement of five of the ten existing Mk III EDR units with five new latest generation EDR units (Mk IV). The new EDR units have a new optimized orientation of the stacks as well as other enhancements to electrode materials and electrical drive which allow the new Mk IV units to have a higher nominal rated capacity of 1.5 MGD of treated water compared to 1.2 MGD of the existing Mk III units.

- Prepared the permit application package and coordinated with the Florida Department of Health (FDOH) to secure the required permit.
- Provided bidding assistance services.
- Provided services during construction (SDC) including engineer of record (EOR), construction contract administration (CA), and full time resident project representative (RPR) services for implementation of the first phase of the facility upgrade based on the final design package prepared.

Construction completion was extended by approximately two months due to Contractor scope additions made during construction at the County’s request and additional time required by the EDR system manufacturer for commissioning.

Arcadis has effectively completed the necessary preliminary investigations, preliminary design report, detailed design, permitting and construction administration services to successfully complete the first rehabilitation phase at the Carlton WTF. All work by Arcadis has been effectively managed using our established project management controls and processes to ensure the project was completed within budget and meeting project time constraints.



### Client

Sarasota County

### Firm’s Role

Prime

### Fee

\$2,712,529

### Contract Term

Phase 1 - 2021  
Phase 2 is Ongoing

### Key Staff

Tim Ware  
Sean Chaparro  
Martha Wulftange  
Guy Le Patourel  
Chris Matthews  
Van Nguyen  
Sam Hobi  
Shantanu Dandane

Since a significant amount of equipment was replaced by the Phase 1 and 2 rehabilitation, Arcadis developed a comprehensive asset management plant (AMP) for the Carlton WTF. As part of this effort, Arcadis worked closely with the County, through a series of interactive workshops, to establish asset definition, hierarchy, levels of service, key performance indicators, risk methodologies, and remaining useful life estimates to complete a detailed risk evaluation to develop prioritized capital projects for a 5-year CIP. Arcadis also completed funding scenario evaluations to develop a recommended 30-year funding plan to maintain meet target risk levels for the plant.



# Hamlin Water Reclamation Facility

Orange County Utilities; Winter Garden, Florida

Arcadis is currently assisting Orange County Utilities (OCU) with construction administration services for the new 5 MGD Hamlin Water Reclamation Facility (Hamlin WRF) for an area of Orange County that was projected to experience significant population growth with a resultant need for additional wastewater treatment capacity in the southwest region of the system. Effluent will be discharged to the Orange County Southwest Service Area and Water Conserv II reuse systems. Arcadis is the engineer of record, project manager, and process technical lead for Phase I of the project. Arcadis completed a Preliminary Engineering Report (PER) in 2015. Part of the report involved development of a layout of the site with considerations for future components for Phase II and Phase III where flows are to be increased to 10 MGD and 15 MGD, respectively, as well as potential additional treatment components should effluent requirements become more stringent.

After the PER, Arcadis was asked to proceed with detailed design of the WRF. Arcadis led a team of more than 14 subconsultants during the design. Arcadis completed survey, geotechnical, stormwater, and ecological investigations, as well as necessary permitting for the facility. The following components were included in the design of the new WRF:

- 3,600 LF of 36-inch influent forcemain to the WRF
- Preliminary treatment structure (headworks) with screening, grit removal and odor control
- 5-stage Bardenpho biological nutrient removal (BNR) activated sludge treatment trains
- Process aeration and blower system in a blower building
- Secondary clarifiers with scum collection system
- Return, waste activated sludge and in-plant pumping systems
- Tertiary filtration using disc filters

- Chlorine contact tank
- Effluent to storage transfer pump station
- Reclaimed water storage and distribution pump station
- Reject/non-compliant water storage and pumping
- Chemical feed systems for alum, supplemental carbon, and sodium hypochlorite
- Sludge holding tanks with odor control
- Sludge Thickening
- Administration, maintenance, support, and electrical buildings
- Electrical systems, gear and emergency power generator with fuel storage system.
- Stormwater and civil infrastructure

### Best Practices in Collaborative Delivery and GMP Development.

This project is being delivered under a traditional Design-Bid-Build process. As Project Manager, Arcadis has effectively collaborated with OCU and the Contractor throughout the construction of the Hamlin WRF to support the accelerated construction schedule. The use of BIM was critical to maintaining an aggressive design schedule, reducing construction conflicts, and optimizing collaboration with multiple subconsultants and personnel working in multiple offices across the U.S.

**Practical, Proven Innovations and Value Engineering:** To assist OCU with future WRF expansions to 10 and 15 MGD, Arcadis was tasked with site master planning facilities for future 5 MGD expansions and design of some processes and footprints for 10 and some for 15 MGD to stay within the established construction budget. Arcadis successfully accommodated several client-requested changes from the preliminary design.

**All-inclusive Liquid and Solids Treatment and Facilities Design:** Arcadis performed detailed sampling and developed influent characteristics of the wastewater to the facility; also



### Client

Orange County Utilities

### Firm's Role

Prime

### Contract Amount

Design: \$8.2M; Construction: \$114M

### Contract Term

Ongoing

### Key Staff

Tim Ware  
Joan Fernandez  
Ifetayo Venner  
Sam Hobi  
Lauren DaCunha  
Seth Grimes

oversaw execution of a preliminary site survey, geotechnical investigation and environmental investigations. Arcadis performed process and hydraulic modeling using Biowin™ and Visual Hydraulics, identified the unit process components required to achieve the required effluent requirements, evaluated alternatives for the various unit process components, and developed a preliminary design for the selected components. Designed a new 60-ft diameter gravity thickener and residuals dewatering building with 2,770 ppd capacity centrifuges, a polymer storage and feed system, and belt conveyor system for offload of dewatered solids onto roll-off dumpsters for offsite disposal.

# Financial Consulting and Bond Engineer General Services

Water and Sewer Department; Miami-Dade County, Florida

Arcadis U.S., Inc. (Arcadis) and its team members have served as Miami Dade Water and Sewer Department’s (WASD) Bond Consultant for nearly 10 years, providing bond consulting engineering services pursuant to

## Annual Bond Engineer’s Report

Arcadis develops an Annual Bond Engineer’s Report (Annual Report) in accordance with Section 607 of the Master Bond Ordinance. The purpose of the Annual Report is to assess, describe and document the following:

- The condition of one-third of the water and wastewater facilities each year.
- The operations of water and wastewater facilities.
- The adequacy of the capital improvement program.
- The adequacy of Renewal and Replacement funding.
- The Department’s compliance with bond covenants relating to debt service coverage and other financial conditions.

In order to achieve these requirements, Arcadis coordinates closely with WASD executive and operations staff in order to gain access and schedule inspections of the Wastewater Treatment Plants (WWTP), Water Treatment Plants (WTP), wellfields, booster pump stations, storage facilities, and pumping stations.

Physical condition data is collected utilizing a tablet-based software program, facilities inspection reports are then generated and used to develop narrative descriptions of the facilities condition. As part of the Annual Report, Arcadis also conducts

detailed reviews of operational data from the WWTPs and WTPs to confirm adherence to regulatory and permit requirements, summarizes budgeted vs. actual Capital Improvement and Renewal and Replacement expenditures. Significant deviations from budgeted and actual expenditures are highlighted. Arcadis staff then met with WASD to collectively review and present the findings from the Annual Report.

## Consulting Engineer Report Development for the issuance of Series 2017 and Series 2019 Revenue Bonds

Most recently, Arcadis developed the Consulting Engineer Report (CER) to support the issuance of WASD’s Series 2017 revenue bonds in the amount of \$929,380,000 and the Series 2019 revenue bonds in the amount of \$233,305,000. Specific efforts associated with the development of the 2017 and 2019 CER included review of WASDs operations, facility physical condition, and finances. Arcadis summarized the findings from the facility inspections efforts conducted as part of the Annual Bond Engineer inspection as well as developed a five-year feasibility analysis. Arcadis also participated in meetings with rating agency staff, bond consultants and attorneys and other involved parties until the official statements were issued.

## Adequacy of Rates and Fees and Renewal and Replacement Fund

Arcadis prepares an annual financial assessment in order to provide an opinion on the adequacy of rates and charges, recommend the monthly



### Client

Miami-Dade County Water and Sewer Department

### Firm’s Role

Prime

### Fee

\$2,391,270

### Contract Term

Ongoing

### Key Staff

Leah Richter  
Joan Fernandez  
Celine Hyer  
Dan Garcia  
Greg Osthues  
Nhi Ngo  
Robert Ryall  
Ajani Stewart  
Garth White  
Lia Dombroski  
Kushala Gowda  
Nhi Ngo



Continued | Miami-Dade WASD Financial Consulting and Bond Engineer General Services

amount to be deposited into the Renewal and Replacement (R&R) Fund, as well as approve the plan for expenditure of bond proceeds in order to keep WASD in compliance with sections 508, 605, 606 and 607 of their Master Bond Ordinance. To accomplish these efforts Arcadis conducts the following activities:

- Analyzes the Department’s projected expenses and revenues for the current fiscal year with respect to budgeted amounts and recent historical experience.
- Assesses the adequacy of the rates and charges in the proposed budget for the upcoming Fiscal Year to fund all projected expenses.
- Reviews R&R reports and R&R projects planned for the upcoming Fiscal Year for consistency of planned R&R projects with current definitions for maintenance, R&R, and capital projects.
- Reviews R&R projects planned in consideration of identified R&R needs in subsequent years.
- Utilizes results of the system’s condition inspections conducted as part of a separate task authorization, assess the adequacy of the R&R Fund to maintain the water and wastewater systems in good operating condition.
- Reviews the MYCIP for the upcoming fiscal year to assess the consistency of proposed expenditures with representations made by the County in applicable bond series resolutions in

accordance with Section 402 of the Bond Ordinance.

- Assesses the need for the capital improvements to enable the Department to meet utility service demands and regulatory requirements.
- Develops a report summarizing findings and recommendations associated with the adequacy of proposed rates and charges, recommended deposit to the R&R Fund, and approval or recommended changes of the proposed MYCIP expenditures.

**Development of Wholesale Customer True-up and Rates**

In support of the annual wholesale customer true-up and rate development, Arcadis staff reviews the WASD developed wholesale customer true-up model and data to confirm the dollars owed by the Department to the wholesale customer. Arcadis then works with Department Staff to review and adjust, if necessary, the allocated costs and customer responsibilities between wholesale and local WASD system customers’ actuals vs budgeted in order to develop revenues to be owed to, or recovered from, each individual WASD wholesale customer. Arcadis then uses the information developed as part of the true-up to develop projected Water and Sewer Wholesale Customer rates for the coming Fiscal Year. Arcadis staff conducts several meetings with WASD staff to present the findings of this effort as well as discuss any questions. A report summarizing the

findings of the true-up and updated rates is then developed and issued to WASD staff for review and use.

**Miscellaneous Management Consulting and Valuation Services**

In addition to the requirements of the bond engineer in accordance with the Bond Ordinance, Arcadis provides other management consulting and valuation services at the request of WASD, such as development of an Asset Management Framework, Service Area Release request reviews, asset valuation and analysis of alternative funding mechanisms for varying service scenarios, detailed Retail Rate Study and Cost of Service analysis, and other miscellaneous assignments at the request of the Capital, Operations, or Finance team.

**Asset Management Framework - Phase I**

Arcadis was engaged to assist M-D WASD in developing an Asset Management (AM) Framework to support its staff, and align work practices, decision making overall operations with defined goals and objectives.

# Henry F. Sliwinski Water Treatment Plant

Frederick Water; Stephens City, Virginia

Frederick Water needed to develop a long-term sustainable water supply solution for their community. Frederick Water turned to Arcadis to design and permit on an 8-mgd greenfield water treatment plant on an aggressive accelerated schedule. Frederick Water secured the use of a 1 BG quarry as part of their raw water supply portfolio.

Based on the water quality analysis, a direct membrane filtration process forgoing flocculation and sedimentation processes was selected as the preferred alternative over a conventional water treatment process train. This process selection was closely coordinated with Virginia Department of Health Office of Drinking Water (VDH ODW) staff to ensure timely approval of the design. The selection of this process resulted in \$10M (>30% of project cost) savings compared to a conventional water treatment plant.

The design of the project included the following:

**BIM Delivery** - The fast-track project leveraged BIM project delivery to facilitate interdisciplinary collaboration and enhance the

engagement of Frederick Water’s staff during the design review process.

**Pump Station Design** - The project included hydraulic analysis and design of 8-mgd Water Distribution Pumping Facilities, a 0.4-mgd sanitary pump station, and a 3-mgd waste recycle pump station.

**Finished Water Storage** - The project included 400,000 gallons of above ground storage.

**CFD Analysis** - Arcadis performed a CFD analysis to optimize sizing of hydraulic structures.

**Transient Analysis** - Arcadis performed a transient analysis to identify and mitigate pressure spikes and vacuum conditions in the distribution system.

Arcadis designed a surge tank system to maintain acceptable pressures. The bid ready design was completed in September 2020. Arcadis completed construction in 2022.



**Client**

Frederick Water

**Firm’s Role**

Prime

**Fee**

\$2.9 million

**Contract Term**

2019 - 2022

**Key Staff**

Chris Waters  
Chris Matthews

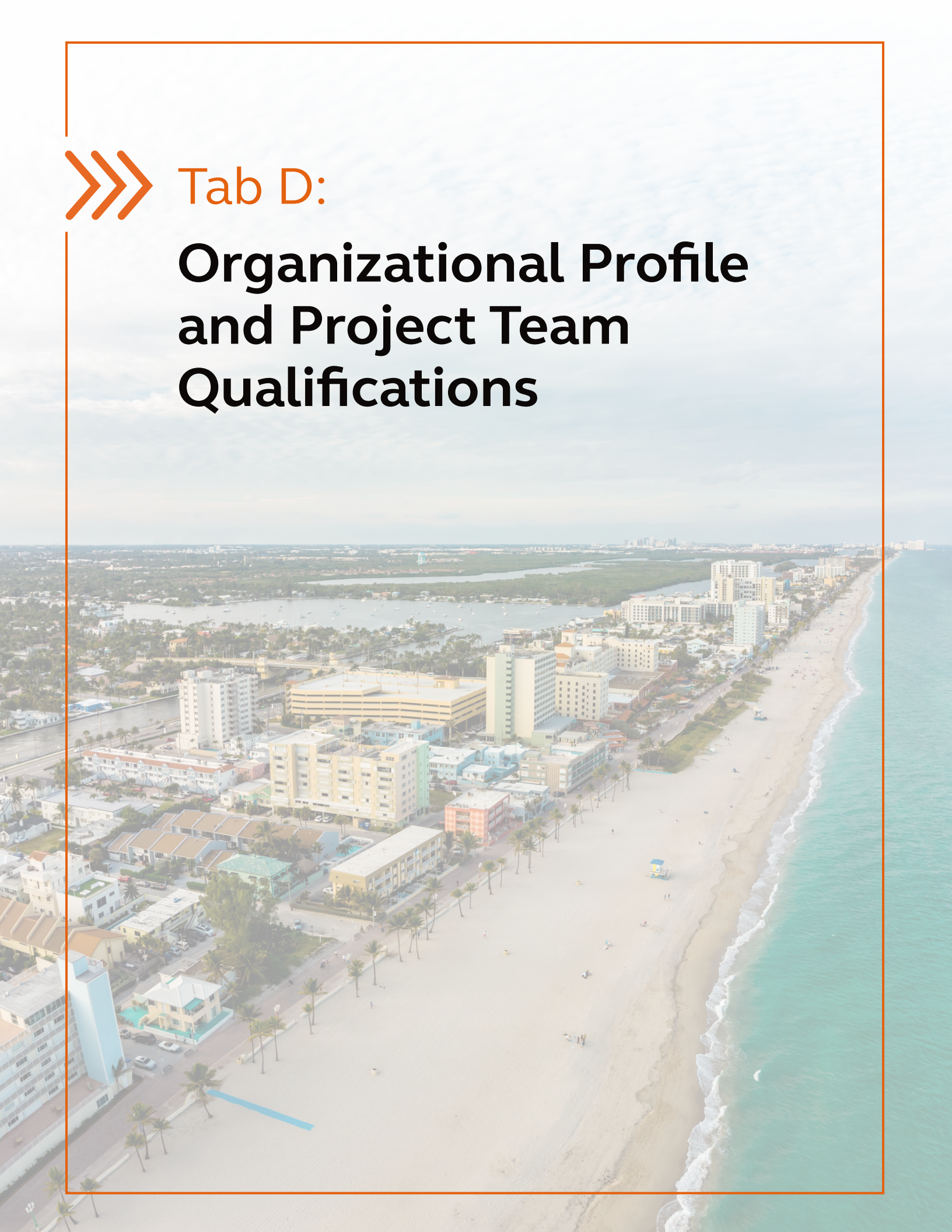






Tab D:

# Organizational Profile and Project Team Qualifications





# Organizational Profile and Project Team Qualifications

## Staff Responsibilities and Duties

Through our experience working with the City of Hollywood since 2003, Arcadis understands the importance of selecting the right individuals to work on the team that will deliver projects to you. As part of our re-organization in 2016 that re-aligned our structure with our core philosophy of “client focus,” we also instituted changes in the team that has been working on our projects for you. Our goal was to present a team to you that combines the strongest of our local staff with the best and brightest technical experts from throughout the country. The result: A team led by staff based in Plantation, FL, only minutes from you, backed by resources from within Florida that can support delivery of any type of project under Service Areas 1, 2, or 3 assigned to us. Finally, from across the country, we have included experts spanning a broad range of services. Arcadis is full-service consultancy – and we can assist you on practically any project you can imagine.

## 1. Organizational Chart of Proposed Key Personnel

### Organization Chart

Arcadis’ singular and renewed emphasis on client focus, places your needs, visions, and objectives as the driver in everything we do. The people selected and the way we have structured our team for this proposal is based solidly upon our direct knowledge and experience of your preferences for how projects are delivered, your expectations of the quality of work you receive, and the degree of responsiveness and sophistication in the level of service we provide as your consultant. We include a Project Leadership Team, consisting of a Contract Manager and three Project Managers, each with the requisite experience in the three Service Areas (1. Wastewater Treatment Plants, 2. Water Supply and Treatment, and 3. Infrastructure) and all of whom are readily accessible to you. We also include Quality Assurance/Quality Control Experts, again in each of the three Service Areas, as well as our Principal in Charge. Through current work and discussions with you, we recognize some of your most pressing needs require expertise in construction management, hydrogeology, and hydraulic modeling. We identify staff with these capabilities as key personnel. On the following pages, we provide brief introductions for our Project Leadership and Key Personnel and include a resume for our Project Leadership team in Appendix A of this Statement of Qualifications.



As shown on the Organizational Chart provided below, our Project Leadership Team is supported with a Primary Project Support Team, composed of staff with expertise in the range of disciplines generally needed to support the typical range of projects in your capital plan.



<sup>1</sup> Staff Located in Florida    <sup>2</sup> Florida PE



## 2. Performance, Experience and Qualifications, Proven Project History

Arcadis has completed numerous projects for you under our current contract -- these have largely been focused on planning in the early years with some design work later on. Since 2003, like the consulting business in general, our firm has changed - we have grown and diversified so that today we have the capacity and ability to work on any type of project you may have. As this new contract will span multiple years, the depth and breadth of our firm today ensures that not only will be able to assist the City with the delivery of critical projects from your capital plan, but also assist you in ways that cannot currently be predicted. Arcadis has a breadth of services that few of our competing firms can match. In demonstration of this, we have provided a full roster of Additional Discipline Experts, based upon services we have provided for our other clients.

The experience of our Project Leadership Team, which includes a strong Contract Manager and three Project Managers with deep capabilities across Service Areas 1, 2 and 3 is a qualifying differentiator for us. The Primary Project Support team we have assembled ensures that we can deliver the range of typical projects you have. Inclusion of our Additional Discipline Experts fills out our team, demonstrating our unique ability to meet any utility engineering need across all three Service Areas.



**Leah Richter, PE** | Contract Manager and Principal in Charge

Ms. Richter has a diverse 25 year background in program management, business advisory and financial consulting services and civil engineering. She specializes in assisting municipal clients in South Florida with managing their planning, operational and capital program needs. Her experience includes project management and delivery, vendor procurement, contract compliance, regulatory permitting, public outreach, annual reporting to bondholders/trustees, litigation support services, environmental compliance and operation and maintenance evaluation. She serves as the Project Manager for the Miami Dade County Water and Sewer Department Bond Engineering and Financial Services contract. Ms. Richter currently serves as the Principle in Charge for the breadth of services Arcadis provides for the City as well as is Arcadis' Southeast Florida Operations Leader and is located in our Plantation office, just minutes from the City to provide rapid response to any request.

### Service Area 1 Wastewater Treatment Plant Team

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**Tim Ware, PE** | Service Area 1 Wastewater Treatment Plant Project Manager

Mr. Ware has 19 years of experience as an engineer, project manager, operator and facility manager for water and wastewater collection and treatment systems. Prior to a career in consulting, he worked within municipalities and in contract operations evaluating, operating, and managing large water and wastewater treatment plants, collection systems and pumping stations. He has completed multiple projects through Continuing Engineering Services contracts as both a project manager and lead technical staff depending on the task. He has experience working with facilities within Florida and throughout the U.S. on a wide variety of tasks and projects. He is a professional engineer in Florida and holds a Florida Wastewater Operator B license..



**Ifetayo Venner, PE, ENV SP** | Service Area 1 Wastewater Treatment Plant QA/QC

Ms. Venner is a professional engineer with more than 20 years of experience and serves as Arcadis' Wastewater Treatment Service Line Leader. As a wastewater process treatment expert she has been responsible for the management, planning, modeling, design and startup of municipal wastewater treatment and reuse facilities throughout the United States. She is President of the Water Environment Federation (WEF) and an Officer on the Board of Trustees. She a past member of the ISI's Envision Review Board the Industry Advisory Board for the Harvard University Zofnass Program for Sustainable Infrastructure.



**Carlton Serrette, PE** | Service Area 1 Wastewater Treatment Plant QA/QC

Mr. Serrette has 28 years of extensive experience in all phases of planning, design and construction of wastewater collection, pumping, and treatment facilities. He has broad experience in design projects from facility planning to conceptual and preliminary designs, final detailed design, contract specifications, construction cost estimates, and construction administration services. Mr. Serrette has supervised and coordinated civil, mechanical, architectural, structural, electrical, Heating, Ventilation, and Air Conditioning (HVAC), plumbing, and hazardous materials work within Arcadis and with subconsultant firms during the design of new facilities and the reconstruction of existing facilities.

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**Chad Dunn, PE** | Headworks/Screening

Mr. Dunn is an associate vice president and project manager with extensive experience in the design and evaluation of large wastewater treatment plant pumping stations and headworks facilities. He has strong experience leading multi-faceted teams through headworks and pumping station design across the country. Mr. Dunn's acts as a technical advisor for headworks and pumping stations nationally for Arcadis. He also has a strong background in the hydraulics of natural and constructed systems and has performed hydraulic research into open-channel flow and turbulence.

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**Seth Grimes, ENV SP** | Headworks/Screening

Mr. Grimes brings more than 20 years of process mechanical design of wastewater treatment facilities with special emphasis in implementation of preliminary treatment technologies. His professional experience includes performance studies and equipment evaluations for combined sewage treatment processes, in addition to participating in all project phases including study, planning, preliminary, detailed design, and construction of screenings facilities. He has led process mechanical design and/or provided technical leadership for multiple screenings removal projects involving multi-rake bar screens, climber screens, grab screens, perforated plates, traveling element, center-flow band screens, and drum screens. He is equally versed in screenings handling systems including belt conveyors, screw conveyors, sluicing systems, and washer-compacting equipment.

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**Anuj Jain, PE** | Primary/Secondary Treatment; Reuse and Effluent Disposal

Mr. Jain has more than 17 years of experience in the water/wastewater industry. He has managed and collaborated on a variety of projects including study, design, bid and construction phase services for municipal and industrial wastewater treatment facilities, pump stations, water mains, sewers, force mains and stormwater systems. His expertise encompasses permitting, hydraulics, hydrology, feasibility studies, preparation of contract drawings and specifications, construction cost estimating, shop drawing review, responding to requests for information (RFIs), change order management, financial evaluation and technical report preparation.

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**Eric Auerbach, PE, ENV SP** | Dewatering Biosolids

Mr. Auerbach has participated in several projects related to biosolids management and digester gas utilization. His recent projects include a long term biosolids management plan that examined both economic and environmental impacts for the City of Columbus. He is also working with the City of Chicago to develop a digester gas to energy system at Stickney Water Reclamation Plant (WRP) which is one of the largest wastewater plants in the world. He has an academic background and specialization in energy engineering and digester gas utilization.





**Ed Becker, PE** | Process Modeling/BioWin

Mr. Becker has 23 years of experience in wastewater process design. He leads Arcadis' Nutrient Removal & Recovery Community of Practice and has been responsible for water resource recovery facility process designs, performance and optimization assessments, treatment capacity expansions, and chemical systems requirements. Mr. Becker also leads the firm's wastewater process modeling efforts, including experience using both BioWin™ and GPS-X™ software packages in a variety of process design and scenario planning applications.

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**Ufuk Erdal, PhD, PE** | Reuse and Effluent Disposal

Dr. Erdal is Arcadis' National Water Reuse Practice Director with diverse experience in planning and concept development, facility design, equipment procurement, commissioning, permitting and approval of treatment facilities used primarily in municipal and industrial water reuse applications. He has delivered key water reuse projects across the globe and the U.S., including California. He is the co-author of Potable Reuse Research Compilation: Synthesis of Findings (Reuse-15-01) and four Water Environment Federation Manuals, including membrane bioreactors and operating of biological nutrient removal facilities. He served as a director on the Water Research Foundation Board to develop sustainable water management solutions using advance research between 2017 and 2020.

## **Service Area 2 Water Supply and Treatment Team**

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**Sean Chaparro, PE** | Service Area 2 Water Supply and Treatment Project Manager

Mr. Chaparro has experience in municipal drinking water and wastewater treatment master planning, design, and special evaluations. Experience in drinking water treatment includes condition assessments, plant optimization evaluations, water quality planning, treatment process evaluations, facility planning, Safe Drinking Water Act compliance assessments, corrosion control treatment evaluations, chemical feed system evaluations, and residuals handling and disposal evaluations and design. Mr. Chaparro is serving as Lead Engineer on the City's Four-Log Improvement Project and as Technical Lead for the City's comprehensive Master Plan's alternatives analysis and WTP evaluation.

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**Rebecca Slabaugh, PE** | Service Area 2 Water Supply and Treatment QA/QC

Ms. Slabaugh serves as the Drinking Water Practice Lead for Arcadis North America and brings 15 years of experience in engineering innovative solutions to distribution system water quality challenges. She is a nationally recognized expert in corrosion control / metals release and Lead and Copper Rule compliance and has supported over 50 public water system across the U.S. on LCR compliance or corrosion related issues. Ms. Slabaugh has direct experience working with CT clients and DPH for approval of program materials to meet DPH funding requirements. She is also a member of the AWWA Lead and Copper Rule Technical Advisory Workgroup and has provided technical support to AWWA, WRF, USEPA and multiple States over the past decade on a range of LCR issues, including regulatory development, treatment selection and implementation, and lead service line replacement guidance. She is currently serving as QA/QC on the City of Hollywood's Four-Log Improvement Project.



**Guy Le Patourel, PE, ENV SP** | Service Area 2 Water Supply and Treatment QA/QC

Mr. Le Patourel has over 35 years of varied experience in the evaluation, design, and delivery of solutions for the water, wastewater and waste management sectors. Whether acting as consultant, contractor, or client, he has successfully delivered complex multi-disciplinary projects by making maximum use of his team members through exceptional organizational and leadership skills. He has broad experience in a variety of Alternative Delivery Projects, including Progressive Design Build, Fixed Price Design Build and EPCM.

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**Michael Pilutti, PE** | Membrane Technology (RO/NF)

Mr. Pilutti is a principal water engineer with 28 years of experience consisting of six years as the assistant director of a public water and sewer utility and 22 years as a consulting engineer. With Arcadis, he serves as membrane treatment technical lead and principal water engineer, applying his national expertise in the use of membrane technology for desalination and potable reuse. He leads the technical design of membrane treatment and other unit processes for water treatment plants and provides technical leadership, guidance and mentoring of junior staff in the areas of membrane system application, design, construction and start-up. He is responsible for liaising with local government water and sewer utilities, developing technical and management solutions, leading technical teams, developing scope and fee proposals, and providing technical advice to peers and clients globally. He has worked with the City of Hollywood staff on the Water Master Plan and Water Treatment Plant Membrane Replacement projects.

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**Brent Alspach, PE, BCEE** | Membrane Technology (RO/NF)

Mr. Alspach has significant experience with membrane filtration and desalination for potable water treatment, including, applications, process planning, piloting, equipment procurement, and integrity testing. In addition, he has served as an advisor to the United States EPA, helping both to develop a regulatory framework for membrane treatment under Long-Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) and to write the associated Membrane Filtration Guidance Manual, including piloting guidelines. As a result of this effort, Mr. Alspach has worked with several state primacy agencies to develop strategies for translating the federal membrane regulatory framework to the state level, including the manner in which membrane filtration facilities should be permitted for Safe Drinking Water Act compliance. He has also been involved in numerous membrane filtration pilot studies, with responsibilities ranging from selecting appropriate membrane systems for testing, pilot plant design, day-to-day operation, (QA)/QC, data analysis, report preparation, and the development of procurement documents based on piloting results.

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**Kirk Nowack, PhD** | Water Softening

Dr. Kirk Nowack has an extensive background in drinking water treatment operations and research. He has worked for the Pennsylvania-American Water Company, where he supervised plant, laboratory, and distribution system activities relating to water quality and regulatory compliance. He also served as a licensed operator, providing operations support at two surface water treatment plants and several groundwater supplies. As a researcher at Penn State, Dr. Nowack led the development of a tailored activated carbon for enhanced MIB and geosmin removal, and some of his findings have been patented. Dr. Nowack focuses on projects pertaining to drinking water quality and treatment, including water treatment plant evaluations and design efforts, treatability studies, operations assistance and operator training. In addition, he serves as a national expert on matters relating to the use of activated carbon in water treatment applications. He has worked with the City of Hollywood staff on the Chlorine and Ammonia Feed Systems Assessments for the Implementation of Four-Log Disinfection Basis of Design Report.





**Ashley Kent, PE** | Filtration

Ms. Kent (Arcadis US – Practice Leader for One Water and Discipline Leader for Biological Drinking Water Treatment) manages drinking water optimization projects across North America. She has been the Principal Investigator on multiple Water Research Foundation projects focusing on drinking water treatment, in addition to working with municipal and industrial public water systems to optimize their operational and treatment practices. Ms. Kent is the Chair of the American Water Works Association (AWWA) Biological Treatment Committee and is co-leading development of a new AWWA Manual of Practice.

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**Chris Waters, PE, BCEE, PMP** | Filtration

Mr. Waters has 23 years of experience with the design and construction of water and wastewater facilities with construction costs up to \$160 million. He has managed or served as the primary project engineer for projects including several new or expanded water treatment plants (WTPs) with capacities up to 225 million gallons per day (mgd), water pump stations with capacities up to 80 mgd, water supply intakes up to 120 mgd, over 10 miles of 42- and 54-inch water transmission mains, several miles of sanitary sewer with diameters up to 48 inches, and several wastewater and stormwater pump stations. He also has served as the project engineer for the design and construction of a 6-mgd reverse-osmosis WTP for brackish groundwater and for hydraulic stress tests to rerate a 225-mgd WTP to 325 mgd.

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**Gabe Trejo, PE, ENV SP** | Disinfection

Mr. Trejo is the disinfection community of practice leader for Arcadis and has experience designing and constructing various aspects of water treatment plants, from raw water pump stations thru finished water clearwells. He has aided in the design of several chemical systems including potassium permanganate, chlorine gas, ferric sulfate, lime, liquid ammonium sulfate, and ozone; various residuals handling infrastructure (pump stations, pipelines, and lagoons), filter conversions to biologically advanced filtration (BAF), and elevated storage tanks and clearwells.

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**Stephanie Bishop, PE** | Disinfection; Chemical Systems

Ms. Bishop has more than 29 years of experience in the water, wastewater, and hazardous waste treatment fields. She has been involved as Design Leader for various chemical system projects including sodium hypochlorite, sodium hydroxide, fluoride, ammonia, sulfuric acid, antiscalant, ferric sulfate, and ozone. She has designed water treatment facilities including various pumps, storage tanks, and filters. She has designed groundwater and soil remediation systems for petroleum-contaminated sites and performed Phase 1 and 2 environment site assessments. Ms. Bishop has done work for the City of Hollywood's Four-Log Improvement Project.

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**Martha Wulfange, PG** | Supply Wells and Permitting

Ms. Wulfange is experienced in conducting geological investigations, performing hydrologic studies and evaluating sites for regulatory compliance. Her project experience includes site characterization and remediation efforts for a wide range of locations such as petroleum tank farms, oil fields, landfills, shooting ranges, missile launch sites at Air Force Base installations, meth lab contamination sites, and rail yards. Support at these sites included development of monitoring or remedial action plans, fieldwork efforts such as drilling or groundwater monitoring, and development of conceptual site models (CSMs). Ms. Wulfange has worked for the City of Hollywood on the Class I Injection Well at the Water Treatment Plant Permit Renewal project.



**Saurabh Srivastava, PE** | Supply Wells and Permitting

Mr. Srivastava is a water resource engineer with more than 18 years of experience specializing in water resources development and management for public utilities. He has worked on numerous water supply permitting projects with SFWMD, SJRWMD and SWFWMD. He has also helped public utilities like Orange County and Toho Water Authority in developing alternative water supply projects to meet the shortfall between demands and traditional groundwater supplies.

## Service Area 3 Infrastructure Team

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**Joan Fernandez, PE, IAM** | Service Area 3 Infrastructure Project Manager

Ms. Fernandez is a licensed Professional Engineer with a diverse and broad range of experience in the business consulting, civil, and environmental fields. She has over 16 years of experience in project management, planning, design, permitting, procurement and construction management. During her professional career Ms. Fernandez has worked closely with various internal and external stakeholders staff at all levels, consultants and contractors in conducting contract negotiations, presentations, workshops, and project implementation. Ms. Fernandez continues to be involved in the development and delivery of Capital Improvement Projects (CIP) for various clients valued at more than \$15 million including City of Hollywood, City of Sunrise, City of Boynton Beach and Miami-Dade Sewer and Water Department.



**Celine Hyer, PE** | Service Area 3 Infrastructure QA/QC; Asset Management & Condition Assessment

Ms. Hyer has over 21 years of specific experience in risk-based asset management in support of Capital Planning. She has led condition and risk assessments for water, and wastewater infrastructure for projects encompassing pipes, pumping facilities and treatment equipment totaling over 1,500,000 assets. As part of the risk assessments, she has created short- and long-range capital plans using business case templates and triple bottom line analysis. Prior to Arcadis Celine served as the Engineering Director for Hillsborough County Utilities where she was responsible for creating and implementing the 5-year capital plan for all water and sewer infrastructure. She is also a national thought leader on asset management for water utilities and currently serves as the Vice Chair for the AWWA Asset Management Committee and the Water Main Condition Assessment Committee.



**Matthew Kiefer, PE** | Service Area 3 Infrastructure QA/QC

Specializing in large diameter condition assessments, Matt is a National Technical Manager for sewer condition assessment and rehabilitation design. His 17-years of experience includes a strong background in project management and extensive hands-on experience performing condition assessments and overseeing the sewer inspection process and field work. Matt has managed several recent Condition Assessment projects with over 900,000 linear feet of sewer inspected which included CCTV, sonar, laser, H2S measurements, personnel-entry, manhole inspections, and ultimately rehabilitation recommendations, detailed design, and construction oversight. From assessment to detailed design, Matt's focus is providing his clients with practical & cost-effective solutions to inspect and repair large diameter sewers. On past projects, his practical rehabilitation solutions for cost effective cementitious and shotcrete rehabilitation saved his clients upwards of \$30 million when compared to other rehabilitation options under evaluation.





**John Scioscia** | Transmission/Distribution

Mr. Scioscia is a subject matter expert in planning, permitting, design, and construction administration of water and wastewater facilities. His experience includes hydraulic modeling, analysis, design and review of drainage, water supply, and collection systems, water/sewer feasibility assessments, planning and analysis, water and wastewater analysis and pump station design, booster stations, and lift stations ranging from one mgd to 150 mgd for new and expansion of water treatment and pumping facilities, water and sewer infrastructure master planning, water quality analysis - raw water system and distribution system, water and wastewater treatment process and plant hydraulic analysis, Intelligent Water networks, surge/transients analysis, and Computational Fluid Dynamics – 3D Hydraulic Modeling. Mr. Scioscia has authored 12 technical publications on hydraulic, transient analysis and condition assessment.

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**Paul Batman, PE** | WW Collections System

Mr. Batman has more than 20 years of specialized expertise in buried infrastructure design, construction and rehabilitation. He has led and supported sewer infrastructure investigation and rehabilitation projects and programs across the country. His experience includes I&I and flow studies, condition assessment, O&M, sewer rehabilitation, and all phases of sewer design and construction. Mr. Batman is Arcadis' national practice coordinator for buried infrastructure assessment, design and rehabilitation and is responsible for identifying and sharing our best talent, tools and practices with project teams nationwide to ensure high quality is provided to our clients.

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**Mark Van Auken, PE** | Stormwater Systems

Mr. Van Auken serves as national Stormwater Practice Leader for Arcadis, where he develops and leads municipal stormwater work. He has 32 years of experience, including stormwater expertise in master planning, utility development, flow monitoring, sampling, modeling, permitting, green infrastructure design, asset management and maintenance. He specializes in municipal stormwater management, with experience leading National Pollutant Discharge Elimination System (NPDES) Storm Water Phase I and II permitting related projects for 19 MS4 communities in seven states. He is a frequent speaker on webinars and at conferences throughout the country on subjects ranging from stormwater regulatory compliance to stormwater system design and maintenance. He is an Envision Sustainability Professional and provides oversight on sustainability options for stormwater and green infrastructure projects for the firm.

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**Chris Tilman, PE** | Stormwater Systems; Site/Civil

Mr. Tilman has both academic and professional experience in stormwater design, including permitting procedures, grading plans, wet/dry detention and retention ponds, flood routing, control structure design, and surface water modeling with ADICPR software. Design experience includes two redesigns of the Lee County, FL WTE stormwater system for the MRF and new transfer station, several small station models for the Tampa Bay Water Authority, and the complete design of the FGUA WTP No. 5 stormwater system in Poinciana, FL. Most recently, Chris led the development of the City of Sebastian's Comprehensive Stormwater Master Plan.



**Dave Wilson, PE** | Water Reuse

Mr. Wilson is experienced in all aspects of civil engineering project design and management including supervision, estimating, permitting, QA/QC and construction support. He is a Licensed Professional Engineer in Florida, Georgia and Tennessee; a Georgia Level II Erosion and Sedimentation Control Design Professional and a Certified Tennessee Level II E&S designer; a Certified Grade IV Tennessee Wastewater Treatment Plant Operator and a Certified Tennessee Grade II Collection System Operator. His area of expertise includes site development, sanitary sewer and stormwater conveyance, detention/retention ponds, site grading, roadways, and sedimentation and erosion controls. He has participated in projects involving plant siting and modifications, owner's engineer services, permitting and construction support, water reuse, and wastewater treatment. Mr. Wilson's knowledge encompasses industrial, commercial and residential development; plant operations and maintenance; and infrastructure rehabilitation.

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**Lauren DaCunha, PE** | Water/WW Hydraulic Modeling

Ms. DaCunha specializes primarily in water and wastewater-related design, water modeling, and infrastructure condition assessment. Specifically, she has assisted in several condition assessments; completed designs and calculations; performed data collection and analysis; completed hydraulic analysis of several water distribution systems and created GIS maps/figures; developed cost estimates and assisted in report, specification and contract writing; and several permitting and funding applications. Ms. DaCunha worked with the City of Hollywood staff on upgrading the City's hydraulic water model.

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**Hazem Gheith, PhD, PE** | Water/WW Hydraulic Modeling

Dr. Hazem Gheith has 36 years of experience in hydrologic and hydraulics modeling of urban drainage. He used hydrologic and hydraulics models to mitigate street flooding, water-in-basement backup conditions, sanitary and combined sewer overflows. He planned and supported the design of city-wide improvements including tunnels, green infrastructures, relief structures, in-line and off-line storage facilities and Real Time Control applications to enhance the operation strategy of collection systems and tunnels. He is Arcadis' national expert for WW modeling and Arcadis' Practice Leader for Collection System Modeling and Planning.

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## Support Disciplines Team

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**Nhi Ngo, PE** | Site/Civil

Ms. Ngo has six years of civil and environmental engineering experience with 5 years serving as a consultant engineer and one year serving municipal and government clients in the civil engineering industry. She worked with the City of Hollywood on the Water Master Plan Phase II and Engineering Services project.



**Sam Hobi, PE | Structural**

Mr. Hobi is a structural engineering technical expert. He is a specialist in civil/structural engineering with over 27 years of experience. He has extensive experience as the structural discipline lead engineer responsible for all structural aspects of projects from start to project completion. During his career as a structural engineer Mr. Hobi worked with other disciplines on many water and wastewater projects and understands the design and construction of such facilities. He has a wealth of experience in the design and analysis of reinforced concrete, structural steel and reinforced masonry structures, and he is skilled in the design, analysis and construction of reinforced concrete structures above-and-below grade with deep or shallow foundations. Particular aspects of his expertise include the design of earth retaining structures and flood control structures for water resources projects.



**Shantanu Dandane, EIT | Structural**

Mr. Dandane is a structural engineer with a master of civil engineering (structures) degree from the University of South Florida. He has experience in building and beam design; tunnel corrosion evaluation; and the use of design software including Auto-CAD, REVIT, ETABS, RISA 3D, Life 365, STAAD-Pro, ANSYS, and SAP2000. He is familiar with design standards such as ASCE 7-10, ACI 318, AASHTO LRFD, PCI Handbook, AISC Steel Manual, and Department of Transportation design standards and design manual.



**Errol Dawkins, AIA, LEED BD+C | Architectural**

Mr. Dawkins establishes the Arcadis Resiliency Water's architectural design approach and technical direction and coordination of the architectural group. He is experienced in industrial, institutional, commercial, and municipal design and construction projects throughout the tri-state area of metropolitan New York. He is a member of award-winning design teams for schools, libraries, recreational facilities, and other municipal buildings. As an architectural project leader and manager, he has worked on various projects including public and private schools, water and wastewater treatment facilities, pools, laboratories and offices. As a LEED accredited professional, Mr. Dawkins incorporates sustainable building strategies into his design projects. He has a broad knowledge of the various building codes and standards, such as ICC, NFPA, OSHA, and ANSI, to conduct building code reviews for various types of projects and confers with both local and state code officials to resolve unique code conditions.



**Dan Garcia, PE, ENV SP, LEED | Process/Mechanical**

Mr. Garcia has extensive experience in municipal infrastructure and resiliency project engineering and management as well as financial analysis and planning. He has managed diverse projects involving stormwater and sanitary sewers, water supply and wastewater treatment, neighborhood improvement and streetscapes, traffic engineering, civil/site engineering, highways and bridges, and coastal and riverine protection. He has also served in roles as Financial Analyst/Planner and Internal Auditor for large multinational banks and engineering consulting firms. Dan has extensive experience in infrastructure resiliency and rehabilitation projects, including the City of Hallandale Beach's Lift Station Upgrade project and currently serves as the Project Manager for the City's 4-log Conversion project, as well as several other projects for the City.



**Brian Duane, PE | Process/Mechanical**

Mr. Duane has executed numerous projects at wastewater treatment facilities throughout Texas, Florida, & Georgia. His experience includes projects with design capacities from 1 million gallons per day (mgd) to 75 mgd. His experience also includes the design of more than 100 water and wastewater pumping facilities ranging in size from under 1 mgd to 2,200 mgd. He is a technical expert in hydraulics, pumping systems and the design of mechanical process systems, and he routinely provides assistance with start-up and troubleshooting of mechanical systems. He has partnered with clients to provide cost-effective solutions that are functional, practical, maintainable and constructible. Mr. Duane worked with the City of Hollywood on the Water Treatment Plant High Service Pump Station project.





**Eric Battle, PE** | Electrical

Mr. Battle is a senior electrical engineer with experience in the analysis, design and services during construction of power distribution systems, facility systems, power system analysis calculations, as well as instrumentation and control systems and SCADA. He has gained skills through the design, bidding, procurement, and construction management of many waters and wastewater facility projects and upgrades. He demonstrates strong relationship management and communication skills with the ability to network and team with project managers, peers, clients, vendors and contractors. Mr. Battle is resourceful, analytical, and detail driven on every project, no matter the scale, with a goal to provide his clients with the best possible service and products.

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**Van Nguyen** | Electrical

Ms. Nguyen who has worked on various projects from large to small scale. She has experience with software tools such as Revit, Power\*Tools for Windows of SKM, AutoCAD, Visual 2016, and MicroStation, which allows her to apply practical knowledge to participate in designing and supporting for electrical construction operations. Her experience in design includes interior and exterior lighting for commercial buildings, power treatment plants and roadways, load calculations, grounding, generator's sizing, voltage drop, conduit fill, cable tray size, overcurrent protection, and cost estimation. Additionally, she has a strong background in power systems analysis studies such as short circuit and arc flash.

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**Kushala Gowda, PE** | Permitting

Ms. Gowda works on a number of diverse projects for several clients in Florida. She has extensive engineering and permitting experience with solid waste facilities, water and wastewater treatment facilities including distribution and collection systems, and stormwater management facilities. Her project experience includes annual reporting to bondholders, waste-to-energy facility operations monitoring, environmental permitting and compliance, construction monitoring, asset management and condition assessment, technical due diligence, and stormwater modeling.

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**Lia Dombroski, EIT** | Permitting

Ms. Dombroski has six years of civil and environmental engineering experience serving municipal and government clients in the water and wastewater industry. She has led in the development of 6 large community water system risk and resilience assessments (RRAs) per AWIA of 2018, including the City of Hollywood's. She has assisted in the condition assessments of large-scale water and wastewater infrastructure including water/wastewater treatment processes, storage facilities, pumping facilities, distribution/collection systems, and other supporting facilities. Ms. Dombroski has worked with the City of Hollywood on projects such as AWIA Risk & Resilience Assessment and the WTP High Service Pump Station Upgrades.

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**Vincent Vitale, PE, LEED AP** | HVAC/Plumbing

Mr. Vitale specializes in heating, ventilating, and air conditioning (HVAC) systems design and engineering for commercial and industrial applications. He is experienced in the design of systems using steam, hot water, chilled water, refrigerant, electricity, gas, and fuel oil. Mr. Vitale is responsible for designs in boiler and chiller systems, built-up and packaged central station air handling systems including constant and variable volume, heat recovery systems, industrial ventilation, exhaust and dust collection systems, high-efficiency particulate air filtration systems, laboratory HVAC systems, computer room air conditioners systems, clean room air systems, odor control systems, and associated direct digital control systems.



**Sopeark Chhea, PE, LEED** | HVAC/Plumbing

Mr. Chhea specializes in the design and engineering of heating, ventilating, and air conditioning systems for commercial and industrial applications. He is responsible for designs in packaged central station air handling systems including constant and variable volume, industrial ventilation, exhaust and supply systems, laboratory, computer room, and clean room air systems.

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**Chris Matthews, PE** | Cost Estimating

Mr. Matthews is a senior construction manager and cost estimator with over 46 years of experience. He has designed and built multi-story commercial buildings, heavy industrial projects, and wastewater treatment systems. He has more than 40 years of design-build projects which span from Corporate HQ for International Organizations to the Ultra-Pure Water Insulation System for the Sandia National Laboratory's Fast Breeder Reactor. He is currently an ACEC Delegate to the EJCDC, a Life Director of the Associated General Contractors of America and has held general contractor licenses in twelve states. He has owned and operated multiple private wastewater utility companies. He has been instrumental in assisting the EJCDC to develop the first Program Management Standard Contract Document for P3s in the U.S. He provided troubleshooting and constructibility reviews during the City's HSPS design and construction.

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**Andrea Guzman** | GIS/BIM/CADD

Ms. Guzman has 29 years of experience and a strong understanding of engineering and architectural design principles. She is an expert in developing accurate, quality, professional CAD drawings, on time and within budget, with a focus on complete client satisfaction. She is thoroughly familiar with all phases of engineering and architectural design including 3D modeling, plan layouts, sections, elevations, schematics, fabrication and installation drawings, specifications and design calculations, bills of materials, and metal fabrication. She is fluent in AutoCAD, Civil 3D, Plant 3D, Revit and MicroStation.

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**Ronnie Alvarez** | Scheduling/Project Controls

Mr. Alvarez has excellent problem-solving and analytical skills. Strong ability to multitask. He is capable of working in a fast paced, dynamic and customer-oriented environment. He is proficient in SharePoint On-Premises, SharePoint Online, CMiC, Bluebeam, Power BI, BIM 360, Primavera P6, ProjectWise, Prolog, ProjectSight, Procure, PlanGrid, Microsoft Office 365, Microsoft Teams, eBuilder Adobe Professional, eDoc, ProjectSolve, Citrix, WebEx.

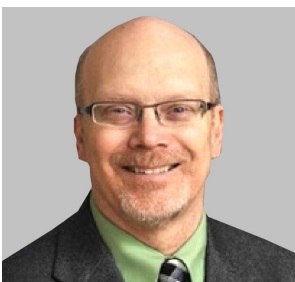
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**Nichole Lynch** | Scheduling/Project Controls

Ms. Lynch has 16 years of experience working with multiple South Florida clients with their planning, feasibility, development, and execution of capital programs. She specializes in project management, document and project controls, scheduling, procurement, project delivery, regulatory compliance, and permitting.

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**Tom Powell, PE** | Controls/SCADA

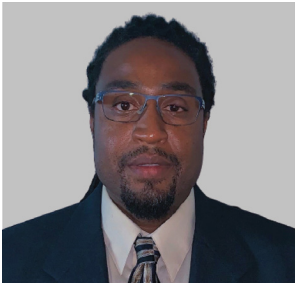
Mr. Powell brings over 30 years of electrical engineering and instrumentation and controls engineering experience for water and wastewater projects. His professional experience includes both controls engineering and electrical power engineering, allowing him to design, coordinate, and manage projects from an integrated whole project system perspective. Mr. Powell specializes in power distribution, motor controls, and system integration -incorporating instrumentation, computer networks, motor controls, and process controls in a combined engineered system. He has designed electrical and control systems for wastewater treatment facilities, pumping stations, water treatment plants, reclaimed water systems, educational and industrial facilities.



**Ninad Deshpande** | Controls/SCADA

Mr. Deshpande is an electrical engineer with electrical design experience in various industrial, commercial and hospital projects. He has strong problem solving and troubleshooting skills and is experienced with electrical load calculations, design of illumination and power distribution schemes, planning of raceways, preparation of budgetary estimates and bills of material, and performance of reactive power compensation studies to improve power quality. His software skills include AutoCAD, MicroStation and the Microsoft Office suite.

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**Garth White, EIT** | Construction Support

Mr. White has more than 17 years of experience specializing in civil and mechanical engineering disciplines and construction oversight. His experience includes operations monitoring and inspections, construction monitoring, cost estimating, and trend analysis for waste-to-energy facilities throughout Florida. Serve in many roles on a variety of water, wastewater, and facility projects. He has experienced in Corrective Measures Study for Norwood water treatment plant rehabilitation of filtration units, installation of production wells and deep injection wells, replacement of large diameter water transmission mains, watermain and forcemain aerial crossing including site restoration. Mr. White worked on the Reverse Osmosis (RO) Membrane System Pilot Study for the City of Hollywood.

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**Stephen Woodhurst** | Construction Support

Mr. Woodhurst has 46 years of technical and management experience in the quality assurance, inspection and engineering field, including surveillance of in-process and final manufacturing activities, site inspections, maintenance of construction schedules, construction inspection and construction management with specialization in water and wastewater projects. He has experience with project management for a variety of infrastructure projects, all phases of surveying, and the supervision of field personnel.

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## **Consulting and Business Advisory Team**

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**Melissa Pomales, PE, ENV SP, PMP** | Consulting and Business Advisory Team QA/QC

Ms. Pomales is a licensed Professional Engineer in Florida and Puerto Rico, with direct and relevant experience in planning, design and construction of water treatment systems and distribution networks; water/wastewater master planning; program and project management for utility water and wastewater capital plans; utility management consulting and business advisory; non-revenue water reduction; capital funding strategies; alternative procurement and delivery advisory (including public-private partnerships); due diligence services; utility asset management; and preparation of feasibility studies to address vulnerabilities, risks, resilience, sustainability, and climate change. She currently serves as the Florida Area Leader for Arcadis' Resilience-Water Business Area. In her role, she regularly provides technical advisory and quality assurance/control of water/wastewater projects delivered across the state which gives her ample visibility into the operations, challenges, and opportunities of water utilities and municipalities in Florida.



**Jason Carter, PE** | Utility Management, Strategy & Innovation



Mr. Carter has over 20 years of experience working with utilities to address emerging issues and develop best practices in water utility management. He has advised boards, executive directors, technical leads and project managers through a wide range of strategic planning, master planning, performance assessment and optimization, regulatory compliance, capital program development, treatment planning and design, applied research, and organizational design efforts. Previously, he served as Arcadis' Applied Research and Innovation Director, leading investments across water, infrastructure, and environmental business lines as well as the intellectual property (IP) portfolio. He managed national thought leadership, innovation pipeline and commercialization of services and technologies. Over the past eight years, he has led a global coalition in the development of innovation management practices as a key pathway to organizational sustainability in the utility sector. Most recently, Mr. Carter led our innovative Design Thinking Kickoff Workshop for the City's Water System Master Plan.

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**Prabhu Chandrasekeran, PE** | Intelligent Water



Mr. Chandrasekeran is the Intelligent Water National Practice Leader for Arcadis North America. He brings over 18 years of engineering and consulting experience in water industry and specializing in utility management consulting for digital transformation. His background includes digital maturity assessment, digital strategy and planning, business process optimization, strategic planning, organizational effectiveness, smart water networks, Sensors and Industrial Internet of Things (IIoT) application, situational awareness, O&M optimization.

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**Ajani Stewart, CFM** | Funding/Grants



Mr. Stewart has over 17 years of experience in developing and implementing programs, projects and polices; leading diverse teams; teaching and promoting the application of concepts; and, deploying successful initiatives in the areas of resilience planning, climate change adaptation/disaster risk reduction, sustainability and environmental protection, and business development. He has a strong record of managing complex projects and large budgets, identifying and nurturing beneficial partnership opportunities, and communicating effectively across disciplines, sectors and cultures.

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**Robert Ryall, PE** | Financial Analysis & Rate Study



Mr. Ryall is a nationally recognized consultant with expertise in financial and strategic planning for water and wastewater utilities around the country. He has assisted with more than \$1 billion in water and wastewater financing and has extensive experience in utility ratemaking, impact fees, bond feasibility studies and acquisition/valuation analysis, and the development and use of interactive financial models. In addition to his financial experience, He is a professional engineer in the State of Florida and has been involved in many strategic planning studies for water and wastewater utilities, including master plans, capacity analysis, consolidation studies and asset management-related engagements. He led efforts to complete a User Rate Evaluation for the City of Hollywood.

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**Mary Jacques** | Resilient Utility Planning



Ms. Jacques has over 29 years of experience in security and emergency preparedness planning and response. Additionally, she has a background in environmental and regulatory compliance and has provided clients with regulatory compliant documents that have gained accolades from regulators, including Risk Management Plans and Spill Prevention Plans. Her experience includes Risk and Resilience Assessments (RRAs) and Emergency Response Plans (ERPs) per the requirements of the America's Water Infrastructure Act (AWIA) of 2018. She is certified in J100 Risk Analysis and Management for Critical Asset Protection and trained in the National Incident Management System (NIMS) and the Incident Command System (ICS). Ms. Jacques evaluated power resilience plan for the City of Hollywood.

### 3. Subconsultants

#### Key Subconsultants

To enhance our project team, we have selected highly qualified subconsultants to provide various services. Brief descriptions of our subconsultants are presented in **tab H: Sub Consultant Information**.



#### Team Availability

Arcadis’ client-focused Project Management Approach places a strong emphasis on the early development of project schedule. MS Project comprises a critical component of our PMA suite of tools, enabling us to create resource loaded schedules so we are immediately aware when project staff may be over-committed. Project schedules are also routinely evaluated against financial data and scope progress during monthly review meetings, so we become immediately aware of variances between earned value, planned value, and actual costs. The use of a resource-loaded schedule and repeated review of performance against the established project schedule allows our project managers to improve efficiencies in schedule adherence by proactively addressing bottlenecks that typically arise when staff have too many competing assignments. Further, these tools and review processes serve as checkpoints ensuring that actual progress in completing the scope is in alignment with the established project schedule and that we are spending our approved budget at an appropriate pace. The advantages of this aspect are clear and can be demonstrated through our recent work as your Water Treatment Plant engineer.

Through the years of working for you, we have a solid understanding of the importance you place on timely performance and schedule adherence. Our Contract Manager and each of discipline-specific Project Managers assigned to lead work this contract are recognized for timely performance in delivering projects they manage. We will ensure that all of our future projects follow the excellent example of the delivery of the Hydraulic Modeling Update and Calibration. Our PMA tools and emphasis on continuous schedule review will provide additional tools in achieving solid schedule performance on our projects for you.

#### Current/Anticipated Workloads

The staff resources available in our local and regional offices provide significant “bench strength” that facilitates required resource allocations to meet the City’s needs. Our south Florida offices (Plantation, Boynton Beach and Miami) include more than 75 professionals to cover the potential services described in this solicitation. We have more than 350 additional professionals located

throughout Florida. Key project personnel are available to initiate the work immediately upon contract execution and to continue work on an ongoing basis. Furthermore, we commit to providing other resources as needed to supplement the proposed team to meet your needs. Our Contract Manager, Leah Richter, will be responsible for scheduling and committing team resources to assigned project and incorporating additional staff as needed.

Below is a listing of our proposed team’s availability (over the next 12 to 16 months) for this project. Resumes for our key staff can be found in the Appendix.

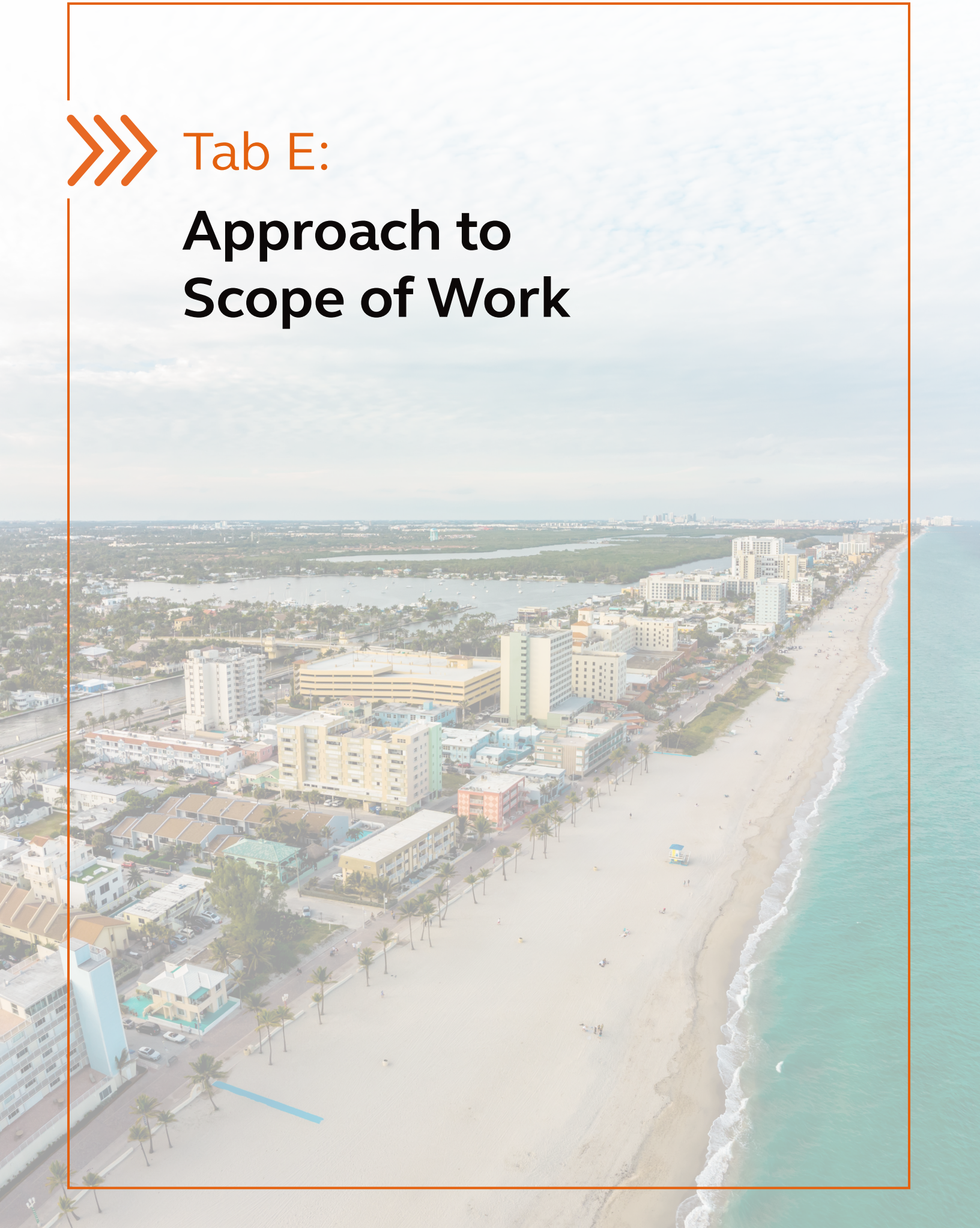
Name   Role	Availability
<b>Leah Richter, PE</b>   Principal in Charge	40%
<b>Tim Ware, PE</b>   Service Area 1 Wastewater Treatment Plant Project Manager	50%
<b>Sean Chaparro, PE</b>   Service Area 2 Water Supply and Treatment Project Manager	60%
<b>Joan Fernandez, PE, IAM</b>   Service Area 3 Infrastructure Project Manager	60%
<b>Ifetayo Venner, PE, ENV SP</b>   Wastewater Treatment Plant QA/QC	45%
<b>Rebecca Slabaugh, PE</b>   Water Supply and Treatment QA/QC	25%
<b>Celine Hyer, PE, IAM</b>   Infrastructure QA/QC	45%
<b>Michael Pilutti, PE</b>   Membrane Technology (RO/NF)	30%
<b>Brent Alspach, PE, BCEE</b>   Membrane Technology (RO/NF)	30%
<b>Lauren DaCunha, PE</b>   Water/WW Hydraulic Modeling	40%





Tab E:

# Approach to Scope of Work





# Approach to Scope of Work

Arcadis’ goal for every project is a fully satisfied client, and we understand that the critical element is people. Therefore, we staff our projects so our clients receive excellent technical expertise delivered through a responsive local leadership team.

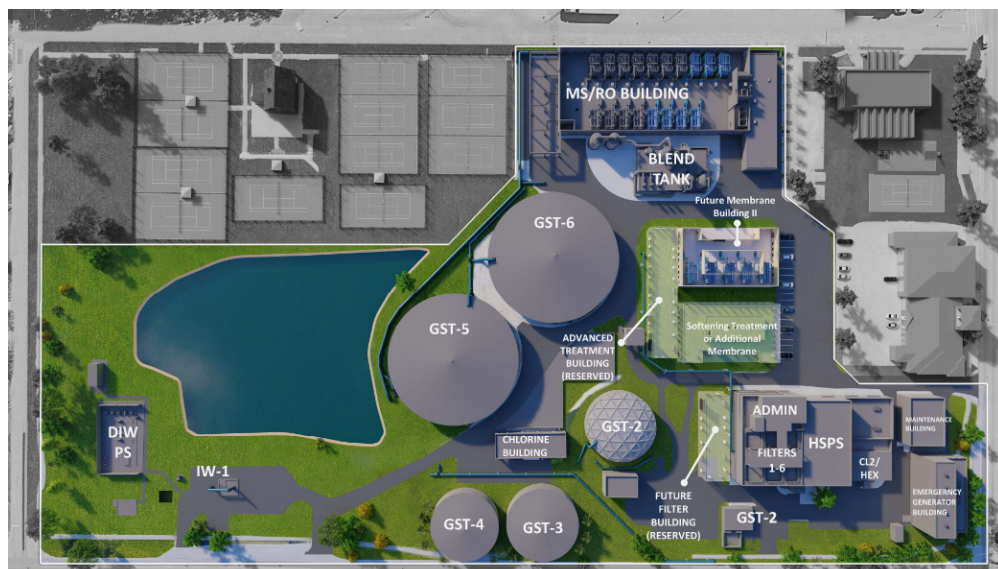
Our team brings a highly accomplished Contract Manager, **Leah Richter, PE**, with multi-disciplinary experience with small and large projects. Ms. Richter will be supported by an experienced team consisting of **Tim Ware, PE** (Wastewater Treatment Plant), **Sean Chaparro, PE** (Water Supply and Treatment), and **Joan Fernandez, PE** (Infrastructure) who will manage the Arcadis team and provide the City with the most experienced and responsive team. Our team will manage and deliver high-quality deliverables on time and within budget through a judicious assignment of professional staff and technical resources. Ms. Richter has collaborated with and successfully delivered projects with Tim, Sean, and Joan for the entirety of their careers with Arcadis.

## Proven Approach For Multi-Year Consulting Services Contracts

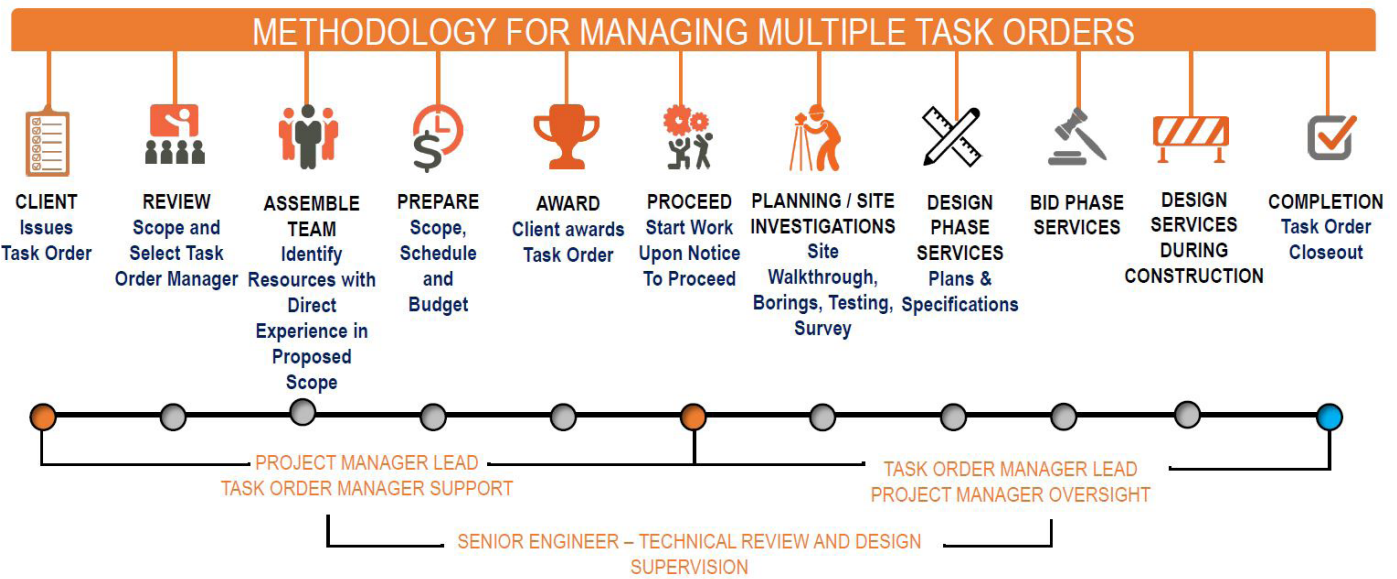
Our project approach is based upon our more than 30 years of experience working with over 30 clients across Florida on multi-year Engineering and Consulting Services Contracts. More importantly, we have a proven approach for providing over 50 task order projects for the City over the last 20 years including studies, design and construction phase services. Our approach ensures continuity for the projects and planning for the City’s future. Right now, Arcadis and the City are completing a critical planning process with the Water Master Plan. The plan lays out the roadmap for significant projects and investments to the City’s Water Treatment Plant and water system. Therefore, this cycle is especially important as many of the planned projects will lead to design and construction including the following:

- 1) Membrane Train Replacements and upgrades
- 2) Lime Softening Rehabilitation and upgrades
- 3) Water Supply well permitting and construction
- 4) Electrical and Control System upgrades
- 5) Significant annual R&R expenditures for pipeline and facilities assets > \$10M
- 6) And many more

These are just a few selected evaluations and the WTP is expected to undergo many significant upgrades as the facilities are nearing 60 years of continue service. Our teams led by our Project Managers, Tim Ware, PE, Sean Chaparro, PE, and Joan Fernandez, PE, lead these projects to success by leveraging our historical knowledge of the City’s systems, intimate understanding of the current planning cycle drivers, and our deep, experienced team of technical experts and industry leaders – many whom are already engaged.



Master Plan Roadmap - WTP Expansions thru 2045



### Ensuring City Objectives are Achieved

Our top priority is ensuring that your project objectives are achieved. Task Orders under this contract will likely be for a study/evaluation or a capital improvement project (design/ permitting/ bidding and construction phase support). We understand the objective for each of these will be for our team to provide value to the City through our professional expertise and recommendations and to provide a quality project on time and under budget.

### Task Order Contract Management Process

We follow a consistent project management and task order development process that is further detailed in the above graphic.

### Scoping Meeting

A scoping meeting will be held with the staff from the various City departments that will be involved with the work. The goal of this meeting is to achieve consensus on the purpose, goals, and scope of the project. Consensus among all team members on the project goals at the earliest phase of the work is critical to the long-term success of the project. Our **Contract Manager Leah Richter, PE**, will be present and supported with corresponding Project Managers and Subject Matter Experts as needed, to confirm that the scoping items are adequately defined and that the delivered services will meet the project goals.

### Effective Initiation, Team Assembly and Execution of Multiple Assignments

Effective engagement of Project Managers under the overall oversight by the Contract Manager is one of the key success factors in managing multiple projects within a Task Order Contract. As illustrated in the flow chart above, Ms. Richter will assign a Project Manager for each Task Order based on their expertise as well as identify required resources and assemble the team (including subconsultants). The Project Manager will assume day-to-day responsibilities for delivering their Task Orders on time and budget. Ms. Richter will provide overall oversight and ensure day-to-day management using our state-of-the-art Project Management tools to track and maintain the budget and schedule. Our approaches to project schedule, budget and quality management, and environmental health and safety commitment will be documented in the Project Management Plan developed at the outset of the project and are briefly described in this section.

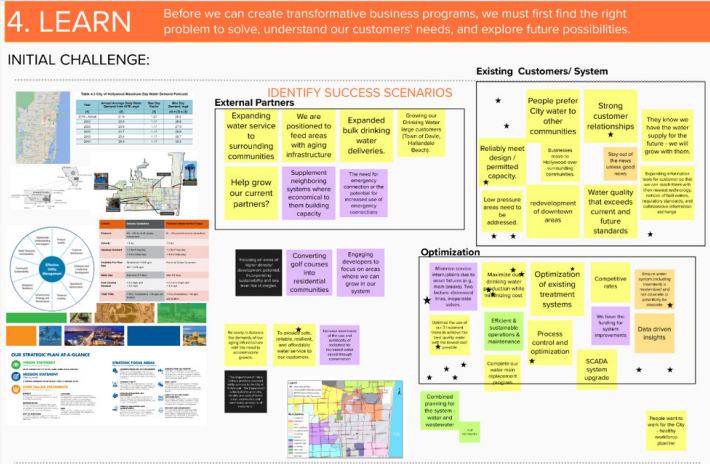
### Task Order Development and Award

Information gathered at the scoping meeting and through the Team Assembly will allow the project team to create a draft scope of work, fee estimate, a Work Breakdown Structure (WBS), and preliminary project schedule for review by the City’s team. After review and acceptance by the City, the scope, fee, and schedule will be finalized and a Purchase Order will be provided by the City.

### Kickoff Meeting

We always begin all of our projects with a kickoff meeting with all stakeholders and the project team members, including the project manager to confirm project goals

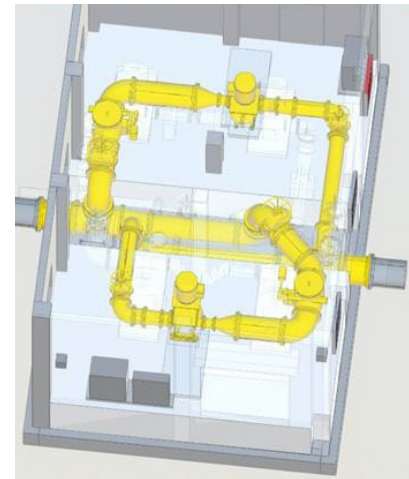




During the field condition assessment phase of the Water Master Plan, Arcadis team utilized the latest software and digital tools to efficiently and comprehensively collect and evaluate over 2000 water system assets. The results of the tools were fully compatible and transferred to the City's Assessment Management program. Our industry leading approach allows for quick (less than one 1 week) field data acquisition and quality control. This approach is also used in our support for other utility initiatives including the upcoming regulatory driven Lead and Copper Rule inventory requirements.

### Design/Study Phase

Depending on the project type, the project will progress to a design or study phase. This phase will include the preparation of a Preliminary Engineering Report and contract documents (plans and specifications) for a design project or a technical memorandum, feasibility study, or evaluation for a study. We meet regularly with stakeholders to discuss the project and to get buy-in on the different elements of the project.

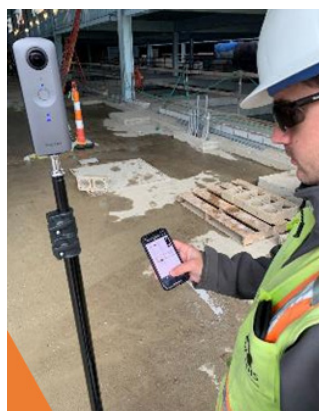


Interactive Stakeholder Engagement using Digital Collaboration Tools (Mural)

and review the project scope, schedule, budget, and administrative procedures. This is also where we discuss identified project risks and possible mitigation actions. We understand that each project is unique can quickly mobilize and have staff in the field and quickly engaged as quickly as possible. Our staff office is within 20 miles of the WTP and over 25 staff in our Plantation and Miami offices. For more significant engagements, goal setting and vision definition is critical. For example, our leading team of industry leaders, **Jason Carter and Celine Hyer** facilitated a design thinking workshop to help City staff develop a vision for the future of the utility including defining, identifying, and establishing success factors, level of service targets to guide the master planning. The workshops were held over multiple days using cutting edge, interactive format (Mural) that increased participation and engagement.

### Data Collection and Review

Data will be collected from the City including existing reports, as-builts, existing permits, etc. Field data to be collected may include record drawings, GIS Data, topographic survey, SUE, and geotechnical, past reports, CCTV data, condition assessment data, operation, and maintenance data. This data will be collected and reviewed for use in a study or design. We have the capabilities to securely receive and transmit data through controlled information sharing platforms, such as SharePoint and others. The privacy of our Clients' data is paramount to us.



Tablets and Digital Tools for Efficiencies

### Permitting

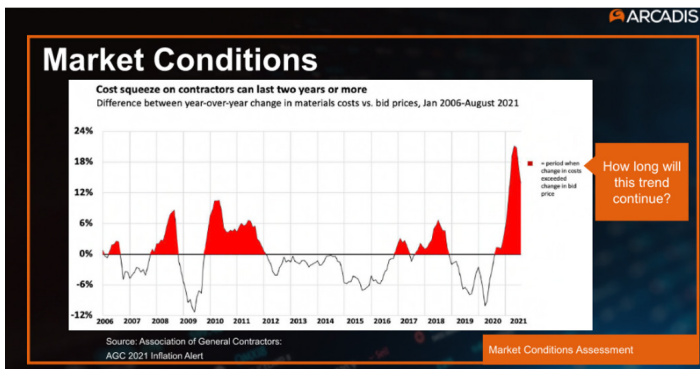
For a design project, Arcadis will work with the City and the regulatory agencies to identify and prepare the necessary permit applications. We will identify potential permits and permitting agencies early and have preapplication meetings to introduce them to the project and agree on the permit(s) required and the requirements for approval. As part of the permitting process, Arcadis will also respond to request for additional information (RAIs) from corresponding jurisdictional authorities in order to secure permits for the projects.





## Bidding Assistance

During the advertising and bidding phase, our support includes responding to bidders' questions, addenda preparation, bid review, review of the bidder's qualifications to complete the work, and recommendation of award. Typically, the design team attends the pre-bid meeting to describe the project and to respond to questions posed by the bidders. We will complete a bid review of the apparent low bidders and provide a recommendation of award to the City.



Arcadis CM Group Monitors and Reports on Construction Market Conditions

## Construction Assistance

We have the full capability to assist the City during the construction of our design projects. We can provide a wide range of services during construction, from limited construction oversight to full time resident project representative (RPR). Our design team will respond to contractor requests for information (RFIs) and review shop drawings and other submittals. Members of our design team, as necessary, will attend construction progress meetings and will perform site inspections during the construction to assure that the intent of the design is being met. Our team is available to assist the City with punch list and project certification.

## Start-up and Operations Training Assistance



Upon substantial completion of construction, we assist our clients with the startup of our projects. Our team will be on site to assure that all designed components are ready for startup and that the process operates as the designer intended. We have in-house Licensed Operators that can support as needed to help troubleshoot waste and wastewater systems.

## Project Management Toolbox to Track and Maintain Budget and Schedule

### Work Breakdown Structure

Upon receipt of the notice to proceed, the appropriate project team commences a planning meeting in which the appropriate Work Breakdown Structure (WBS) is determined and the appropriate roles are assigned to meet the scope of work. At a minimum, the project planning team consists of the Certified Project Manager (CPM); Associated Project Manager (APM) and Task Managers (TM) as warranted; the lead technical expert, and the quality consultant (QC).

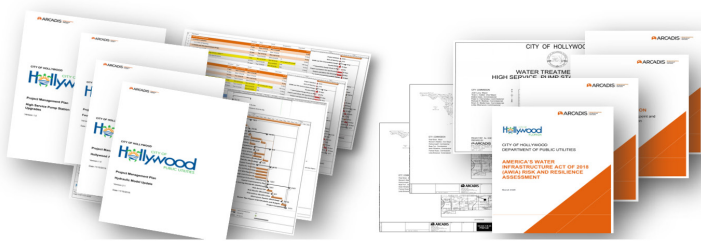
Each project is required to have a CPM assigned to the project. In addition, based upon the size and complexity of the project, an Associate Project Manager (APM) may be assigned at the phase level and Task Manager may be assigned at the task level. Each member of the assigned management team can view, track and update the portion of the project for which they are responsible.

The WBS is planned at a level that is required by the scope of the work to be performed by the work authorization. Resource for labor, subcontractor and expenses are budgeted and scheduled at the lowest level of the WBS. The cost for those resources is posted, monitored, and updated at that lowest level such that assignment and tracking of the scope, schedule, and budget can be performed at the lowest level of the WBS.

### Cost Management

The planning, scheduling, and budgeting program is an Oracle ERP system that is integrated with the Accounting & Finance (A&F) database to provide job-to-date (JTD) actual costs, estimate to complete (ETC) costs, and schedules to provide an estimate at completion (EAC) cost and schedule. The ERP project plan uses the WBS breakdown appropriate for the task authorization. The data regarding the WBS and costs budgeted as a part of the planning process is uploaded from the ERP program into the A&F database as a method to allow for appropriate cost tracking against the budgets. When costs are incurred the data is posted simultaneously in the A&F database and into Oracle ERP. The project team regularly updates the ETC costs in Oracle ERP to ensure any appropriate changes in the EAC are captured and submitted back to the A&F database for further tracking.

Within Oracle ERP, all tasks within WBS have a specific ID and can use the scheduling functionality including predecessor, successor interdependencies, scheduling on a task basis, and milestone management. The appropriate schedule and duration can also be planned for each



*The Arcadis Way PM is a Global Certified Process.*

resource and task. Oracle ERP is a resource loaded schedule that automatically sets a time-phased budget baseline at the control level upon the initial submittal of the resource loaded schedule. Revised baseline budgets are set upon the change in compensation/authorized task order amounts in the system. In addition, revised baselines can also be set at any time throughout the project as needed.

Each task authorization is assigned a unique base project number. Each project number requires a minimum of one phase and each phase requires a minimum of one task. Each phase and task has a unique description and identifier in the system. Depending upon the size and complexity of the project and the WBS required to align with the contract and needed to appropriately manage the scope, the project may have multiple phases and the phases may have multiple tasks. There is no limit to the number of phases and tasks that can be set up to be able to accommodate a robust WBS.

## Schedule Management

Our schedule management approach is based on the use of Microsoft Project to plan, execute, monitor, and control the time management component of project control. Developing a realistic and accurate schedule for each task order is very important. However, for the schedule to be a valuable tool throughout the project, it must be maintained and be reflective of project progress. To achieve these goals, our team implements the following steps:

- Identify overall project duration from the work breakdown structure
- Identify major milestones
- Identify permit submittals
- Incorporate appropriate City review periods
- Update and submit schedule with monthly reports
- Develop overall schedule and review with the City
- Identify City program schedule constraints (Board meetings, advertisement periods, public meetings, etc.)

Milestones for key quality management checkpoints are identified in the task order schedule. For design task orders, these include QA/QC cross checks prior to scheduled deadlines, operability reviews and constructability reviews. These QA/QC procedures are built into the schedule and allow for a high-quality product that is delivered on schedule. We also recognize that an integral part of schedule management is smoothly and consistently progressing the work between major deadlines. We continuously coordinate during regular internal progress meetings.

## Team Coordination

Transparency and timely communication among the involved parties are vital to the ultimate success of any project. Arcadis develops project communication plans to enhance the efficiency of project execution and promote the achievement of the project’s goals through optimal sharing of information. The Communications Plan includes key project stakeholders (internal and external), as well as communications strategies for each. Communication on our projects typically includes weekly management team meetings and the development of a Microsoft Teams site that contains contact information, meeting agendas, meeting minutes, action items, and status reports. The cloud-based Teams site is available to all project stakeholders as needed. The weekly meetings involve project status reporting, resolution of issues, and schedule maintenance. Effective project coordination and client communication are dependent on project managers who are accountable for communication plan implementation. Our project management personnel are successful communicators who understand how to promote communication flow among stakeholders to realize the full benefits of the communication plan.

## Communications Management

We will ensure these objectives are achieved through ongoing communication between our Project Manager, Project Team, and the City’s Project Manager. The interface between project managers can be through phone calls, virtual Teams calls, or in-person following appropriate Covid protocol. We have demonstrated through our previous task orders, that our Contract Manager will be responsive and attentive to the City’s Project Manager. This is demonstrated by simply being available for a phone call, promptly returning emails, and being available for project meetings. In addition to the Project Manager, each assignment under this contract will receive a designated back up point of contact for that project, which will be up to speed on project details and communications, this will assure our responsiveness to the City and your needs.

## Project Management **Commitment to Excellence**

### Define

- **Understand** client expectations
- **Know** scope of work
- **Define** project requirements

### Plan

- **Meet** client expectations
- **Meet** scope objectives
- **Achieve** budget goals
- **Develop** task work plans
- **Communicate** plan to team

### Control

- **Perform** milestone reviews
- **Follow** plan & meet objectives
- **Implement** QA/QC plan

## Quality Assurance/ Quality Control

Our quality management program defines the steps we take as a firm so that we:

- Do the right job by asking the right questions and providing the right solutions.
- Have the right team on the project.
- Do the job right by correctly using the appropriate techniques to meet the goals.

Our Contract Manager, **Leah Richter, PE** and Project Managers (**Tim Ware, PE, Sean Shaparro, PE, and Joan Fernandez, PE**) will be responsible for quality deliverables on this project. Their responsibilities include:

- Understanding, planning for and delivering the resources and activities needed to meet the City’s expectations and conform to applicable standards.
- Engaging/disengaging the right resources at the right time.
- Confirming the execution of QA/QC measures and activities as defined in the project quality plan and per City’s requirements.

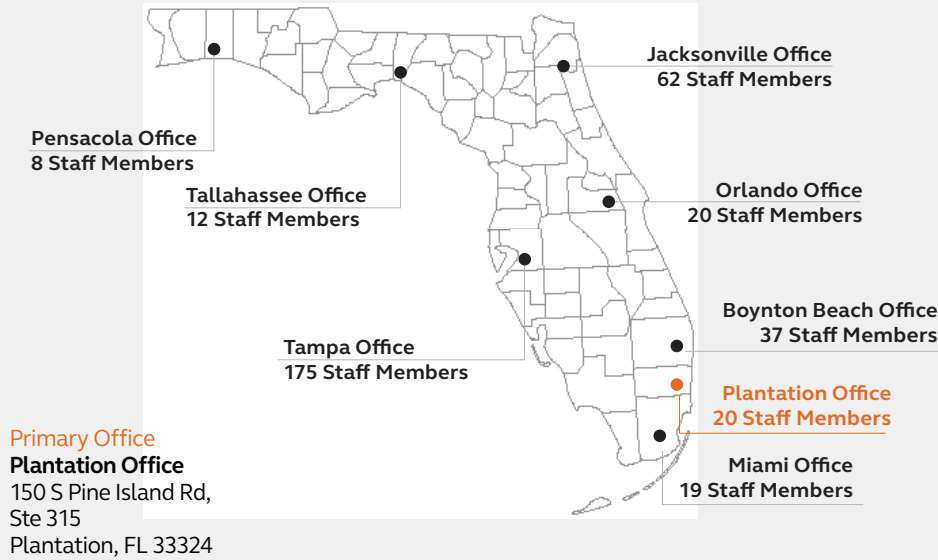
To accomplish quality, we will strive to understand, plan for, and meet the City’s needs and expectations while consistently conforming to the applicable standards of professional practice. Quality in our work is achieved through Quality Assurance (QA) and Quality Control (QC) procedures that will be documented in a Project Quality Plan (PQP) to be developed at the start of each task order by the Task Assignment Project Manager. The document will describe the QA and QC steps that the team is required to implement throughout the project phases. Arcadis standard templates will be used to aid in preparing the project specific PQP.

In general, the following elements will be included: list of deliverables, schedule of quality reviews and responsible persons for in-house production reviews, subcontractor quality control procedures and review requirements, project specific instructions (covering items such as CADD procedures, deliverables and report formatting, design development standards), and QA/QC acknowledgment forms. The extent of the PQP will depend upon the size and complexity of the task order.





## Arcadis is Local



Our South Florida practice is supported by over 350 professionals among 8 Florida offices. Arcadis has performed a thorough review of resources in the State to ensure that local knowledge and established local relationships can be leveraged to bring the City exemplary services.

Our Contract Manager and specific Task Assignment Project Managers will be responsible for quality deliverables on projects. Their responsibilities include:

- Understanding, planning for and delivering the resources and activities needed to meet the City’s expectations and conform to applicable standards.
- Engaging/disengaging the right resources at the right time.
- Confirming the execution of QA/QC measures and activities as defined in the PQP and per client’s requirements.

Quality control activities confirm that all deliverables meet the City’s specified quality standards and requirements and applicable industry standards. Our quality control activities for this project will include

formal, independent project reviews conducted by **Ifetayo Venner, Rebecca Slabaugh, PE** (Water Quality Expert) and **John Scioscia, PE** (National Treatment and Hydraulics Expert) for the process design and supported by independent QA/QC reviewers for each respective design element including cost estimating.

These advisors are specifically tasked with performing rigorous reviews of project deliverables to confirm that they meet the industry standard of care as well as the City’s stated project- specific goals. The advisors will not be involved in the day-to-day decision or preparation of documents, but instead, provide a fresh perspective on the quality of the assembled documents. Sufficient time will be allotted in the baseline schedule for corrections (if necessary) to be made prior to the submittal deadlines.

## Leveraging INNOVATIVE DIGITAL TECHNOLOGIES

As a leader in digital transformation, Arcadis routinely uses digital technologies that allow us to seamlessly meet these challenges. We can facilitate remote oversight, saving you time and money, and maintain continuity of your work.



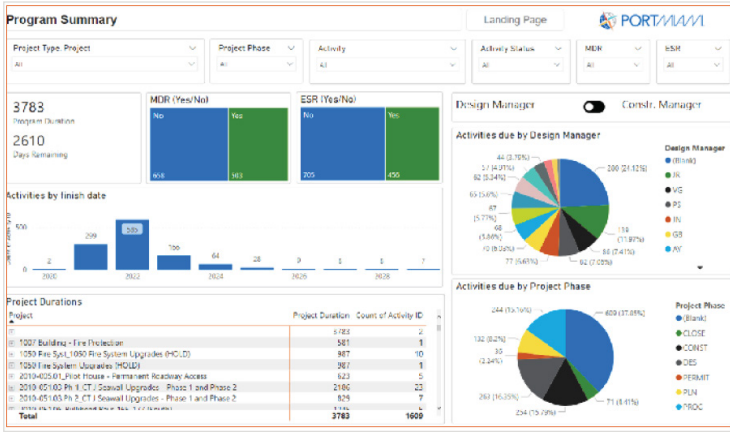
**REMOTE EXPERT SERVICES.** Don’t fly there. Don’t drive there. Just be there. Reduce travel and save time and money while you keep “eyes on” your project from your home location



**360-DEGREE VIRTUAL PLATFORMS.** Need to perform a site assessment? Want to take a project progress site tour? Our 360-degree virtual platforms provide enhanced visualization of construction project progress and operational settings



**DRONE DEPLOYMENT.** Need to perform a virtual project pre-bid or kick-off meeting site walk? Want to get a birds-eye view of your project progress but can’t be there in person? We use drones to see the big picture.



## Document Management System

We offer BIM 360 document management platform which will provide continuity from the design phase to the construction phase by connecting the construction team and the construction data to the design. This platform will serve as a centralized location for all project data and will provide controlled access to stakeholders when they need it. This platform will connect the project team and data in real-time and will support informed decision-making throughout the project. The project team will have the right information at the right time – keeping the project on time and on budget.

## Power BI Data Visualization Dashboard

To enhance Stakeholder Engagement, we will utilize Power BI as a data visualization dashboard tool and overall single source for record keeping and tracking. The Port and Arcadis will be able to collaborate and share customized dashboards and interactive reports. This can be scaled accordingly, and all users will be able to access data anytime and anywhere (using mobile applications) with built-in governance and security to control access, as needed. The dashboard is user friendly and customizable to track high level project metrics such as schedule, budget, and overall progress. Not only will this dashboard be included as part of the monthly reporting process, but it will also allow users to access project documentation from the Document Management System.

## 360° Photo Documentation

Photographically documenting work at every stage of construction allows us to document unforeseen conditions, quality installation of systems, verify construction was completed in accordance with plans and specifications, code issues, back check materials used, change order verification, solve problems down the road, and quickly and easily verify if a problem is a systemic or an isolated issue without doing destructive verification.

## Arcadis Resources/Facilities and Innovation

### Enhancing Efficiency and Reporting Through Digital Tools

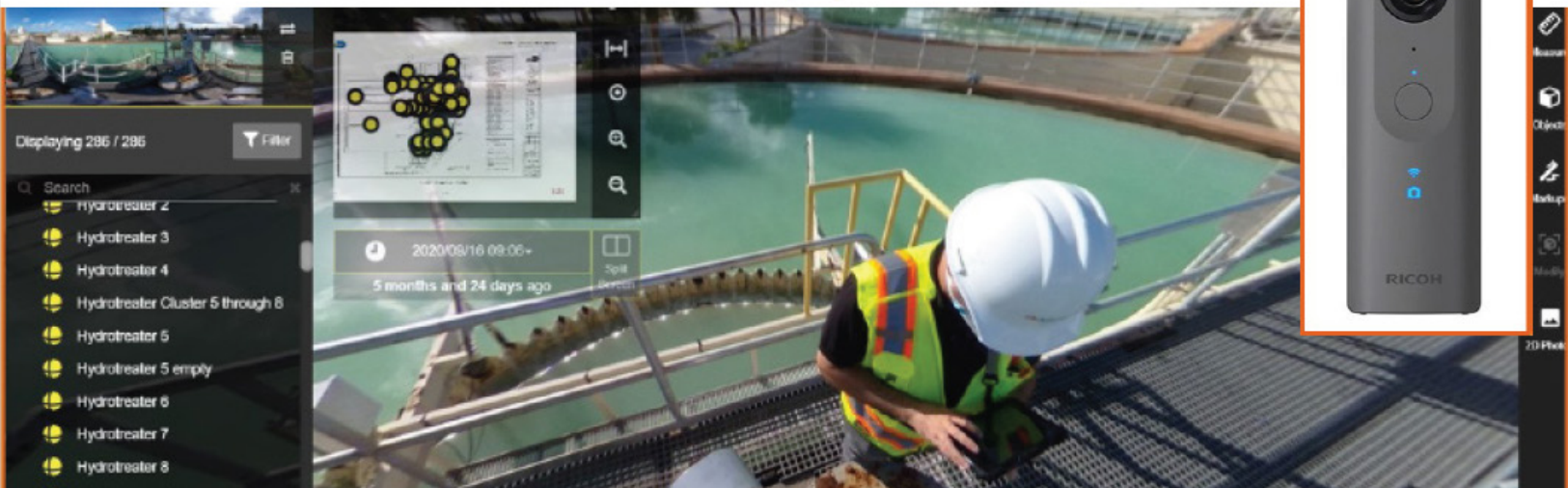
Arcadis utilizes industry-leading digital platforms to enable seamless collaboration, along with visual, interactive, and easily accessible solutions for our clients.

### Mobile Data Collection

Arcadis can bring the value of digital data collection to this project using a mobile-friendly data collection tool. This tool will standardize data at the point of collection and improve efficiency, accuracy and allow scaling effectively.

Traditionally, construction inspectors walk a construction site with design drawings while making notes in margins to record observations, construction progress and contractor change orders. The time it takes to get these notes from margin to action can mean costly mistakes or project delays. To make our inspectors more efficient, we use tablets.

### Reality Capture with 360° Camera & Holobuilder

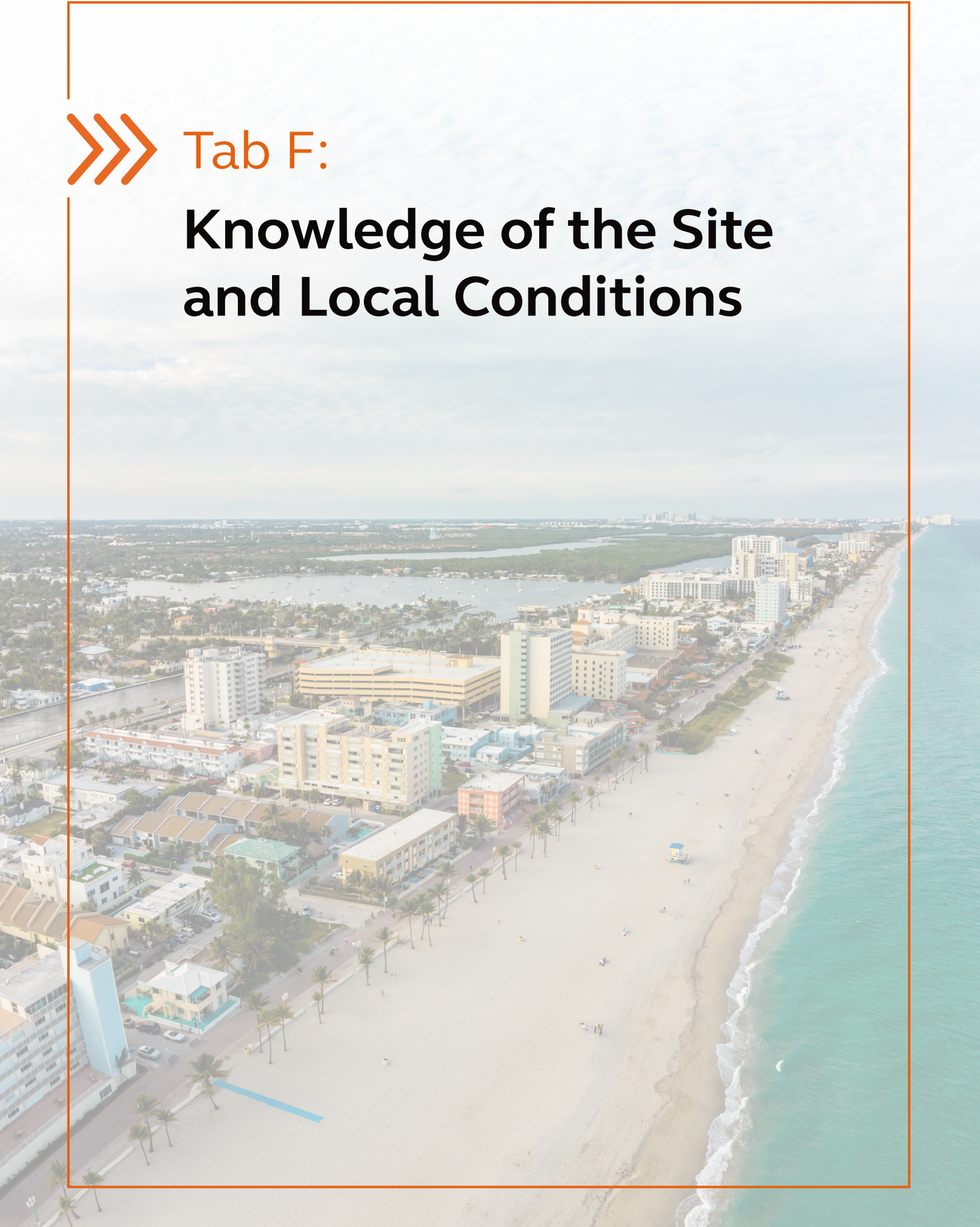






Tab F:

# Knowledge of the Site and Local Conditions





# Knowledge of Site and Local Conditions

## Local, County, State Regulations

Our work for the City of Hollywood will be led by staff from our office in Plantation and Florida, from which we are within close proximity to Hollywood and can quickly respond to issues as they arise. Arcadis also maintains offices in Tampa, Orlando, Miami, Sarasota, Boynton Beach, Jacksonville, Pensacola, and Tallahassee. Our staff have worked for numerous Florida communities including the City of Hollywood to expand and improve their utilities in all respects.

In recent years the Building Officials, County, and State reviewers have all shifted to digital permitting applications. This includes guidelines from Florida Board of Professional Regulations (FBPR) allowing for digital designing and sealing. Ultimately, this shortens the time from project start to project bid durations and allows for more transparency in the permitting process. Tung Nguyen and the team are experienced in obtaining permitting approvals from all levels of government and multiple jurisdictions in Broward County and South Florida. He is acquainted with building reviewers locally as well as state reviewers having signed off on recent project close-outs and inspections and coordinated with FDEP for pre-submittals meetings or discussing building permitting questions via Qless Virtual system.

- Florida Department of Environmental Protection (FDEP) Application for a Specific Permit to Construct PWS Components
- City of Hollywood Building Department
- Broward County

## Federal Regulations and Technical Standards Experience

Arcadis brings superior understanding of regulatory requirements as a result of our more than 25 years of experience providing engineering and technical support to the USEPA Office of Ground Water and Drinking Water (OGWDW). Over that period, we have conducted treatability studies, prepared technologies and costs (T&C) documents, and developed guidance to assist public water systems to meet critical requirements of many of the rules promulgated over that period.

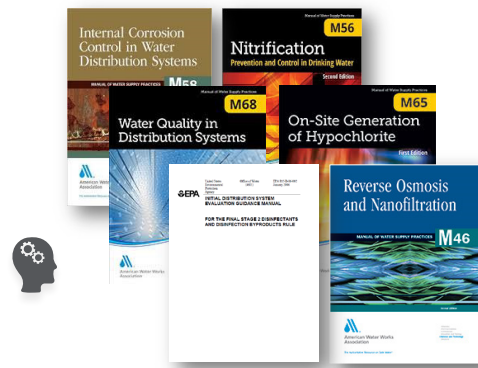
Arcadis developed T&C and guidance manuals for most major drinking water regulations over the past 15 years, including the Enhanced Coagulation and Enhanced Precipitative Softening Guidance Manual, the Stage 2 Disinfectants and Disinfection Byproducts Rule (DBPR) Operational Evaluation Guidance Manual, and the Membrane Filtration Guidance Manual. Our water treatment experts have also contributed to the development of numerous American Water Works Association (AWWA) standards and manuals of practice including M65: On-site Generation of Hypochlorite, M53: Microfiltration and Ultrafiltration Membranes for Drinking Water, M61: Desalination of Seawater, and the upcoming 2nd ed. of M46: Reverse Osmosis and Nanofiltration.

Arcadis has conducted evaluations and designed numerous NF and RO systems for utilities throughout the US. Our treatment process lead, **Michael Pilutti**, has designed 9 RO plants including the 66 MGD seawater desalination plant in Sydney, Australia and led the pilot testing and design effort for the upgrades to the City of Hollywood's existing NF trains. In addition, he has conducted numerous NF and RO pilot studies including a 1.5 MGD pilot plant where four separate treatment trains using RO and various forms of pretreatment were evaluated for their ability to remove various contaminants such as nitrate, atrazine, DBP precursors, and TDS. Mr. Pilutti is also a contributing author to AWWA M46: Reverse Osmosis and Nanofiltration.

## Constructability Reviews

Arcadis will review designs at the 90% design stage with a rigid Constructability/Bidability/Operability/ Maintainability (CBOM) review of the project. At the 90% stage, the contract documents should be in near final form with the exception of final details. Our reviews at this stage simulate the contractor's process to bid, procure, construct and startup the planned work. Part of the review will be to walk the site with the plans to identify potential conflicts. We have found that this effort is well worth the time since potentially expensive conflicts can be resolved prior to taking bids. We broaden the aspects of construction to account for the operations that will occur during construction and to test the designs for the future operability of the facilities. **Our thorough CBOM Reviews usually result in change orders of less than 2% of the total construction cost.**

**Our experts hold leadership roles on various organizations like the American Membrane Technology Association, lead research in emerging technologies, and have written dozens of guidance manuals.**



## Safety

At Arcadis, the safety and well-being of our employees, clients, and business partners is our most important priority. To that end, our health and safety (H&S) vision and policy reflect a proactive risk and behavior-based approach that integrates health, safety, and wellbeing into our culture, values, and the way we do business. We strive to achieve zero incidents in everything we do ensuring the health, safety, and well-being of our employees and our clients. Our H&S program covers standard safety and accident prevention in the workplace and at job sites, and we have a standard project H&S plan template. The program includes standards, processes, and elements that meet Occupational Safety and Health Administration (OSHA) and other governmental H&S requirements, as applicable. These proactive tools, along with risk tools that incorporate behavior-based safety into the program, go beyond compliance in our efforts to protect our staff and others associated with our projects from work-related injuries and illness. Central to our safety culture is the concept of **TRACK**:

- **T**hink through the task
- **R**ecognize the hazards
- **A**ssess the risks
- **C**ontrol the risks
- **K**eep health and safety first in all things

## Risk Management

Every project has risks. Managing and communicating them helps achieve that goal. Arcadis' risk management approach includes a comprehensive assessment and analysis of the project cost, performance and schedule. It requires input from numerous sources with influence from various factors, many beyond our control but all that affect the project delivery. We identify, analyze, quantify, monitor and communicate the project risks that our clients use to make informed decisions that lead to a higher chance of successful project delivery.

Arcadis provides complete risk management services including both qualitative and quantitative methods and analysis. We facilitate and conduct risk workshops; establish, compile and update risk registers; and, follow industry standards and use.



## Safety commitments

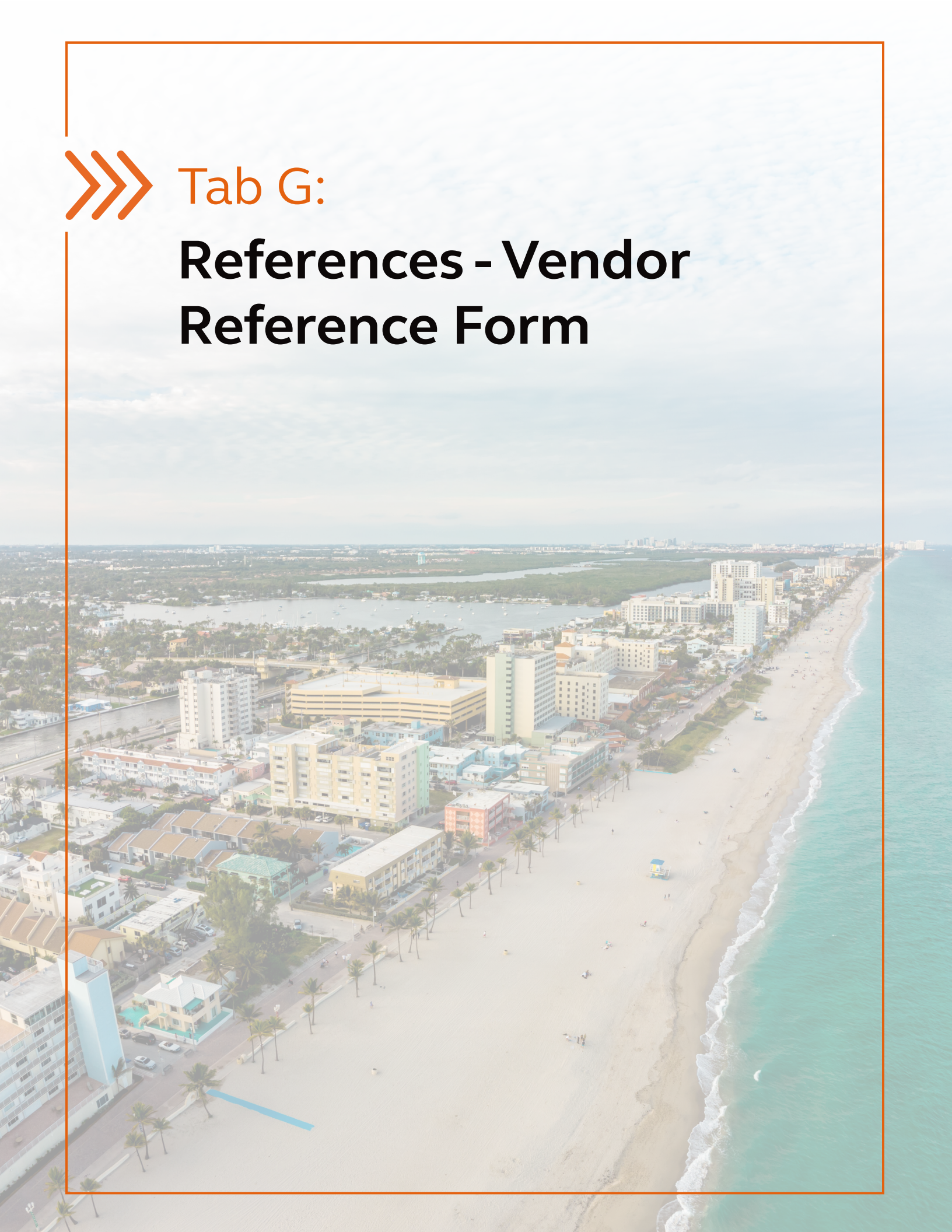
1. Our work is never so urgent or important that we cannot take the time to do it safely.
2. All injuries are preventable.
3. Everyone is obligated to refuse unsafe work.
4. Everyone is obligated to raise concerns about the hazards seen.
5. All levels of supervision are accountable for safety performance.
6. Employee and contractor commitment is essential for safety performance.
7. Excellence in safety leads to excellence in business.
8. Safety attitude off the job is as important as being on the job.





Tab G:

# References - Vendor Reference Form





# References - Vendor Reference Form

The below provides a brief overview of relevant projects (full writeups are included in Tab C: Firm Qualifications and Experience) for each vendor we have selected to provide a reference. The following pages include the completed Vendor Reference Form for the below listed clients/projects.

## 1. Sarasota County: Carlton EDR Phase 1 and 2

The T. Mabry Carlton Water Treatment Plant (WTP) is located in the southeastern portion of Sarasota County in the T. Marby Carlton, Jr. Memorial Preserve. The Carlton WTP is currently the County’s largest water producer with a rated capacity of 12 million gallons per day (MGD) maximum monthly average daily flow. The facility’s treatment includes degasification, pressure filtration, electro dialysis reversal (EDR), disinfection, and pH department.

## 2. City of Hallandale Beach: Continuing Professional Architectural and Engineering Services

Arcadis has provided as-needed engineering services for a variety of projects for the City of Hallandale Beach.

## 3. City of Tavares: General Engineering Services

Arcadis has provided as-needed engineering services for a variety of projects for the City of Tavares.

### What our Clients are Saying.....

“Arcadis has always provided exceptional service, and highly professional staff to assist our needs. Would highly recommend.”

---

*Peter Kunen, PE, Asst. Director  
PW/City Engineer  
City of Hallandale Beach*

“We have worked with Arcadis for years and they have always worked with us to find a way to get it done.”

---

*Phil Clark, Director of Utilities, City of Tavares*

“Arcadis provides the highest level of expertise needed for OUC’s complex projects.”

---

*Chuck DiGerlando, Manager, Water Distribution Engineering, Orlando Utilities Commission*

“This design was complex and challenging, the Arcadis staff and subsequently their work was outstanding, lead project engineer, Sean Chaparro led the team and county through self purchase of equipment and worked harmoniously with other firms as well saving costs.”

---

*Gene Allen, Project Manager, City of Sarasota*

1. Sarasota County: Carlton EDR Phase 1 and 2

**VENDOR REFERENCE FORM**

City of Hollywood Solicitation #: RFQ-041-23-JJ  
 Reference for: Arcadis U.S., Inc.

Organization/Firm Name providing reference: Sarasota County  
 Organization/Firm Contact Name: Gene Allen Title: Project Manager  
 Email: Public Utilities Phone: 941.861.0529  
 Name of Referenced Project: Carlton EDR Phase 1 and 2 Contract No: 2011-217  
 Date Services were provided: \_\_\_\_\_ Project Amount: \$4.4M (Design & CEI)  
 Referenced Vendor's role in Project:  Prime Vendor  Subcontractor/  
 Would you use the Vendor again?  Yes  No. Please specify in additional comments

**Description of services provided by Vendor (provide additional sheet if necessary):** Arcadis provided full design services to upgrade the Carlton Water Treatment Facility, which included; new Suez EDR membranes and associated equipment, pressure filter vessels, electrical, various mechanical pumps, piping and instrumentation & controls.

Please rate your experience with the Vendor	Need Improvement	Satisfactory	Excellent	Not Applicable
<b>Vendor's Quality of Service</b>				
a. Responsive	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Accuracy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Vendor's Organization:</b>				
a. Staff expertise	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Professionalism	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Staff turnover	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Timeliness/Cost Control of:</b>				
a. Project	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**Additional Comments (provide additional sheet if necessary):** This design was complex and challenging, the Arcadis staff and subsequently their work was outstanding, lead project engineer, Sean Chaparro lead the team and county through self purchase of equipment and worked harmoniously with other firms as well saving costs.

****THIS SECTION FOR CITY USE ONLY****					
Verified via:	Email:	<input type="checkbox"/>	Verbal:	<input type="checkbox"/>	Mail: <input type="checkbox"/>
Verified by:	Name:				Title:
	Department:				Date:

2. City of Hallandale Beach: Continuing Professional Architectural and Engineering Services

**VENDOR REFERENCE FORM**

City of Hollywood Solicitation #: RFQ-041-23-JJ  
 Reference for: Arcadis U.S., Inc.

Organization/Firm Name providing reference: City of Hallandale Beach

Organization/Firm Contact Name: \_\_\_\_\_ Title: \_\_\_\_\_

Name: Peter Kunen, P.E. Title: Asst. Director PW/City Engineer

Email: pkunen@cohb.org Phone: 954.457.3042

Name of Referenced Project: Continuing Professional Architectural and Engineering Services and Other Services Contract No: (RFP) # FY 2018-2019-012

Date Services were provided: April 2021 - Present Project Amount: \$584,600

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

Description of services provided by Vendor (provide additional sheet if necessary):  
Lift Station No. 6 Rehabilitation Engineering, Services During Construction and Post Construction Services and Systemwide Telemetry System Engineering Services

Please rate your experience with the Vendor	Need Improvement	Satisfactory	Excellent	Not Applicable
<b>Vendor's Quality of Service</b>				
a. Responsive	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Accuracy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Vendor's Organization:</b>				
a. Staff expertise	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Professionalism	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Staff turnover	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Timeliness/Cost Control of:</b>				
a. Project	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Additional Comments (provide additional sheet if necessary): Arcadis has always provided exceptional service, and highly professional staff to assist our needs. Would highly recommend.

****THIS SECTION FOR CITY USE ONLY****				
Verified via:	Email: <input type="checkbox"/>	Verbal: <input type="checkbox"/>	Mail: <input type="checkbox"/>	
Verified by:	Name:		Title:	
	Department:		Date:	



3. City of Tavares: General Engineering Services

**VENDOR REFERENCE FORM**

City of Hollywood Solicitation #: RFQ-041-23-JJ  
 Reference for: Arcadis U.S., Inc.

Organization/Firm Name providing reference: City of Tavares, FL  
 Organization/Firm Contact Name: Phillip Clark Title: Director of Utilities  
 Email: pclark@tavares.org Phone: 352.742.6485  
 Name of Referenced Project: Continuing Engineering Services - CRA Stormwater Improvements Contract No: 2013-0004  
 Date Services were provided: 2014 - 2017 Project Amount: \$1,183,000  
 Referenced Vendor's role in Project:  Prime Vendor  Subcontractor/ Subconsultant  
 Would you use the Vendor again?  Yes  No. Please specify in additional comments

**Description of services provided by Vendor (provide additional sheet if necessary):**  
 Stormwater Improvements in the CRA downtown area including: converting wetland areas to a stormwater treatment pond, interceptor piping, stormwater control structures with overflow outfall piping to Lake Dora. Included SRF funding compliance.

Please rate your experience with the Vendor	Need Improvement	Satisfactory	Excellent	Not Applicable
<b>Vendor's Quality of Service</b>				
a. Responsive	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Accuracy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Vendor's Organization:</b>				
a. Staff expertise	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Professionalism	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Staff turnover	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Timeliness/Cost Control of:</b>				
a. Project	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

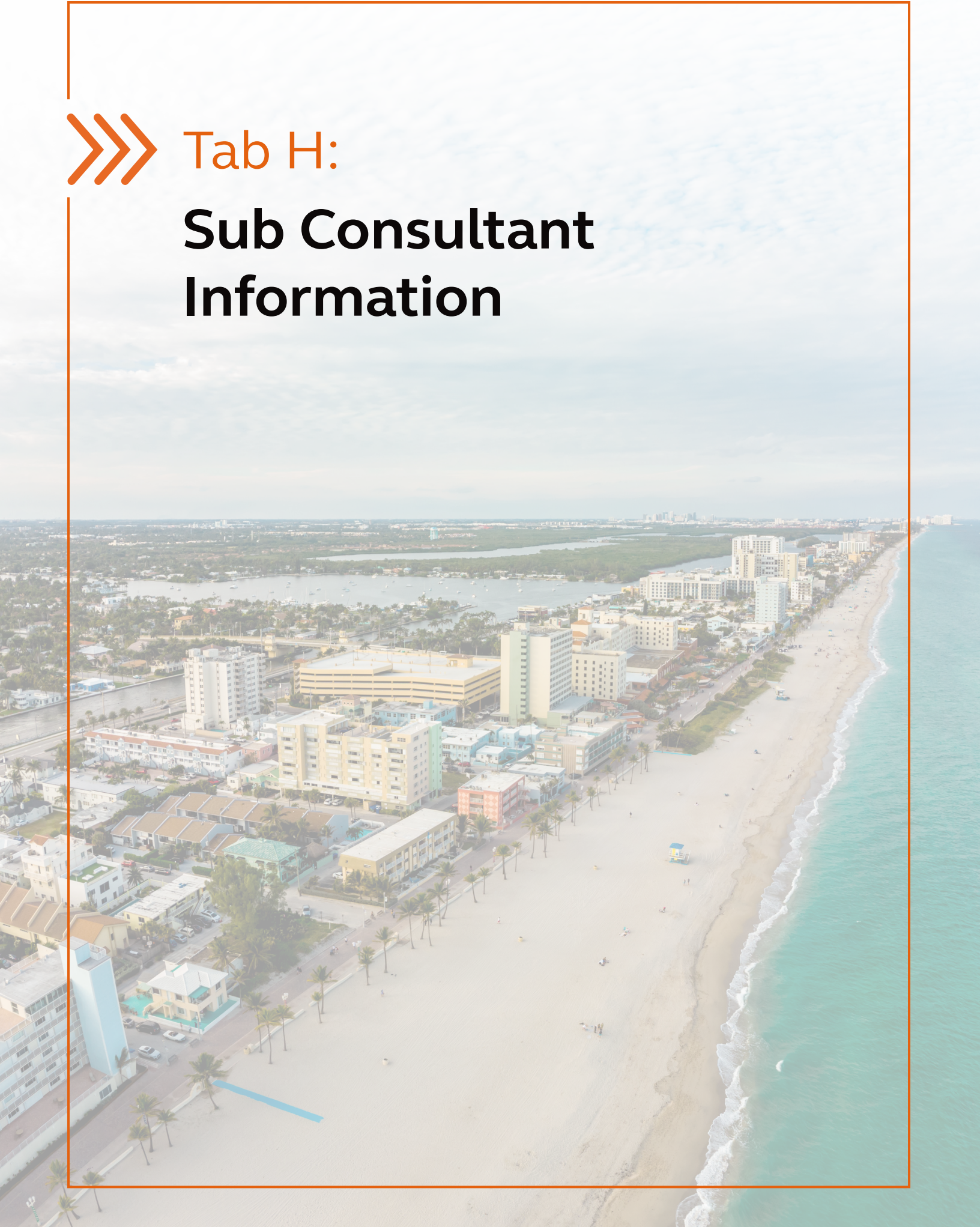
**Additional Comments (provide additional sheet if necessary):** *Arcadis is a good company. We continue to use their services.*

****THIS SECTION FOR CITY USE ONLY****				
Verified via:	Email:	<input type="checkbox"/>	Verbal:	<input type="checkbox"/>
	Mail:	<input type="checkbox"/>		
Verified by:	Name:		Title:	
	Department:		Date:	



Tab H:

# Sub Consultant Information





# Subconsultant Information

In addition to our subconsultant partners listed below, we have numerous relationships with other subconsultants such as geotech, public outreach, traffic engineering, and others that we could engage rapidly as specific project needs arise.



### Role: Electrical and Controls

McKim & Creed is a committed team of talented professionals who improve the quality of life for businesses and communities by providing world-class engineering and geomatics solutions. Our technical specialties include civil, environmental, mechanical, electrical, plumbing, and structural engineering; industrial design-build services; airborne and mobile LiDAR/scanning; unmanned aerial systems; subsurface utility engineering; and hydrographic and conventional surveying services for the energy, transportation, federal, land development, water and building markets. As an employee-owned company that has been in operation since 1978, we provide these services through excellent work, dedicated service and a passionate desire to solve problems and impact lives. McKim & Creed's depth of local resources offers the flexibility to provide experienced staff at your disposal to keep your project on track. Our solid background and experience have resulted in the method and controls being in place to balance staff requirements while maintaining quality, schedule and budget for our clients. McKim & Creed is committed to meeting budget and schedule requirements.



### Relevant Project:

#### Lift Station 87, Sarasota County, FL

Lift Station 7, which handled approximately one-third of the City's wastewater flow, was at the end of its useful life and had a history

of mechanical failures and overflows to an environmentally sensitive waterbody. The City entered into a Consent Order with FDEP to improve the level of service and reliability of the facility by constructing a new master lift station, Lift Station 87, to replace Lift Station 7. Due to site constraints at the existing site, the new lift station had to be relocated.



Preliminary services included hydraulic modeling and a criticality analysis of 26 lift stations in the service area to size the master lift station for future growth. Impacts from sea level rise and Hurricane 1 through 5 winds and storm surges were also evaluated to develop a sustainable and resilient design.

A cost-benefit analysis determined that the new Lift Station 87 facility should be constructed to an elevation of 26 feet to protect critical equipment from potential impacts of catastrophic storm events. This would protect the new lift station facility from storm surges associated with a Category 3 hurricane and would facilitate reconstruction of the Lift Station 87 service area after a catastrophic storm event.

**Mr. Aubrey Haudricourt**, of McKim and Creed, brings more than 28 years of experience in electrical and instrumentation engineering combined. He has designed and overseen the installation of power generation, controls systems, lighting for large facilities. He has also been involved in security assessment and security design. His expertise includes evaluating existing conditions, treatment facility electrical systems, and both electrical



### Role: Risk and Resilience Planning

Launch! Consulting, Inc. (Launch) is a woman-owned, micro-SWaM consulting firm based in Charlottesville, Virginia, with a national footprint of delivering more than 150 resilience projects from Anchorage to Miami. Our CEO, a professional engineer and expert facilitator,

is a national leader in emergency response and recovery planning. Launch often partners with large engineering firms and small specialized firms to accomplish client goals. We bring expert knowledge and facilitation to lead highly functioning teams for all stages of emergency management. Our well-organized, facilitated projects are conducted by nine full-time staff.

Launch staff lead and participate in national committees for professional organizations such as the American Public Works Association (APWA) and the American Water



Works Association (AWWA). We have grant specialists successful in winning state and federal funding for our city clients; emergency power experts who led the response to critical infrastructure emergency power needs for many storms while in the Army Corps of Engineers assisting FEMA; and nationwide trainers who not only taught disaster management for FEMA as part of the Texas A&M Engineering Extension Service (TEEX) program for seven years, but also developed and taught the Risk and Resilience Certificate Program for AWWA – one of the organization’s most popular trainings in its history.

Launch is certified by the National Women Business Owners Corporation (Certification #RWBE16139) and by Virginia as a micro-Small Woman and Minority (SWaM) (certification #709885) and a Disadvantaged Business Enterprise (DBE). With more than 12 years in business and a CEO who previously led the disaster preparedness group for a large international engineering company, Launch operates a highly successful consulting practice focused on emergency management services and all things resilience.

**Relevant Project:**

**Security/Risk Assessment Emergency Response - Broward County Water & Wastewater Services**

Launch provided several resilience plans for the five Divisions of the Broward County utility. The first project was a Security/Risk Assessment for critical infrastructure improvements at the 95 MGD North Regional Wastewater Treatment Plant (NRWTP).

The Launch team then provided an evaluation of the existing Hurricane Plan and Continuity of Operations Plan. Then through a series of workshops involving staff from many county departments, Launch developed a risk communications plan, an emergency response plan, and a continuity of Operations Plan. The Launch team conducted a series of workshops and field assessments (including night visits) to complete the Security/Risk Assessment. The assessment utilized the J100-10 standard for a comprehensive review of the wastewater utility with regard to both man-made and natural hazards. This included SCADA analysis of proposed SCADA upgrades (using AWWA’s Cyber Security tool).



**Ms. Linda Warren, PE** - As the Principal of Launch for 12 years, Ms. Warren has been at the forefront of securing Water and Wastewater Utilities since 9/11, before which she focused on source water protection (28 years of experience). Ms. Warren is a professional civil engineer and facilitator, proficient at bringing multiple stakeholders together from local, state and federal agencies to build resilient communities. She has developed emergency response plans and related documents, designed and facilitated emergency exercises, developed continuity plans, and conducted team resilience trainings for public works, utilities, and localities. Trainings which Ms. Warren developed are used nationally.



**Role: Utility Advisor**

Tobon Engineering is a minority owned engineering consulting business founded by Maurice Tobon, P.E., PMP a Professional Engineer with over 33 years of experience in water, wastewater engineering, master planning, utilities management, hydraulic modeling, and climate change in south Florida and internationally.

**Relevant Project:**

**Royal Utility Company Engineering Services**

Royal Utility Company provided (sold in 2020) water and sewer service to 4,300 Coral Springs residents consisting of single family, multi-family units as well as two large commercial developments. Royal Utility’s 0.5 square mile service area was essentially the “hole in the doughnut”

within the City’s service area. Tobon Engineering served as the utility and engineer of record for all matters relating to the operation and management of the utility. Royal Utility infrastructure consisted of a water treatment plant, wells, distribution system and wastewater pump stations. He regularly interfaced with the City of Coral Springs, Broward County Health Department and Broward County Water and Wastewater Services on operational issues of the utility.



As the Engineer of Record for the utility Tobon Engineering was involved with various operational issues and projects such as:

- Representing the utility for issues relating to permitting and compliance

- Hydraulic modeling
- Lead and Copper Rule compliance
- Backflow and cross connection compliance
- Review of new developments for adherence to standards
- Construction inspection
- Sanitary sewer surveys
- Capital projects including rehabilitation of water treatment equipment and structures
- Liaison with the City of Coral Springs and Broward County in all matters including large user agreements

**Maurice Tobon, PE, PMP** – President of Tobon Engineering and a professional water engineer with over 30 years of experience in water, wastewater, reclaimed water engineering, climate change and utilities management in south Florida and internationally. Served for over fifteen years at the highest management levels of two of the largest water utilities in south Florida (Palm Beach County and City of Fort Lauderdale) and was responsible for nearly \$1 billion in program management capital improvements. Unique experience and insight from being in government for many years and understands the issues faced by water and wastewater utilities. Responsible for formulating sustainable infrastructure solutions in line with strategic visions and key intended outcomes and missions as defined by the Executive Administration.



**Role: Survey and Geotechnical Services**

Stoner & Associates was founded by James D. Stoner, P.S.M. in 1988. Stoner & Associates has over fifteen employees, including four Licensed Professional Surveyor and Mappers, supervising four survey field crews. Stoner & Associates maintains an office in Fort Lauderdale, Florida. Teamwork and highly qualified personnel are the foundation of the company. Their team of Licensed Professional Land Surveyors has worked together for over twenty years. During this time, they have developed their skills and developed a team that can make accurate surveys seamlessly and efficiently. They also have developed the ability to work as part of a team, participating on large projects. They know that other professionals rely on their survey products for the basis of their projects and they take that responsibility seriously. Stoner & Associates is committed to utilizing the latest technology. They employ the latest technology to produce our high quality surveys. Their formidable arsenal of tools includes electronic and robotic total stations, automated data collection, Real Time GPS, and CADD Mapping Software.

**Clients & Projects**

**City of Sunrise**

- University Hospital – Sketch and Legal Descriptions
- Davie Country Club – Sketch and Legal Descriptions

- Southwest Water Treatment Plant – As-Built Survey
- Sunrise Road Improvements – Various Topographic Surveys
- Five Vacant Parcels – Boundary Surveys
- Park City Water Treatment Plant – Updated Boundary Survey
- Passive Park – Topographic and Utility Surveys
- City Hall Parking Lot – Topographic Survey
- N.W. 44th Street – Topographic Survey

**Town of Davie**

- Oakes Road Fire Station – Boundary Survey
- Lift Station Number 11 Improvement Project – Topographic Survey
- Silver Lakes Park – Construction Layout Survey
- Wachovia Bank Parcels – Boundary, Topographic, & Tree Surveys
- Parks & Recreation Building at Pine Island Park – Topographic Survey
- Orange Drive – Topographic & Tree Surveys
- Eastside Community Hall – Topographic & Tree Surveys
- N-20 Canal – Topographic Survey
- Public Works Gas Pump Station – Topographic Survey
- S.W. 130th Avenue Canal – Topographic Survey
- Sunny Lake Expansion – Boundary Survey



**Role: Subsurface Utility Exploration**

Blood Hound is an underground utility locating firm based in the heart of the Midwest, providing services nationwide. Using state-of-the-art techniques and technology, they can locate any and all underground utilities and structures. That includes privately owned and exotic facilities such as chilled water, chemical transport, process, waste, or underground storage tanks.

Although it's the law to call 8-1-1 before you dig, this system doesn't locate these utilities. Blood Hound makes use of a variety of technologies, including state-of-the-art EM scanning, GPS mapping, Ground Penetrating Radar, camera inspection, and vacuum excavation, so you can be sure that if it's on your job site, you will know about it before your shovel does.

**Gold Shovel Standard® Certified**

Blood Hound has earned Gold Shovel Standard Certification by meeting the high standards of the Gold Shovel Standard (GSS) organization, which sets the standard for timely, accurate locating infused with ample communication between stakeholders. GSS advocates for a close partnership between asset owners and utility locators.



**Role: Material Testing**

Founded in 1984, Corrosion Probe, Inc. (CPI) has built an international reputation for providing consulting, engineering design and technical support for corrosion control and prevention, condition assessment, structural rehabilitation, quality control and quality assurance (QC/QA), inspection, and specialty nondestructive testing services to clients in the municipal water and wastewater industries throughout the U.S. and Canada. CPI applies these disciplines to piping, tanks, and other conveyance system equipment and structures, including metals, FRP/ other plastics, and protective coatings.

CPI has teamed with Arcadis for over 14 years, including the City of Hollywood for FRP tanks and Spiractor supports.

**Relevant Projects:**

**City of Hollywood, FL, WTP – FRP Tank Inspections**

CPI, as a subconsultant to Arcadis, performed multiple internal and external inspections of the sodium hypochlorite day and bulk tanks, which included side entry



and vertical entry only. All inspections performed per applicable sections of TAPPI TIP 0402-28, CPI's internal best practice for inspection of FRP equipment, and FRPI's Aboveground Storage Tank Inspector Certification and Licensing Manual. Report of findings included recommendations for repairs and statement on continued use.

**City of Hollywood, FL, WTP – Spiractor Support Inspections**

CPI, as a subconsultant to Arcadis, inspected the six legs, anchor plates, attachment welds and bolts for 12 Spiractor supports and reported condition information to the Arcadis Resiliency Study. Report detailed inspections performed and associated results, CPI's opinion of the

structural integrity of components exhibiting significant deterioration, and any recommendations for rehabilitation.

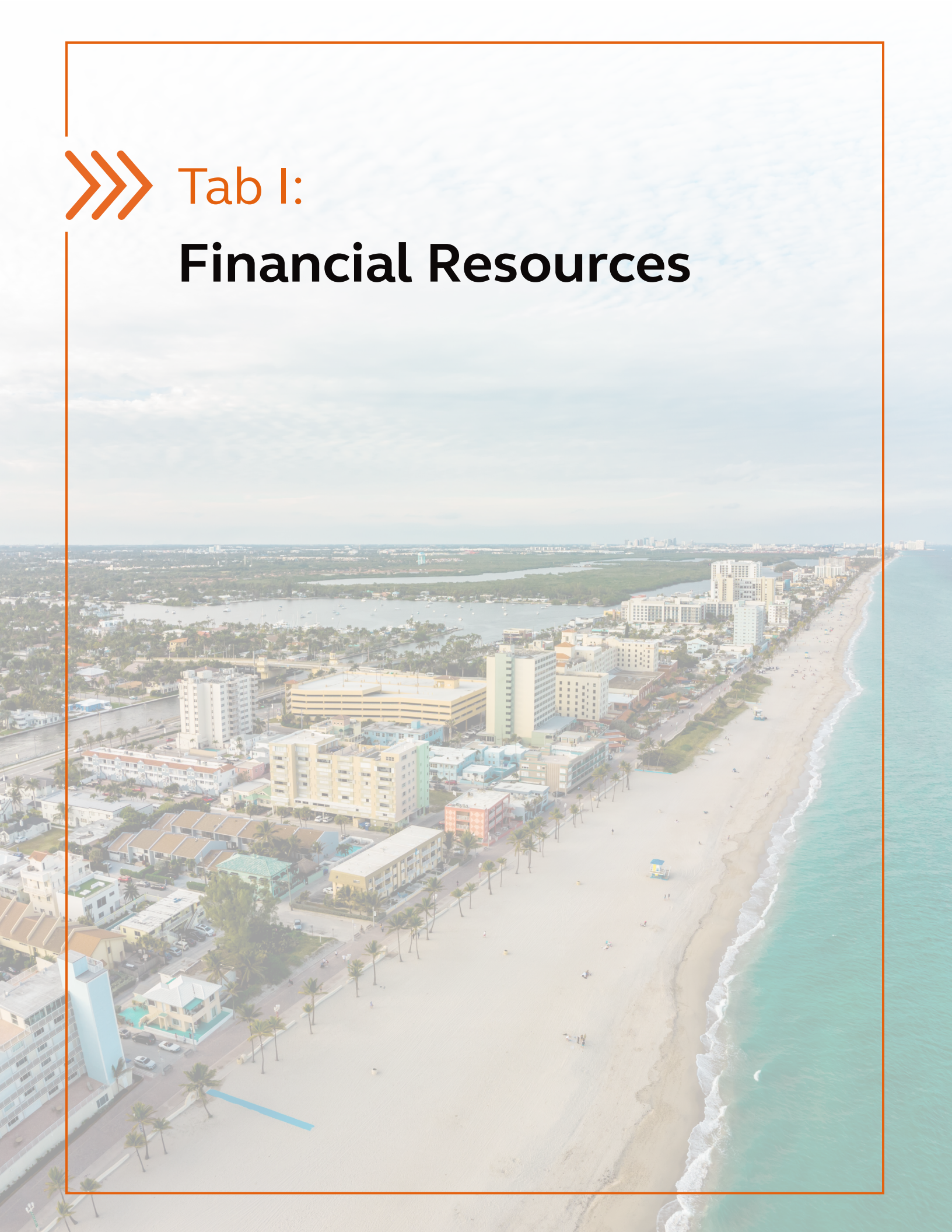






Tab I:

# Financial Resources



# Financial Resources

## ARCADIS U.S., INC. AND SUBSIDIARIES

### Consolidated Statements of Financial Position

As at December 31

(Dollar amounts in thousands)

Assets	Note	2021	2020
<b>Current assets:</b>			
Cash and cash equivalents		\$ 25,985	16,074
Accounts receivable, net	2	328,589	346,081
Related-party receivables	13	167,707	170,861
Related party - income taxes receivable		11,234	—
Other current assets		8,853	12,361
Total current assets		<u>542,368</u>	<u>545,377</u>
Property and equipment	4	19,588	22,006
Right-of-use assets	5	35,486	42,021
Goodwill and intangible assets	6	275,288	275,385
Other non-current assets		15,558	14,721
Total assets		<u>\$ 888,288</u>	<u>899,510</u>
<b>Liabilities and Stockholder's Equity</b>			
<b>Current liabilities:</b>			
Accounts payable		\$ 128,041	108,873
Accrued expenses		106,011	94,005
Related party - income taxes payable		—	86,520
Billings in excess of cost		97,136	75,171
Current portion of lease liabilities	5	15,683	18,880
Other current liabilities		10,325	21,639
Total current liabilities		<u>357,196</u>	<u>405,088</u>
Deferred compensation		12,524	11,998
Deferred tax liabilities	9	17,027	22,513
Lease liabilities	5	27,818	34,631
Other non-current liabilities		2,587	1,261
Total liabilities		<u>417,152</u>	<u>475,491</u>
<b>Stockholder's equity:</b>			
Preferred stock, \$0.01 par value			
Authorized, 1,000 shares; none issued		—	—
Common stock, \$0.01 par value			
Authorized, 9,000 shares; issued 387 shares		—	—
Additional paid-in capital		371,605	371,364
Retained earnings		99,531	52,655
Total equity		<u>471,136</u>	<u>424,019</u>
		<u>\$ 888,288</u>	<u>899,510</u>

See accompanying notes to consolidated financial statements.

**ARCADIS U.S., INC. AND SUBSIDIARIES**  
 Consolidated Statements of Comprehensive Income  
 For the Year Ended December 31  
 (Dollar amounts in thousands)

	<b>Note</b>	<b>2021</b>	<b>2020</b>
Gross revenue	7	\$ 1,434,948	1,413,760
Materials, services of third parties and subcontractors		<u>539,434</u>	<u>537,418</u>
Net revenue from services		895,514	876,342
Personnel costs	8	679,343	658,964
Other operating expenses	8	92,864	92,687
Depreciation and amortization expense	4,5,6	<u>21,347</u>	<u>26,396</u>
Income from operations		101,960	98,295
Other income (expense):			
Interest income		75	1,053
Interest expense		<u>(1,662)</u>	<u>(2,245)</u>
Income from operations before provision for income taxes		100,373	97,103
Provision for income taxes	9	<u>27,295</u>	<u>28,921</u>
Profit and Comprehensive income		<u>\$ 73,078</u>	<u>68,182</u>

See accompanying notes to consolidated financial statements.



**ARCADIS U.S., INC. AND SUBSIDIARIES**

Consolidated Statements of Changes in Equity

For the Year Ended December 31

(Dollar amounts in thousands)

	Common stock		Additional paid-in capital	Retained earnings	Total
	Shares	Amount			
Balances at January 1, 2020	387	\$ —	372,775	54,473	427,248
Comprehensive income	—	—	—	68,182	68,182
Dividends	—	—	—	(70,000)	(70,000)
Stock exercises and excess tax benefit	—	—	(1,411)	—	(1,411)
Balances at December 31, 2020	387	—	371,364	52,655	424,019
Comprehensive income	—	—	—	73,078	73,078
Dividends	—	—	—	(26,202)	(26,202)
Stock exercises and excess tax benefit	—	—	241	—	241
Balances at December 31, 2021	387	\$ —	371,605	99,531	471,136

See accompanying notes to consolidated financial statements.

**ARCADIS U.S., INC. AND SUBSIDIARIES**

Consolidated Statements of Cash Flows

For the Year Ended December 31

(Dollar amounts in thousands)

	Note	<u>2021</u>	<u>2020</u>
Cash flows provided by operating activities:			
Comprehensive income		\$ 73,078	68,182
Adjustments to reconcile net income to net cash provided by (used in) operating activities:			
Allowance on receivables		419	(1,078)
Depreciation and amortization	4,5,6	21,347	26,396
Deferred income taxes		(5,486)	(2,477)
Interest expense leases		1,492	2,177
Changes in assets and liabilities:			
Receivables		27,770	160,071
Other current assets		3,508	(7,080)
Other assets		(837)	109
Accounts payable		19,168	(81,258)
Accrued expenses		11,709	(1,986)
Billings in excess of cost		21,965	(3,735)
Income taxes payable		(88,056)	6,005
Deferred compensation		526	(653)
Other liabilities		(9,988)	18,081
Net cash provided by operating activities		<u>76,615</u>	<u>182,754</u>
Cash flows from investing activities:			
Capital expenditures	4,6	(5,108)	(4,390)
Proceeds from sale of property and equipment	4	333	80
Payments for acquisitions, net of cash received		—	(1,555)
ARCADIS cash pooling arrangement	13	(17,000)	(108,000)
Net cash used in investing activities		<u>(21,775)</u>	<u>(113,865)</u>
Cash flows from financing activity:			
Payment of dividends	13	(26,202)	(70,000)
Principal payments on lease obligations	5	(18,727)	(20,641)
Payment on Intercompany Loan		—	—
Net cash used in financing activity		<u>(44,929)</u>	<u>(90,641)</u>
Net increase in cash and cash equivalents		9,911	(21,752)
Cash and cash equivalents, beginning of year		<u>16,074</u>	<u>37,826</u>
Cash and cash equivalents, end of year		<u>\$ 25,985</u>	<u>16,074</u>

Sincerely,

Leah K. Richter, PE



Tab J:

# Legal Proceedings and Performance





# Legal Proceedings and Performance

Arcadis U.S., Inc. has never been terminated for default. Also, Arcadis has never paid any liquidated damages.


## 1. Arbitrations

ARCADIS		Design & Consultancy for natural and built assets	Updated:	Q4 2022				
The following is a summary of the requested litigation for the preceding five years. Such claims are disputed and not reasonably expected to be adversely determined, applicable insurance is available, and/or such claims are not reasonably expected to materially impact the financial condition or the operations of Arcadis.								
<b>Litigation Ten-Year History:</b>			<b>Arcadis U.S., Inc. and All Affiliates</b>					
Plaintiff	Defendant (Arcadis Affiliate)	Date Suit Filed	Nature of Incident	Type of Claim	Jurisdiction	Business Line	Government Claim (Y/N)	Resolution 1 = Case Ongoing 2 = Dismissal 3 = Resolved/Settled 4 = Judgement 5 = N/A
Commonwealth Edison	Arcadis US	Feb-22	Plaintiff filed claim for damages due to utility strike	General Liability	Cook County, IL	Env	N	1
Edgewater Pearl Cond Assoc.	Arcadis US	Aug-21	Plaintiff alleges negligence in consulting related to contamination of soils	General Liability	Bergen Cnty, NJ	Env	N	1
B.L. Harbert Int'l, LLC	Arcadis US	Jul-21	Plaintiff alleges refusal to amend contract due to change orders impacting contract price and completion date	Breach of Contract	Jefferson Cnty, AL	Infra	N	1
K.K. Machine Co., Inc.	Arcadis US	Jul-20	Plaintiff claims negligence resulting in structural damages to business property during adjacent sewer project	Prof. Liability	Queens Cnty, NY	Water	N	1
Stryker Demolition	Arcadis US	Mar-20	Plaintiff claims breach of contract and unjust enrichment	Breach of Contract	DE	Env	N	1
Burnham, Jacoba	Arcadis CE; Arcadis FieldTech Solutions	Dec-19	Plaintiff claims negligence resulting in structural damages to residence during Woolsey Fire remediation	General Liability	Los Angeles Cnty, CA	Env	N	3
P.F. Moon Co., Inc.	Arcadis US	Aug-19	Third party complaint claiming professional negligence and breach of contract causing monetary damages	Breach of Contract	Hamilton County, TN	Water	N	1
Rivera, Jackelyn and Gilberto	Arcadis US	Jul-18	Plaintiffs allege negligence in connection with CM services	Prof. Liability	Broward Cnty, FL	Infra	N	3
Popel, Shulamit	Arcadis US	Mar-18	Plaintiff alleges negligence in connection with roadway in construction zone	General Liability	Cook Cnty, IL	Infra	N	3
Woodbranch Cowltown Parking	Callison RTKL and Arcadis US	Feb-18	Plaintiff alleges breach of contract and negligence in connection with parking garage plans	Breach of Contract/ Prof. Liability	Tarrant Cnty, TX	Water	N	3
Lecain, Judith and Richard	Arcadis US	Jan-18	Plaintiff alleges negligence in connection with intersection design	Prof. Liability	Chatham Cnty, GA	Infra	N	3

## 2. Lawsuits

Please see above.

### 3. Other Proceedings



**ARCADIS OSHA and MSHA CITATIONS 5-YEAR SUMMARY DESCRIPTIONS (01-01-18 to 01-13-23)**

Arcadis U.S. (Arcadis) and its affiliated companies have over 100 offices located throughout the U.S. with over 5,000 employees. In the past five years, Arcadis has performed thousands of contracts for hundreds of clients. Given the size of the organization, the geographic distribution of its offices, and our growth, Arcadis has very few occupational safety citations/violations. None of these citations/violations have affected Arcadis' ability to perform our services and each has been satisfactorily resolved. A five-year list of Occupational Safety and Health Administration (OSHA) and Mine Safety and Health Administration (MSHA) citations/violations is provided below:

**(STATE) MIOSHA Citation 1503321.015:** On November 19, 2020, a job site on property owned by UPS at 162 Walnut Street, Petersburg, MI, was visited by a Michigan OSHA inspector who notified Arcadis that one (1) on-site fire extinguisher at the location was not up-to-date on inspections. Arcadis purchased a new fire extinguisher and placed it on site on November 20, 2020. MIOSHA did not issue a monetary fine and listed the violation as "other-than-serious."

**(FEDERAL) MSHA Citations #9343689 and #9343691:** During the week of July 12, 2018, MSHA completed an inspection at the Berkley Pit Mine site (Continental Mine 24-00338) in Butte, Montana where Arcadis was working for Montana Resources. Arcadis was issued two Notices of Violation ("NOV"): (1) NOV No. 9343689 was issued on July 12, 2018 for not having an audible backup alarm on a rental pickup truck operated by Arcadis within the mine site boundary; and (2) NOV No. 9343691 was issued on July 13, 2018 for failing to set the parking brake and to chock the wheels on a parked vehicle.

Following a safety health conference call with the MSHA Rocky Mountain District, wherein Arcadis presented various defenses and mitigating circumstances relating to the inspection and the NOVs, the gravity designation for NOV No. 9343691 was modified to "unlikely" and not "significant and substantial" and Arcadis paid a \$118 civil penalty to settle and resolve the NOV. Arcadis subsequently contested NOV No. 9343689 before the Federal Mine Safety and Health Review Commission on the grounds that the pickup truck was stationary at the time of inspection and the applicable Regulation provides for several methods of safe backing, which is consistent with Arcadis' policies and practices for backing of vehicles. Prior to the hearing on Arcadis' contest, Arcadis and MSHA agreed to settle the NOV by modifying the gravity designation for NOV No. 9343689 to "unlikely" and not "significant and substantial" and Arcadis paid a \$118 civil penalty to settle the NOV economically and amicably.

Please reach out to Corporate Legal and Corporate Health and Safety for additional information.

arcadis.com  
This document is intended for the internal use of this questionnaire and may not be distributed externally or reproduced for external distribution in any form without express written permission of Arcadis North America Corporate H&S Director/Specialist.

Page:  
1/1

### 4. Bankruptcies

Arcadis has not been involved in any bankruptcy or reorganization proceedings in the last 10 years.

### 5. Terminations

Arcadis U.S., Inc.

#### Terminations & Missed Milestones

##### Terminations

Project	Description
Confidential Natural Gas Client	<b>For Cause:</b> October 2021 - Confidential Natural Gas Client  Arcadis was engaged for emergency response work to support a pipeline spill, which was a successful initiative. Following completion thereof, the project was turned over to the client to perform derivative remediation and restoration of the site. This client division had a contractual standard of care for work and expectations that were above market standard, and which Arcadis worked diligently to meet. The client ultimately stated that they did not think Arcadis could meet their expectations at this site and elected to terminate the contract.
Confidential State Agency – Environmental Protection Division August 2022	<b>For Convenience:</b> August 2022  State agency's needs changed and going forward the requirements for the project shifted to essential project management work.
Confidential Telecommunications Client, Environmental Remediation Project	<b>For Convenience:</b> There was inability to complete planned work and close a particular site in 2019, requiring a contract extension and remobilization of the site contractor into 2020. Arcadis was tasked with working with the site contractor to complete dewatering and excavation of contaminated soils. Roles and responsibilities of the various contracted parties were unclear, especially related to dewatering, and the client asserted that it was Arcadis who was responsible for dewatering; the lack of which led to delays before winter shut down. The client then opted to conclude Arcadis' contract for further work.
Confidential Railroad Client, Environmental Site Assessment	<b>For Convenience:</b> Confidential client elected to terminate certain Work Orders under an overarching MSA (which was not terminated), using the Termination for Convenience contractual provision.
Confidential Energy Client	<b>For Convenience:</b> Confidential client transitioned a small retail portfolio from Arcadis Canada Inc. to another vendor in the province of Ontario via the Termination for Convenience provision within our Multi-Sites Agreement (MSA). The MSA remains in effect and Arcadis Canada Inc. continues to perform work for this client in the Atlantic Provinces and Quebec.
Confidential Energy Client	<b>For Convenience:</b> Arcadis was terminated from this confidential client project in Texas, Project in October 2020, via the Termination for Convenience contractual provision.
Confidential Energy Client	<b>For Convenience:</b> Arcadis Canada Inc., lacked certain essential resources to perform on this program and meet core deliverables, so certain portions were transferred out of our scope.
Confidential Municipal Client	<b>For Convenience:</b> Seven (7) days' notice was given on April 23, 2021, for a termination date of April 30, 2021, pursuant to the Termination for Convenience clause.

### 6. Bonding

Arcadis has never had to used bonding moneys to complete a project or to pay a subconsultant or supplier.

Sincerely,



Leah K. Richter, PE



Tab K:

# Required Forms





**STATEMENT OF QUALIFICATION CERTIFICATION**

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

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

Company: (Legal Registration) Arcadis U.S., Inc.

Name/Principal/Project Manager: Leah K. Richter, PE / Vice President / Principal

Address: 150 S Pine Island Road, Suite 315

City: Plantation State: FL Zip: 33324

Telephone No. 954.525.2499 FEIN/Tax ID No. 57-0373224 Email: Leah.Richter@arcadis.com

Does your firm qualify for MBE or WBE status: No MBE  WBE

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

<u>Addendum No.</u>	<u>Date Issued</u>	<u>Addendum No.</u>	<u>Date Issued</u>
<u>1</u>	<u>1/24/2023</u>	<u>                    </u>	<u>                    </u>
<u>2</u>	<u>1/24/2023</u>	<u>                    </u>	<u>                    </u>

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

N/A

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

Submitted by:

Leah K. Richter, PE

Name (printed)

2/28/2023

Date: Title

  
Signature

Vice President

## PROPOSAL

TO THE MAYOR AND COMMISSIONERS  
CITY OF HOLLYWOOD, FLORIDA

SUBMITTED February 28, 2023

Dear Mayor and Commissioners:

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

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

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

If this Proposal is accepted, the undersigned BIDDER proposes and agrees to enter into and execute the Contract with the City of Hollywood, Florida, in the form of Contract specified; of which this Proposal, Instructions to Bidders, General Specifications, Supplementary Conditions and Drawings shall be made a part for the performance of Work described therein; to furnish the necessary bond equal to one hundred (100) percent of the total Contract base bid, the said bond being in the form of a Cash Bond or Surety Bond prepared on the applicable approved bond form furnished by the CITY; to furnish all necessary materials, equipment, machinery, tools, apparatus, transportation, supervision, labor and all means necessary to construct and complete the work specified in the Proposal and Contract and called for in the Drawings and in the manner specified; to commence Work on the effective date established in the "Notice to Proceed" from the ENGINEER; and to substantially complete all Contract Work within 20 days with final completion within 20 days, and stated in the "Notice to Proceed" or pay liquidated damages for each calendar day in excess thereof, or such actual and consequential damages as may result therefrom, and to abide by the Local Preference Ordinance, Exhibit A.

The BIDDER acknowledges receipt of the any and all addenda.

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

~~Attached hereto is a certified check on the \_\_\_\_\_~~ Not Applicable

~~\_\_\_\_\_ Bank of \_\_\_\_\_~~

or approved Bid Bond for the sum of

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

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

WHEN THE BIDDER IS AN INDIVIDUAL:

\_\_\_\_\_

(Signature of Individual)

\_\_\_\_\_

(Printed Name of Individual)

\_\_\_\_\_

(Address)

\*\*\*\*\*

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

\_\_\_\_\_

(Name of Firm)

\_\_\_\_\_

(Address)

\_\_\_\_\_ (SEAL)

(Signature of Individual)

\*\*\*\*\*

WHEN THE BIDDER IS A PARTNERSHIP:

\_\_\_\_\_

(Name of Firm) A Partnership

\_\_\_\_\_



(Address)

By: \_\_\_\_\_  
(SEAL)  
(Partner)

Name and Address of all Partners:

\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

WHEN THE BIDDER IS A JOINT VENTURE:

\_\_\_\_\_  
(Correct Name of Corporation)

By: \_\_\_\_\_ (SEAL)  
(Address)

\_\_\_\_\_  
(Official Title)

As Joint Venture  
(Corporate Seal)

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

\*\*\*\*\*

WHEN THE BIDDER IS A CORPORATION:

Arcadis U.S., Inc.  
\_\_\_\_\_  
(Correct Name of Corporation)

By: Leah K. Richter  
(SEAL)

Leah K. Richter, PE / Vice President  
\_\_\_\_\_  
(Official Title)

630 Plaza Drive, Suite 200  
Highlands Ranch, CO 80129  
\_\_\_\_\_  
(Address of Corporation)



Local office address:  
150 S Pine Island Road, Suite 315  
Plantation, FL 33324

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

*Secretary Certificate for*  
CERTIFIED COPY OF RESOLUTION OF  
BOARD OF DIRECTORS

Arcadis U.S., Inc.  
(Name of Corporation)

RESOLVED that Leah K. Richter, PE  
(Person Authorized to Sign)

Vice President of Arcadis U.S., Inc.  
(Title) (Name of Corporation)

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

**Water Treatment Plant and Wastewater Treatment Plant Projects**  
**RFQ-041-23-JJ**

**Bid No. IFB-xxxxxxx**

*Secretary Certificate describing Board*  
The foregoing is a true and correct copy of the Resolution adopted by

Arcadis U.S., Inc. at a meeting of its Board of  
(Name of Corporation)

Directors held on the 24th day of February, 2022

By: Kimberly Farnicki

Title: Assistant Secretary

(SEAL)

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



- END OF SECTION -

## SECRETARY CERTIFICATE

I, Kimberly Lasnicki, Assistant Secretary of Arcadis U.S., Inc. (the "Corporation"), a corporation organized under the laws of the State of Delaware, certify that the following is a full and correct copy of a resolution adopted by written consent of the Board of Directors of said Corporation, dated February 24, 2022:

*"RESOLVED, the President and each Business Area Director are authorized and empowered, in accordance with the Bylaws and other operating policies and procedures of the Corporation, to enter into proposals for fees and other contracts and obligations in the name and on behalf of the Corporation, upon such terms and conditions as may be agreed upon between the other party or parties and the Corporation, as evidenced by the approval of the President or Business Area Director. The President and Business Area Directors also are empowered to delegate such authority to other employees of the Corporation in such amounts and on such other terms as they shall determine from time to time in accordance with the Bylaws and other operating policies and procedures of the Corporation."*

**AND I DO FURTHER CERTIFY** that pursuant to the above resolution that contracts, amendments, and required documentation for the **City of Hollywood, FL for Water Treatment Plant and Wastewater Treatment Plant Projects RFQ-041-23-JJ** may be signed by **Leah K. Richter** in her capacity as **Vice President** of the Corporation.

**AND I DO FURTHER CERTIFY** that the above resolution has not been in any way altered, amended or repealed and is now in full force and effect.

**IN WITNESS WHEREOF**, I have signed this Certificate this 6th day of February, 2023.



*Kimberly Lasnicki*

Name: Kimberly Lasnicki  
Title: Assistant Secretary  
Arcadis U.S., Inc.



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

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

1. This form statement is submitted to the City of Hollywood by Leah K. Richter, PE / Vice President for Arcadis U.S., Inc.  
(Print individual's name and title) (Print name of entity submitting sworn statement)  
whose business address is 150 S Pine Island Road, Suite 315, Plantation, FL 33324  
and if applicable its Federal Employer Identification Number (FEIN) is 57-0373224. If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement.  
N/A
- 

2. I understand that "public entity crime," as defined in paragraph 287.133(1)(g), Florida Statutes, means a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with the United States, including, but not limited to, any bid, proposal, reply, or contract for goods or services, any lease for real property, or any contract for the construction or repair of a public building or public work, involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misinterpretation.
3. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(1)(b), Florida Statutes, means a finding of guilt or a conviction of a public entity crime, with or without an adjudication of guilt, in an federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, nonjury trial, or entry of a plea of guilty or nolo contendere.
4. I understand that "Affiliate," as defined in paragraph 287.133(1)(a), Florida Statutes, means:
1. A predecessor or successor of a person convicted of a public entity crime, or
  2. An entity under the control of any natural person who is active in the management of the entity and who has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding 36 months shall be considered an affiliate.

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

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

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

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

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

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

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

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

Leah Kirsten Richter  
(Signature)

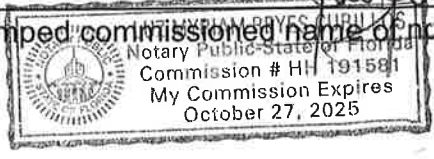
Sworn to and subscribed before me this 23 day of February, 2023.

Personally known Leah Kirsten Richter

Or produced identification Driver License Notary Public-State of Florida

Driver License my commission expires October 27, 2025  
(Type of identification)

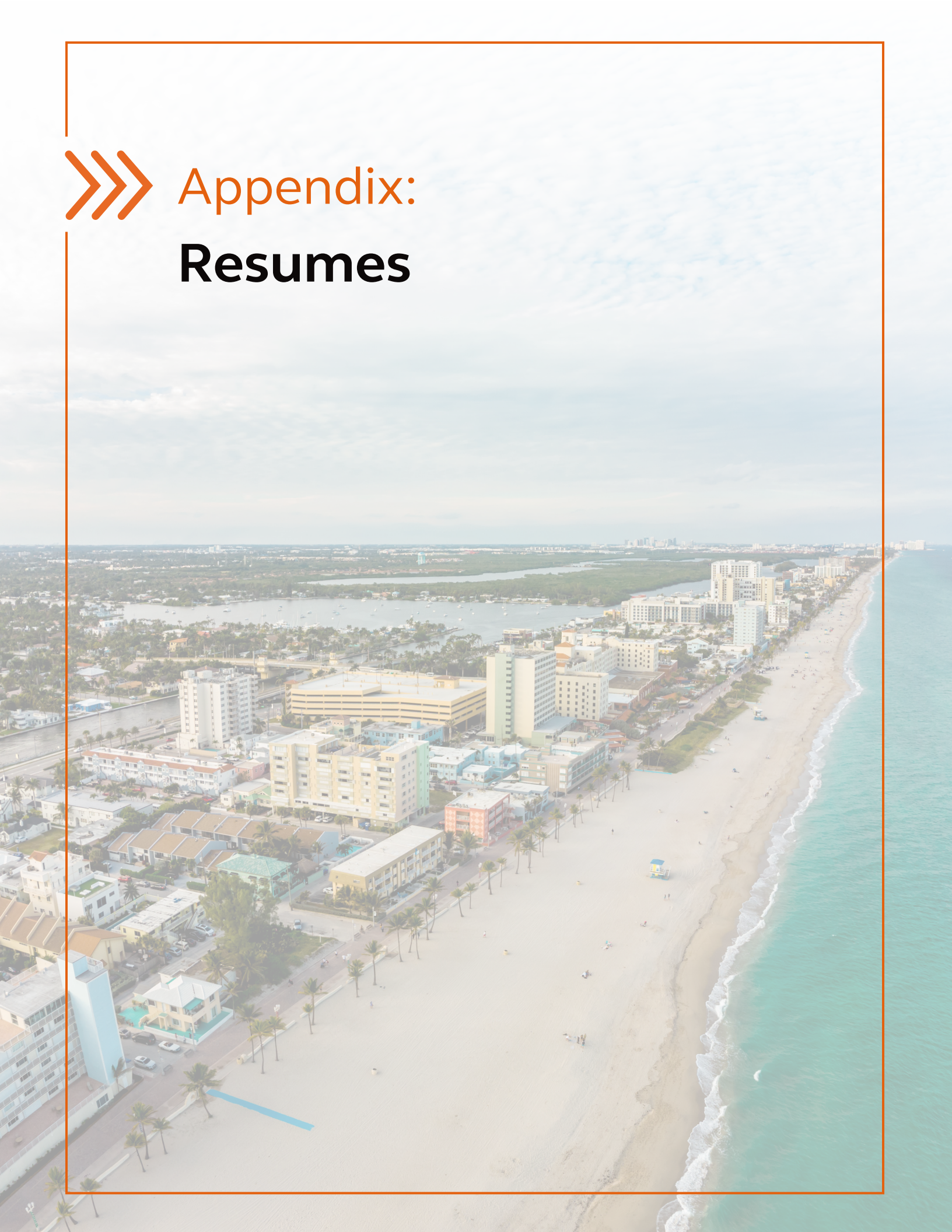
(Printed, typed or stamped commissioned name of notary public)







# Appendix: Resumes







# Leah Richter, PE

## Contract Manager and Principal in Charge

### Key Information

#### Education/Qualifications

MS, Civil Engineering,  
Florida Atlantic University,  
2002  
BS, Civil Engineering,  
University of Florida, 1997

#### Years of Experience

Total – 26  
With Arcadis – 25

#### Professional Registrations/ Certifications

Professional Engineer – FL

#### Office Location

Plantation, FL

Ms. Richter has a diverse 25 year background in program management, business advisory and financial consulting services and civil engineering. She specializes in assisting municipal clients in South Florida with managing their planning, operational and capital program needs. Her experience includes project management and delivery, vendor procurement, contract compliance, regulatory permitting, public outreach, annual reporting to bondholders/trustees, litigation support services, environmental compliance and operation and maintenance evaluation. She serves as the Project Manager for the Miami Dade County Water and Sewer Department Bond Engineering and Financial Services contract. Ms. Richter currently serves as the Principle in Charge for the breadth of services Arcadis provides for the City as well as is Arcadis' Southeast Florida Operations Leader and is located in our Plantation office, just minutes from the City to provide rapid response to any request.

### Relevant Experience

#### Water System Master Plan and Water System Engineering Contract

City of Hollywood, Hollywood, FL

Serves as Contract Manager for the full breadth of services Arcadis provides as the City's engineer of record for the City's Water Treatment Plant and water distribution system. Activities and projects have included numerous capital improvement design and construction projects, feasibility studies, condition assessments, asset management and master planning activities.

#### AWIA Risk and Resilience Assessment

City of Hollywood, Hollywood, FL

Served as Quality Assurance Manager for the development of a Risk and Resilience Assessment in accordance with the requirements of America's Water Infrastructure Act completed in March 31, 2020.

#### Deep Injection Well Annual Reporting and Utilities Engineering Contract

City of Miramar, Miramar, FL

Serves as Contract Manager for all of our services for the City as part of our Utilities Engineering continuing services contract. Recent activities have included annual reporting for their Water Reclamation Facility deep injection wells, as required by the FDEP.

#### Emergency Response Plan Update

City of North Miami Beach, North Miami Beach, FL

Served as Project Manager for the update of the City's Emergency Response Plan (ERP) conducted previously in accordance with the requirements of the

Bioterrorism Act. Activities included facilitation of workshops with City staff to identify relevant updated data and information, and revised strategies for response to scenarios and incidents, coordination with Public Safety Officer for distribution and exercising of the ERP, and update of the ERP.

### **Water and Sewer Dept. (WASD) Bond Engineering Services**

**Miami-Dade County, Miami, FL**

Serves as Project Manager for WASD's Rates, Fee Analysis, and Bond Engineering Contract. Responsible for overseeing and delivering all assignments and task orders under the multi-year contract serving WASD's Executive Leadership team. Projects and activities conducted to date include Asset Management Framework Development, Retail Rate Study, Mixed Use Customer Rate Analysis, Annual Review of the Adequacy of Rates and Fees, Annual Review of Wholesale Customer Rate Impacts and True Up, Annual Condition Assessment of all WASD Facilities, and miscellaneous other assignments for the varying divisions of the Department.

### **Design Build Transactional Consulting**

**City of Davis, Davis, CA**

Served on the transactional consulting team developing the design/build agreement terms in association with the implementation of the necessary facility upgrades needed at the City's WWTP to achieve compliance with the City's National Pollution Discharge Elimination System (NPDES) permit for surface water discharge. Activities included development of request for qualifications documents, evaluation of submittals for shortlist, preparation of key contract terms and risk matrices, as well as detailed design/build agreement for issuance to the pre-qualified vendors.

### **Emergency Response Planning Services**

**Multiple FL Clients, Florida**

Served as Deputy Project Manager and Project Engineer for the development of emergency response plans for four water utilities in accordance with the Bioterrorism Act of 2002 and USEPA Guidance. Activities included: Review of vulnerability assessment and emergency management information; kickoff workshop; development of draft emergency response information; review workshops; preparation of emergency response plan.

### **Utilities Waste Rate Study**

**City of Key West, Key West, FL**

Developed a financial model for the City's solid waste utility department. Activities included reviewing revenue characteristics (historical and budget), and other documentations provided to support revenue and expense projections; developed a comprehensive financial model to project cash flow for a five-year period, completed pricing surveys, and developed rate recommendations. Presented recommendations to the City.

### **Miscellaneous Support Services**

**City of North Miami Beach, North Miami Beach, FL**

Served as Deputy Project Manager to support the City in its implementation of a \$50 million membrane softening treatment facility and related improvements.

### **Water and Wastewater Master Plan**

**Coconut Creek, FL**

Served as Deputy Project Manager for the development of a Water and Wastewater Master Plan. Elements of the project included: hydraulic modeling of water distribution and wastewater transmission systems with the objectives of determining infrastructure needs to satisfy growth through build-out.

### **Litigation Support**

**Lee County, Lee County Utilities, Fort Myers, FL**

Served as Deputy Project Manager for the support to the Lee County Attorney in negotiations with the county's contractor, on behalf of the Lee County Utilities Department to resolve open contract issues and recover funds for completing repairs to the water and wastewater system. Elements of the project included: Review of key documents, inspection services, negotiation assistance, mediation meeting attendance and report preparation.

### **Lee County Utilities Evaluation**

**Lee County Utilities, Fort Myers, FL**

Served as project engineer in the annual inspection of Lee County's Water and Wastewater Treatment Facilities, as well as the County's wastewater collection system and water distribution system. Assisted with annual inspections and the preparation of the annual Site Assessment and Operations Evaluation reports.



## Tim Ware, PE

### Service Area 1 Wastewater Treatment Plant Project Manager

#### Key Information

##### Education/Qualifications

MS, Environmental Engineer,  
University of South Florida,  
2011  
BS, Civil Engineering,  
University of South Florida,  
2006

##### Years of Experience

Total – 19  
With Arcadis – 8

##### Professional Registrations/ Certifications

Professional Engineer – FL  
Certified Wastewater  
Treatment Plant Operator

##### Office Location

Tampa, FL

Mr. Ware has 19 years of experience as an Engineer, Project Manager, Operator and Facility Manager for water and wastewater collection and treatment systems. Prior to a career in consulting, he worked within municipalities and in contract operations evaluating, operating, and managing large water and Wastewater Treatment Plants (WWTPs), collection systems and pumping stations. He has successfully completed over 40 projects worth \$7.4 million through continuing engineering services contracts as a project manager since coming to Arcadis. He has experience working with facilities within Florida and throughout the U.S. on a wide variety of tasks and projects. He is a professional engineer in Florida and holds a Florida Wastewater Operator B license.

#### Relevant Experience

##### Howard F Curren Advanced Wastewater Treatment Plant

City of Tampa, Tampa, FL

Plant Manager responsible for the day-to-day operations of a 96-mgd Advanced Wastewater Treatment Plant and 223 sewage pumping stations including the San Carlos PS. Facilitated the development of 150 technical and professional staff members that work at the plant and pump stations. Interacted with Local, State and Federal regulators to ensure compliance with all NPDES permits. Plant processes include BNR using high purity oxygen, nitrification and denitrification, anaerobic digesters, and heat drying.

##### Central Plant Return Activate Sludge (RAS) / Waste Activate Sludge (WAS) Replacement

Indian River County, Vero Beach, FL

Project Manager for the design and installation of a new rotary drum thickener and the replacement of all RAS and WAS pumps for the County's Central WWTP. Oversaw the design of the improvements and provided support during construction.

##### Boyette Reservoir Algae Study

Pasco County, Wesley Chapel, FL

Project Manager for the evaluation and selection of an appropriate solution to resolve a problem with algae in a reservoir. Pasco County owns and operates the 500 million-gallon Boyette Reclaimed Water Reservoir. The reservoir experiences seasonal algae blooms that are difficult to control. Arcadis evaluated chemical, mechanical, operational and passive solutions to help reduce the impact on operations staff and equipment.



### **Pump Station Condition Assessment**

City of Dunedin, Dunedin, FL

Project Manager overseeing the inspection and evaluation of the city's 43 sanitary lift stations. Project included field inspections, condition assessments, electrical tool with dashboard development and final report for use in CIP developments by the City. Electronic tool was developed to serve as the repository of city data for all their lift stations.

### **Pump Station and Force Main Master Plan**

City of Plant City, Plant City, FL

Project Manager to complete a condition assessment and process evaluation for the City of Plant's pump station and force main system. The City's system has 43 lift stations and more than 30-mi of force mains. Review operational and maintenance history as well as field condition assessments to develop a long-term CIP program for the city to make sure long-term operation.

### **Dunn Headworks Improvements**

Pinellas County, Palm Harbor, FL

Served as technical lead and submittal reviewer for improvements to the existing William Ellsworth Dunn Water Reclamation Facility (WRF) headworks. The project included rehabilitating the existing piping feeding into the headworks from offsite pumping stations, lining the existing gravity pipes discharging from the headworks, cleaning and coating the existing headworks channels, installing new bar screens, and constructing a splitter box to evenly distribute flow to the reactors.

### **Blacks Ford Pigging and Process Control**

Jacksonville Electric Authority, St. Johns, FL

Technical Lead and process oversight for the pigging of an existing 36-in force main into a newly built advanced WRF. Project included influent monitoring and chemical addition to make sure additional solids did not have an impact on the new treatment process upsetting the system. Field monitored and adjusted the process in real time during operations.

### **Chelsea Creek Headworks**

Massachusetts Water Resources Authority (MWRA), Boston, MA

Lead Trainer for improvements made to the Chelsea Creek Headworks. MWRA operates the 350-mgd Chelsea Creek headworks which feeds to the Deer Island WWTP. All equipment within the headworks was updated and improved. Arcadis was responsible for the

design, construction management, startup, and training for the project. Provided training both in person and virtual to all shifts and operators for the headworks equipment and odor control system.

### **Asset Condition Assessment Program**

City of Atlanta, Atlanta, GA

Project manager for a task order to complete Tier 1 Visual Condition assessments for 14,000 water and wastewater assets at three wastewater plants, two water plants, 18 pump stations and eight Combined Sewer Overflow facilities. Completed Tier 2, non-destructive, maintenance assessments on 1,500 of the assets. Completed evaluations for 12 potable water storage tanks. Producing a long-term asset management program with short-term goals, five-year Capital Improvement Plan (CIP) and methodology for continuous assessment.

### **Digester Roof Repairs**

City of Monroe, Monroe, LA

Served as technical and operations oversight for the startup and troubleshooting of an anaerobic digester rehabilitation project and the overall process improvement for the city's 16-mgd WWTP. Digester rehabilitation included Evoqua DyStor inflatable covers for gas storage and use. Wrote Operations and Manual for plant sludge system and worked with plant staff to get digesters operational and troubleshoot process and equipment to make sure safe and efficient operation of the digesters and all ancillary equipment.

### **Port Richmond Remedy Compliance Monitoring Maintenance Pilot/Staten Island**

New York Department of Environmental Protection, New York, NY

Work with the City of New York's Port Richmond Wastewater Plant to evaluate current maintenance practices and staffing levels to determine the needs to implement a reliability centered maintenance program for the facility and eventual roll out to the departments other plants. Interview and coordinate with current plant staff to verify level of effort, maintenance practices, training limitations and challenges experienced on a regular basis.



# Sean Chaparro, PE

## Service Area 2 Water Supply and Treatment Project Manager

### Key Information

#### Education/Qualifications

MS, Environmental Engineering, University of Wisconsin-Madison, 2002  
 BS, Environmental Engineering, Michigan Technological University, 2000

#### Years of Experience

Total – 21  
 With Arcadis – 20

#### Professional Registrations/Certifications

Professional Engineer – FL, GA, MI

#### Office Location

Tampa, FL

Mr. Chaparro has experience in municipal drinking water and wastewater treatment master planning, design, and special evaluations. Experience in drinking water treatment includes condition assessments, plant optimization evaluations, water quality planning, treatment process evaluations, facility planning, Safe Drinking Water Act compliance assessments, corrosion control treatment evaluations, chemical feed system evaluations, and residuals handling and disposal evaluations and design. Mr. Chaparro is currently serving as Technical Lead for the City's comprehensive Master Plan's alternatives analysis and WTP evaluation.

### Relevant Experience

#### City of Hollywood: Water Master Plan

City of Hollywood, Hollywood, FL

Lead Engineer responsible for the water quality and regulatory compliance review and treatment capacity assessment completed as part of the Hollywood Water Treatment Plant Water Master Plan. The assessments included detailed review of water quality treatment performance with respect to current and projected future regulatory requirements and water quality goals, along with an assessment of capacities for each unit process and system at the plant.

#### 20-Year Water Master Plan

City of Venice, Venice, FL

Project Manager and technical lead for a comprehensive water master plan and 20-year capital improvements program for the 4.2-mgd reverse osmosis (RO) WTP. The project included a detailed assessment of raw water supply, treatment, pumping, and distribution system needs (including hydraulic modeling) and improvements to meet future growth projections, address redundancy needs, meet increasingly stringent regulatory requirements, and to provide for the rehabilitation or replacement of equipment.

#### Collins Park WTP Capital Improvement Projects (CIP) Master Plan

City of Toledo, Toledo, OH

Technical Lead for the regulatory, water quality, treatment process, condition and plant optimization assessments completed as part of the development of a comprehensive water master plan and 20-year needs assessment for the City of Toledo's 120-mgd Collins Park WTP. The project included inspecting, evaluating, and assessing the suitability and condition of the city's source of supply and WTP to identify system deficiencies, equipment deterioration, operational constraints, and process issues related to compliance with long-term water quality goals and regulatory requirements. A detailed optimization

assessment was completed to identify “low-hanging fruit” that could help the city improve treatment performance and/or reduce operating costs.

### **Free Chlorine Maintenance Evaluation**

**Tampa Bay Water, Tampa, FL**

Project manager and technical lead for the comprehensive evaluation to identify work tasks and considerations associated with a semi-annual region-wide free chlorine maintenance program within Tampa Bay Water’s Regional System to facilitate participating member government concurrent free chlorine conversions within their distribution systems. A periodic regional free chlorine conversion could serve as an additional tool to address nitrification occurrences, reduce overall flushing volumes, increase disinfectant residuals, minimize DBP formation, control biogrowth, and provide a consistent regional approach to chlorine conversions. The feasibility of this region-wide approach was investigated, including evaluation of alternatives, operational changes that would be required, water quality and infrastructure impacts, and regulatory compliance. “What if” scenarios and a risk analysis were completed to identify potential water quality and/or operational challenges on the regional and member government systems. Response actions were developed to mitigate each identified potential issue associated with a regional conversion.

### **Distribution System Water Quality Audit**

**Hillsborough County, Public Utilities Dept, Tampa, FL**

Project manager and process lead for a detailed assessment of the County's distribution system water quality performance which was benchmarked to AWWA Partnership for Safewater guidelines and recommendations. Distribution system water quality performance was compared against industry standards and best management practices to identify areas of improvement to further optimize distribution system water quality.

### **Reverse Osmosis Water Treatment Plant Preliminary Basis of Design Investigation**

**City of Venice, Venice, FL**

Project manager for the comprehensive assessment of all plant processes to identify necessary improvements to address issues associated with the RO system, water use permit requirements, need for additional water supplies, and normal equipment operational wear and tear. This evaluation included a detailed assessment of improvements

that could be implemented for the City’s odor control system to replace the existing chemical scrubber, which historically had poor treatment performance. The evaluation also included a preliminary assessment of the potential to increase the RO process recovery by adding a second stage, as well as the resultant impacts to concentrate quality and NPDES permit limitations.

### **As-Needed Engineering Services**

**City of Tallahassee, Tallahassee, FL**

Project manager and/or project engineer on projects including evaluation of the effectiveness of the effectiveness of sequestration to control colored water in premise plumbing. Prepared the necessary permit documentation to allow for temporary and then permanent use of the selected sequestrant Conducting a detailed assessment of biogas utilization and resource recovery optimization options to better use generated biogas at the City’s TPS WRF.

### **Carlton WTP Rehab Phase 1 Design and SDCs**

**Sarasota County, Sarasota, FL**

Project manager and process mechanical engineer of record for the detailed design and construction administration services for the replacement of the EDR membrane system at the Carlton WTF. Responsible for managing the design team, coordinating with the County and the EDR Equipment Manufacturer, completing the detailed design work associated with the process mechanical components of the project, and overseeing construction administration services during construction. Design for the first phase of the EDR upgrade has been completed while construction was successfully completed in May 2021.

### **Reverse Osmosis (RO) Water Treatment Plant Odor Control System Improvements**

**City of Venice, Venice, Florida**

Project manager and technical lead for the preliminary and detailed design of a new odor control system for the Reverse Osmosis WTP. The odor control system includes two degasifier towers to remove hydrogen sulphide from the liquid stream, a biotrickling filter to remove gaseous hydrogen sulphide, a clean in place system and an acid neutralization system. As a separate project, served as project manager and technical lead for the detailed design for the replacement of the carbon dioxide feed system for pH control to enhance odor control system performance.





# Joan Fernandez, PE, IAM

## Service Area 3 Infrastructure Project Manager

### Key Information

#### Education/Qualifications

MS, Environmental Engineering, Florida International University, 2007  
 BS, Environmental Engineering Sciences, University of Florida, 2004

#### Years of Experience

Total – 19  
 With Arcadis – 6

#### Professional Registrations/Certifications

Professional Engineer – MD, FL  
 Pipeline Assessment and Certification Program (PACP)/ Manhole Assessment Certification Program (MACP)/ Lateral Assessment Certification Program (LACP) Certified  
 Institute of Asset Management Certification

#### Office Location

Plantation, FL

Ms. Fernandez is a licensed Professional Engineer with a diverse and broad range of experience in the business consulting, civil, and environmental fields. She has over 19 years of experience in project management, planning, design, permitting, procurement and construction management. During her professional career Ms. Fernandez has worked closely with various internal and external stakeholders staff at all levels, consultants and contractors in conducting contract negotiations, presentations, workshops, and project implementation. Ms. Fernandez continues to be involved in the development and delivery of Capital Improvement Projects (CIP) for various clients valued at more than \$15 million including City of Sunrise, City of Boynton Beach, City of Hollywood and Miami-Dade Sewer and Water Department.

### Relevant Experience

#### American Water Infrastructure Act (AWIA) Risk & Resilience Assessment City of Hollywood, Hollywood, FL

Project Manager for the City of Hollywood AWIA Risk & Resilience Assessment project. Followed American Water Works Association J100-10 Standard Risk and Resilience Assessment Methodology, which has been endorsed by United States Environmental Protection Agency, to conduct a risk assessment of the physical and cyber assets of the city's water system. Oversaw project management activities and collaborated with the city and internal team members to schedule meetings, issue requests for information, prepare materials, facilitate workshops, develop meeting minutes, and provide project status updates. Worked with internal stakeholders to identify critical facilities, assets, and threats, as well as the consequences and vulnerability of the system to such threats. Reviewed the risk and resilience profile (financial and operational) of the water system and summarized results and recommendations to improve the city's understanding and preparedness for potential hazards.

#### Bond Engineering Services

##### Miami-Dade County Water and Sewer Department (WASD), Miami, FL

Provided bond engineer consulting services for the largest water and wastewater utility in the Southeastern U.S., which serves nearly 2.3 million people each day, through the development of Miami-Dade WASD Bond Consultant's Reports. Organized and conducted inspections of water and wastewater infrastructure including water treatment facilities, wellfields, water storage and remote pumping facilities, wastewater treatment facilities, and wastewater pumping stations.

Analyzed data in asset management software, Orion, and Asset Hound, to process and communicate data relating to water and wastewater parameters, current flows, and future flow projections. Incorporated information into reports which highlight the adequacy of the department's capital improvement program, the adequacy of the renewal and replacement funding, the condition and operations of water and wastewater facilities, and the department's compliance with bond covenants to debt service and other financial conditions.

### **Water Main Replacement Joint Participation Program**

Orlando Utilities Commission, Orlando, FL

Project manager for as-needed professional services to assist OUC with the development of a joint agency program with the City of Orlando, Orange County and FDOT to identify water main replacement projects for agencies to participate jointly by sharing costs and minimizing disruptions to the residents.

### **Replacement and Renewal Contract – Regional Pump Station Improvements Basis of Design Reports (BODRs)**

Miami-Dade Water and Sewer Department (MDWASD), Miami, FL

As project manager, led the preliminary design for five regional pump stations, 301, 414, 415, 416 and 417, that feed the NDWWTP. The work included an inspection of the facility and preparation of a BODR to clearly identify the necessary improvements relative to the requirements of the consent decree as well as restoring long-term reliability to the station. As part of the existing facility assessment, a hydraulic evaluation was conducted to assess the range of head and flow conditions associated with the pump station's system and to develop associated system curves to be used in the evaluation of pumping equipment (existing and new) for the station.

### **Asset Management Framework**

Miami-Dade WASD, Miami, FL

Deputy Project Manager. Served as the Deputy Project Manager to assist the Department with the development of the Asset Management Framework that will support its staff and align work practices, decision making and overall operations with defined goals and objectives. This project evaluated existing business practices associated with existing Asset Management efforts and provided guidance to the Department about best practices and methods needed to achieve International

Standards Organization (ISO) Series 55000 certification. The scope of the Phase 1 of the AM Framework included:

Performed an assessment that provides a high-level review of Miami-Dade WASD's current asset management practices related to Practices and Processes, Information Systems and Data and Knowledge.

Documented 'as-is' AM business processes and identified areas of improvement.

Performed a Strategic Asset Management Gap Analysis to identify current gaps and set priorities for the three core elements – Practices and Processes, Information Systems and Data and Knowledge.

Developed concept level 'to-be' AM business processes to align with ISO 55000 requirements. Identified relevant key performance indicators (KPIs) and developed benchmarks for these KPIs.

### **Lift Station and Force Main Master Plan**

Plant City, FL

Task Manager. Task lead for the development of a risk-based evaluation of 40 wastewater lift stations and force mains for informed, fact-based decisions to be made with respect to capital and maintenance expenditures. The master plan includes a 20-year planning horizon with a more detailed 5-year CIP for nearer term projects. Various tasks performed include: development of condition and risk assessment guidance documentation, development of equipment inventory at each lift station, and evaluation of asset condition and failure risk results for each lift station and force main.

### **Water and Wastewater Master Plan Update**

City of West Palm Beach, West Palm Beach, FL

Project Manager/Quality Assurance Quality Control. Team Leader on the update of water and wastewater demand forecasts, and hydraulic modeling to assess the impact of planned downtown developments on the adequacy of existing pumping and conveyance infrastructures. A task of this project included the design and permitting for the connection from either the 8-in main (WSP28993) or the 12-in water main (WSP28987) to the 42-in Ductile Iron Pipe transmission main (WSP25671, WSP29646) located on the north side of Banyan Boulevard by the WTP to add redundancy to the system in case the 36-in transmission main fails.



# Ifetayo Venner, PE, ENV SP

## Service Area 1 Wastewater QA/QC

### Key Information

#### Education/Qualifications

MBA, Business Administration, University of South Florida, 2008  
 MS, Environmental Engineering, Stanford University, 2000  
 BS, Civil Engineering, · BS, Civil Engineering, McGill University, 1998

#### Years of Experience

Total – 21  
 With Arcadis – 21

#### Professional Registrations/ Certifications

Professional Engineer – CT, FL, TX  
 Envision Sustainability Professional Credential (ENV SP)  
 Leadership in Energy and Environment – LEED

#### Office Location

Tampa, FL

Ms. Venner is a professional engineer and Arcadis' Wastewater Treatment Practice Technical Leader. As a wastewater treatment technical expert, she has been responsible for the planning, modeling, design and start-up of municipal wastewater treatment facilities throughout the United States. As a project manager, she has been responsible for project delivery for various projects related to water and wastewater treatment and distribution. She has been an active proponent of incorporating sustainability principles into design projects. She is a member of the Arcadis Envision Leadership team, providing training to Arcadis staff in pursuit of Envision Sustainability Professional credentials, as well as support for project teams in incorporating sustainability principles into projects and evaluating the applicability of Envision and the various credits. She is also involved in several Water Environment Federation (WEF) and International Water Association committees and task forces on wastewater process design, modeling, and sustainability. She is the director of the WEF Sustainability Community of Practice, which comprises seven committees and task forces including the Utility Management Committee and the Envision Task Force, and also sits on the Committee Leadership Council Steering Committee and the Board of Trustees. She is leader of the Wastewater Treatment group under the Envision Task Force and a member of the Institute for Sustainable Infrastructure's Envision Review Board.

### Relevant Experience

#### Dale Mabry Headworks

Hillsborough County Public Utilities Department, Tampa, FL

Project Manager for rehabilitation of the headworks at this activated sludge treatment plant with an average design flow of 6-mgd. The existing headworks, grit chambers, and conditioning (anaerobic selector) tank are old, and the concrete of these structures likely had deteriorated to a point that threatened the facilities' continued service. Managed a structural assessment of the headworks and conditioning tank in order to determine whether to proceed with rehabilitation or replacement of these structures. Managed a process assessment using a model developed and calibrated for the Advanced Wastewater Treatment Plant (WWTP) to understand the impact of the conditioning tank to the treatment process and perform an evaluation of the existing aeration system. Based on the results of these two evaluations, new headworks and grit chambers currently were designed. Arcadis also recommended some modifications to operations to optimize process control, minimize energy use, and reduce alum used for phosphorus removal



**Expansion of Falkenburg Advanced Wastewater Treatment Plant**

Hillsborough County Public Utilities Department, Tampa, FL

Responsible for the process design of the plant’s expansion from 9-12-mgd utilizing the existing tankage. The process consists of an anaerobic tank for biological phosphorus removal followed by an oxidation ditch for nitrification and denitrification. Responsible for the characterization of plant influent data and performance of a state point analysis. In addition, performed computer modeling of the biological system using BioWin software.

**Primary Clarifier Rehabilitation and Nutrient Removal Upgrades**

City of Largo, Largo, FL

Project Manager for this project to perform the following improvements at the City of Largo WRF: a structural assessment and structural repairs of one of the WRF’s primary clarifiers, mechanical improvements in all primary clarifiers, installation of an alum feed system for supplemental chemical phosphorus removal to the existing enhanced biological phosphorus removal system, installation of mixers to convert the first aeration zone of each aeration tank to an anoxic/aerobic swing zone, and the addition of nutrient analyzers for improved process control.

**Odor and Corrosion Study**

Pinellas County Utilities, Largo, FL

Project Manager for the investigation of alternatives to magnesium hydroxide that may have emerged since the execution of the contract and to evaluate these alternatives according to criteria such as cost, safety, and ease of operation in order to determine whether they are a viable alternative to magnesium hydroxide. Year Completed for Professional Svcs: 2014 / N/A for Construction Svcs.

**Valrico Advanced Wastewater Treatment Plant Expansion to 6-mgd**

Hillsborough County Public Utilities Department, Dover, FL

Assisted with the biological process design for the expansion of the Valrico AWTP from 6 to 12-mgd. The process consists of an anaerobic tank for biological phosphorus removal followed by an oxidation ditch for nitrification and denitrification.

**Eastside Water Reclamation Facility (WRF) Re-rate**

City of Rifle, Rifle, CO

Responsible for a capacity analysis of the City of Venice Eastside WRF, a five-stage Bardenpho facility for biological phosphorus and nitrogen removal. BioWin modeling was used to demonstrate that the WRF permitted capacity could be increased from 6-mgd 3-month average daily flow to 8-mgd three-month average daily flow.

**Odor Evaluation**

City of Fort Worth Village Creek Water Reclamation Facility, Fort Worth, TX

Led an evaluation to determine the cause of an increase in odor complaints at the City’s land application sites, as well as a decrease in the biosolids cake concentration leaving the VCWRF. Arcadis then worked with the City to develop an odor control plan and to evaluate and implement measures to reduce biosolids odor and improve biosolids dewatering.

**Advanced Purified WTP Phase I**

El Paso Water Utilities, El Paso, TX

Wastewater process lead for this project to develop an Advanced Purified Water Treatment Plant for recycling wastewater via direct potable reuse. As part of the alternatives evaluation, was responsible for reviewing the existing process recommending improvements, as well as recommending the best process configuration to treat a portion of the wastewater to advanced wastewater treatment standards prior to discharge to the new advanced purified plant.

**Design of Huntington Levee and Stormwater Pump Station**

Fairfax County, Fairfax, VA

Technical Advisor and ENV SP for this project to build a levee and pump station for flood protection for the Huntington area. Responsible for coordinating with Fairfax County and Arcadis staff to implement sustainability principles into the design, developing and reviewing the documentation required for pursued credits, and to file the completed application with the Institute for Sustainable Infrastructure. This project is currently in the verification process.



# Carlton Serrette, PE

## Service Area 1 Wastewater QA/QC

### Key Information

#### Education/Qualifications

MS, Civil Engineering,  
Howard University, 1993  
BS, Civil Engineering,  
Howard University, 1990

#### Years of Experience

Total – 29  
With Arcadis – 29

#### Professional Registrations/ Certifications

Professional Engineer – FL,  
MD, DC

#### Office Location

Tampa, FL

Mr. Serrette's experience includes extensive work in all phases of planning and design of wastewater collection, pumping, and treatment facilities. He has broad experience in design projects from facility planning to conceptual and preliminary designs, final detailed design, contract specifications, construction cost estimates, and construction administration services. He has supervised and coordinated civil, mechanical, architectural, structural, electrical, heating, ventilation, and air conditioning, plumbing, and hazardous materials work within Arcadis and with subconsultant firms during the design of new facilities and the reconstruction of existing facilities.

#### Relevant Experience

##### **Southeast Water Reclamation Facility Cloth Filter Project**

*Manatee County Utilities, Bradenton, FL*

Technical Advisor/QA/QC for \$8 million upgrade of the SEWRF Filters at the 11.0 mgd facility. Project includes the upgrade and replacement of two Automatic Backwash Filter with new cloth media filters including repurposing an existing structure, replacing the mechanical components with a new AquaDiamond filters and adding a Canopy with monorails. The system modifications also include flow patterns expected with the cloth media filters, rehabilitation of Filter Blower Building including miscellaneous equipment and controls, plant drain pump station, dewatering slab, and providing electrical controls and SCADA integration in accordance with Manatee County's standards.

##### **Hamlin Water Reclamation Facility**

*Orange County Utilities, Orange County, FL*

Technical Advisor/QA/QC for the planning and design of a new "greenfield" 5 mgd Water Reclamation Facility including headworks, oxidation ditches, clarifiers, filters, chlorine contact tanks, reject and reclaim storage facilities, and solids handling facilities.

##### **Parham Landing Wastewater Treatment Plant Expansion & Upgrade**

*New Kent County, Richmond, VA*

Design Quality Leader for expansion and upgrade of the Parham Landing WWTP. The project included new headworks, pre-equalization tanks with pump station sequencing batch reactors, blower building, post-equalization tanks with pump station, cloth disk-type filters, ultraviolet disinfection, effluent/reclaim/non-potable pump station, alum, carbon, hypochlorite, and magnesium hydroxide addition systems. The project also included the conversion of existing clarifiers to sludge holding tanks, and modification of an existing filter building to an administrative/storage/chemical building.

**Northeast & Northwest Water Reclamation Facilities Grit Study**

City of St. Petersburg, St. Petersburg, FL

Technical Advisor, QA/QC for the grit study at the Northeast & Northwest Water Reclamation Facilities. Project included on-site sampling, evaluation of the existing grit equipment removal efficiency performance, identification and evaluation of alternative solutions and recommendations to the City.

**Dale Mabry Advanced Wastewater Treatment Plant Headworks Rehabilitation Project**

Hillsborough County Public Utilities Department, Tampa, FL

Project Principal for the headworks rehabilitation project at the 6.0 mgd, AADF treatment plant. The initial phase of this project included a structural assessment of the headworks and conditioning tank, a process assessment to understand the impact of the conditioning tanks to the treatment process, and evaluation of design alternatives, as well as a design of the recommended alternative. The County opted to rehabilitate the existing headworks and install an emergency bypass to the conditioning tanks and eventually shutdown the plant and bypass flow to another AWTP.

**Expansion of Falkenburg Advanced Wastewater Treatment Plant**

Hillsborough County Public Utilities Department, Tampa, FL

Project Manager for the expansion of the plant from nine to 12 mgd. The effort included a capacity expansion without the addition of significant process tankage. Managed the biological process study utilizing dynamic modeling. Project also included the design of additional biosolids dewatering equipment in an existing facility along with construction inspection services.

**Replacement of Return Active Sludge Pumps at River Oaks Advanced Wastewater Treatment Plant**

Hillsborough County Public Utilities Department, Tampa, FL

Project Manager for the \$1.2 million Return Active Sludge Pumps replacement. Project included the replacement of four two-speed pumps and motors with four new pumps with variable frequency drives, miscellaneous structural and architectural modifications, and instrumentation and controls upgrade.

**Valrico Advanced Wastewater Treatment Facility Expansion**

Hillsborough County Public Utilities Department, Dover, FL

Project Manager for the \$50 million plant expansion from six to 12 mgd and addition of ultraviolet (UV) disinfection. Project included new oxidation ditches, clarifiers, filters, UV disinfection, and reject and reuse storage facilities. Other components of the project included reclaimed water pump station.

**Central Water Reclamation Facility**

Emerald Coast Utilities Authority, Pensacola, FL

Provided quality reviews as part of Third-Party Owner's Agent Services to the Emerald Coast Utilities Authority Board for the relocation of the Main Street Wastewater Treatment Plant (WWTP). Performed Value Engineering services as well as quality reviews at 30%, 60%, and 90% design stages. Project included construction of a new 20 mgd water reclamation facility including transmission lines to convey flow from the existing WWTP, headworks, oxidation ditches, clarifiers, filters, disinfection, reject and reuse storage facilities, as well as biosolids facilities.





# Rebecca Slabaugh, PE

## Service Area 2 Water Supply and Treatment QA/QC

### Key Information

#### Education/Qualifications

MS, Environmental Engineering, Virginia Polytechnic Institute and State University, 2007  
 BS, Civil Engineering, Purdue University, 2005

#### Years of Experience

Total – 16  
 With Arcadis – 15

#### Professional Registrations/Certifications

Professional Engineer – IN  
 Certified Construction Documents Technologist

#### Office Location

Indianapolis, IN

Ms. Slabaugh serves as the Drinking Water Practice Leader at Arcadis. She brings over 16 years of experience engineering and managing drinking water quality and treatment projects, including process selection and optimization, regulatory compliance, water quality monitoring, bench and pilot testing, and cost estimating. She has completed preliminary and detailed process designs for ground and surface Water Treatment Plants (WTP) ranging in size from <1-mgd to 1,300-mgd and has experience with conventional and advanced water treatment processes. She is a contributing author to multiple American Water Works Association (AWWA) Manuals of Water Supply Practice and has provided regulatory support to AWWA, Environmental Protection Agency, and various state agencies. Ms. Slabaugh is currently serving as Quality Assurance/Quality Control on the City’s Four-Log Improvement Project.

### Relevant Experience

#### Chlorine and Ammonia Feed System Assessments for Implementation of Four-Log Disinfection

City of Hollywood, Hollywood, FL

Technical Advisor on study to determine necessary modifications to the existing chlorine and ammonia systems to achieve four-log virus inactivation at the City’s WTP.

#### Water Distribution System Optimization Plan

City of Flint, Flint, MI

Project Manager for development of a distribution system optimization plan that includes assessment of current practices and corrosion control treatment as compared to industry best practices (i.e., AWWA Partnership for Safe Water), identification of associated gaps, and assessment of the human and financial resources in order to develop a recommended prioritized list of improvements for the City of Flint.

#### Distribution System Water Quality Audit

City of St. Petersburg, FL

Technical Advisor on audit that compares the City’s current practices to the AWWA G200 Standard for Distribution System Operation and Maintenance and the AWWA Partnership for Safe Water Distribution System Optimization Program to identify gaps and develop a recommended prioritized list of improvements.

### **Lead and Copper Rule Revisions Program Support**

Louisville Water Company, Louisville, KY

Technical Advisor providing guidance and best practices to Louisville as they develop an action plan and corresponding communication plan for achieving compliance with all aspects of the LCRR. Services include review of draft content and methodologies, identification of gaps and needed resource, development of a communications roadmap, and direct support for development and implementation of all program elements.

### **Filter Evaluation**

Fort Wayne City Utilities, Fort Wayne, IN

Project Manager for ongoing study to assess filterability challenges at lime softening plant and identify potential improvements to filter design and operations, including filter media composition, depth, and size.

### **Collins Park WTP 20-Year Master Plan & Needs Assessment**

City of Toledo, Toledo OH

Process Engineer for water master plan project designed to improve treatment plant performance and operations and develop a 20-Year Capital Improvements Plan (CIP) program. Project work included assessment of historical water quality performance, detailed condition assessment, evaluation of potential alternatives to improve treatment plant performance and operations, and development of CIP.

### **Water Master Plan Update**

City of Elkhart, Elkhart, IN

Evaluated existing capacities of three ground WTPs, conducting a high-level compliance review with respect to the Stage two disinfection byproduct rules and the Ground Water Rule (GWR), conducting a review of the current CIP based on recent water demands, and preparing recommendations for future capital improvement projects.

### **Water Master Plan Update**

Fairborn, OH

Technical Lead on regulatory compliance evaluation for water master plan update. Work included a review of raw, finished and distribution system data as compared to current and future regulations and evaluation of potential benefits of providing 4-log virus inactivation for compliance with the GWR.

### **Interim Water Production Plan**

Citizens Energy Group, Indianapolis, IN

Process Engineer responsible for benchmarking and assessing existing conditions at four surface and nine ground WTPs and identifying potential alternatives to increase treatment capacity, reliability, and water quality performance.

### **Softening and Corrosion Control Treatment Improvements**

City of Miamisburg, Miamisburg, OH

Technical Advisor to the City of Miamisburg on a transition plan for maintaining effective corrosion control treatment during commissioning of a new membrane softening process.

### **Water Quality Testing and Plant Optimization**

City of Bay City, Bay City, MI

Process engineer for detailed audit of plant operations at the Bay City Municipal Water Treatment Plant (BCMWTWP) to identify performance-limiting factors and process adjustments that could be implemented to optimize treatment performance and minimize disinfection by-products levels with minimal capital investment at the plant.

### **WTP Corrosion Control Treatment Update and Simultaneous Compliance Assessment**

City of Bay City, Bay City, MI

Process Engineer for comprehensive evaluation of corrosion control treatment, softening/coagulation practices, and related simultaneous compliance issues at the Bay City Municipal WTP. Work included evaluation of existing water quality conditions and operations/process control data, modeling of various treatment process alternatives, and identification of treatment modifications.

### **Water System Evaluation**

South Bend Water Works, South Bend, IN

Assessment of the condition of nine groundwater and surface WTPs, groundwater wells in seven well fields, and a representative sample of pump stations and storage tanks throughout the distribution system; review of operational performance and regulatory compliance; and identification of recommendations for future capital projects.



# Guy Le Patourel, PE, ENV SP

## Drinking Water QA/QC

### Key Information

#### Education/Qualifications

BS, Civil Engineering,  
University of Cape Town

#### Years of Experience

Total – 35  
With Arcadis – 1

#### Professional Registrations/ Certifications

Professional Engineer – FL  
(Civil)  
Envision Sustainability  
Professional

#### Office Location

Tampa, FL

Mr. Le Patourel has more than 35 years of varied experience in the evaluation, design, and delivery of solutions for the water, wastewater and waste management sectors. Whether acting as consultant, contractor, or client, he has successfully delivered complex multi-disciplinary projects by making maximum use of his team members through exceptional organizational and leadership skills. He has broad experience in a variety of alternative delivery projects, including progressive design build, fixed price design build and Engineering, Procurement and Construction Management (EPCM) 2016 Measured Term Contract (MTC).

### Relevant Experience

#### Carlton Water Treatment Plant (WTP)

Sarasota, FL

Process Lead for the comprehensive process selection, pre-design, final design, and construction supervision for the upgrade and expansion of the Carlton electro-dialysis reversal (EDR) WTP in Sarasota County. This facility uses an advanced membrane treatment process, electro-dialysis reversal (EDR), to remove excess salts from the brackish groundwater. Phase 1 construction is underway, upgrading the existing Mark 3 EDR skids with the new Mark 4 membranes supplied by General Electric (GE) Water. The scope includes evaluation of the pre and post treatment processes and identification of plant-wide upgrades necessary in Phase 2 to expand capacity from existing 12 to 15-mgd.

#### Siesta Key Master Pumping Station

Sarasota, FL

Project Manager for planning, design, and construction stage services for a new Master Pump Station (MPS) to transfer wastewater flow from Siesta Key off the barrier island to mainland and allow for decommissioning of the Siesta Key Advanced Wastewater Treatment Plant (WWTP). The MPS has a capacity of 5-mgd with two 180-hp and two 65-hp pumps. The project includes approximately 30,000-LF of 20-in-dia force main to interconnect with the existing county sewerage system. Horizontal directional drilling was required for over 3,000-ft crossing of the open water in Little Sarasota Bay.



**Lakewood Ranch South Wastewater Master Plan**

Sarasota, FL

Project Manager for planning, design, and construction stage services for a new Master Pump Station (MPS) to transfer wastewater flow from Siesta Key off the barrier island to mainland and allow for decommissioning of the Siesta Key Advanced WWTP. The MPS has a capacity of 5-mgd with two 180-hp and two 65-hp pumps. The project includes approximately 30,000-LF of 20-in-dia force main to interconnect with the existing county sewerage system. Horizontal directional drilling was required for over 3,000-ft crossing of the open water in Little Sarasota Bay.

**Bee Ridge Water Reclamation Plant Phase 2 Expansion**

Sarasota, FL

Senior Reviewer and Engineer of Record for the construction stage services of an expansion to increase facility capacity to 12-mgd (million gallons) Project included evaluation of existing equipment and system. The expansion of the aeration basin, aeration system, and related site and process improvements.

**Siesta Key Advanced WWTP**

Sarasota, FL

Project Manager for upgrades to this 2.7-mgd plant included repairs to the headworks and mechanical screen, replacement of existing aeration system with fine bubble tubular diffusers, replacement of a secondary clarifier bridge and drive unit, extensive repair and rebuilding of the tertiary reactor clarifier, repair and recoating of chemical containment areas, and installation of a new pump station for recycle flows.

**MacCarrons WTP Upgrade**

St Paul, MN

Provided Owner's Advisor services for developing request for proposal (RFP) and technical requirements for progressive design build of upgrades to the 120-mgd plant that was first constructed in the 1920s. The scope included replacement of outdated lime softening basins and slaking equipment with modern clarifiers and slakers. New redundant re-carbonation basins and provision of ozone for taste and odor control were also included in the work. The complex existing hydraulics, aging structures and very tight site added to the challenges of maintaining plant flow and quality during construction. This was the owner's first use of the Progressive Design-Build (PDB) delivery method and extensive workshops were held to facilitate the process.

**Progressive Design Build for WTP Supervisory Control and Data Acquisition (SCADA)**

Ann Arbor, MI

Provided Owner's Advisor services for developing RFP and technical requirements for progressive design build of (SCADA) system upgrades. Included a review of current available industry standard contract documents for Alternative Delivery for water and wastewater projects. Developed a customized approach for City of Ann Arbor based on the Design-Build Institute of America (DBIA) standards, modified to suit City Ordinances and local requirements.

**Elmira WWTP Biological Nutrient Removal (BNR)**

Elmira, ON

Design of expansion and process upgrades to the 2-mgd Elmira WWTP. The Elmira plant required advanced BNR solutions to deal with the very high wet weather peak flows experienced at the plant. Existing aeration tanks were retrofitted with baffle walls and internal recycles to provide anaerobic, anoxic, and aerobic conditions. Provision for step-feeding during high flow events was included to maintain biomass within the system and still effectively meet stringent treatment objectives.

**Wastewater Consolidation Master Plan**

Corpus Christi, TX

As Infrastructure Evaluation Lead, completed evaluation of City of Corpus Christi's wastewater system consisting of 1,200-mi of pipes, 100 lift stations, and six treatment plants to determine the optimal long-term conveyance and treatment scenario. The plan addresses three key issues: growth of population and flows; rehabilitation needs; and future treatment requirements. Developed a range of options from expanding and upgrading existing facilities to consolidation at one or more new plants. The program schedule uses a phased approach and outlines key project triggers, funding requirements, and life-cycle costing.



# Celine Hyer, PE, IAM

## Service Area 3 Infrastructure QA/QC; Asset Management & Condition Assessment

### Key Information

#### Education/Qualifications

MS, Engineering Management, Florida Institute of Technology, 1989  
 BS, Chemical Engineering, Florida Institute of Technology, 1988

#### Years of Experience

Total – 34  
 With Arcadis – 22

#### Professional Registrations/Certifications

Professional Engineer – FL  
 Institute of Asset Management IAM Certificate

#### Office Location

Tampa, FL

Ms. Hyer has extensive experience in applying risk-based prioritization of pipelines for renewal and inspection planning as well as conducting condition assessments. She has worked on numerous condition and risk assessment projects across the country over the last 20 years encompassing over 75,000 miles of pipelines, including both desktop statistical and machine learning failure analysis as well as field condition studies utilizing invasive and non-invasive tools. Ms. Hyer is an established national expert in the industry and frequently speaks and provides training through webinars and at conferences on risk-based prioritization and condition assessment techniques. Ms. Hyer contributed her knowledge as an author for the American Water Works Association Manual M77, Water Main Condition Assessment. Ms. Hyer serves as the Vice Chair for the AWWA Asset Management Committee and the Water Main Condition Assessment Committee and is a member of the American Society of Civil Engineers Committee on Americas Infrastructure producing for the water and sewer 2021 report cards.

### Relevant Experience

#### Asset Management Framework Phase I

Sarasota County Public Utilities, Sarasota, FL

Technical Lead for developing an Asset Management Plan for the Carlton Water Treatment Facility and associated well fields. The project included a condition and risk assessment of all existing assets to determine the capital and maintenance needs including visual inspections, review of past maintenance history and desktop evaluations through staff interviews. A 5 Year CIP was developed at \$25M and long-term funding projections determined \$5M per year would be needed to maintain the desired condition and risk levels.

#### Large Diameter Pipeline Assessment and Replacement Program

JEA, Jacksonville, FL

Program Manager to manage all aspects of over 900 miles of large diameter and critical (12"- 72") water, gravity, and force main pipelines for risk assessment, capital program development, conceptual design, and management of final design and construction over a 5-year period. The risk assessment included Geographic Information System analysis of existing data and field condition assessment. Large diameter reinforced concrete gravity mains were inspected using CCTV and sonar. Pressure mains were inspected using internal and external acoustics to identify leaks, gas pockets, and wall integrity external Broadband Electromagnetic pipe wall thickness testing, in-line Engineering Manual wall thickness testing and soil corrosivity analysis. Conceptual designs were completed for rehab and replacement of poor condition pipelines.

### **Asset Management Implementation Phase I and II**

Toho Water Authority, Kissimmee, FL

Technical Lead and Workshop Facilitator for development of the overall asset management program, including asset hierarchy and definition standards. Assessment guidelines for visual and desktop condition assessment, consequence of failure and risk were developed for water plants, booster stations, valve chambers, storage reservoirs, and elevated tanks. Program development provided a comprehensive field assessment pilot program across all asset categories for GCWW staff training and knowledge transfer of asset management principles and procedures.

### **Condition Assessment of Large Diameter Water Mains and Major Sewers**

District of Columbia Water, Washington, DC

Program Quality Reviewer for the ongoing inspection and condition assessment of large diameter sewers, manholes, force mains, siphons and water mains. The inspection program is being completed with a team of subcontractors utilizing a variety of technologies including Closed Circuit Television, sonar, and laser profiling. Activities include project planning and scheduling, preparation of risk registers and safety plans, permitting, coordination with Net Promoter Score, Department of Consumer and Regulatory Affairs, and various other stakeholders, performing field inspection and providing findings reports. Inspected assets include:

- 8,000 LF of 66" welded steel water main using CCTV, electromagnetic and Laser Imaging Detection and Ranging.
- >20,000 LF of 72" and 96" Reinforced Concrete Pipe sewer force mains and siphons using CCTV, sonar and LiDAR.
- ~4,600 LF of 30" to 112" cast iron, RCP and concrete inverted siphons using sonar.
- >2,000 LF of out-of-service 84" to 96" RCP gravity sewer using CCTV, sonar and LiDAR to assess feasibility of reinstatement.
- >23 miles of 24" to 84" RCP pipes and tunnels using CCTV, sonar and in selected areas LiDAR.
- 12,000 LF of 54" to 75" RCP and brick sewers using CCTV and sonar.
- > 150 National Association of Sewer Service Companies level 2 manhole and structure inspections using pole-mounted Go-Pro cameras and RedZone's Vertue inspection technology.

### **Comprehensive Asset Management Plan Phase**

Metropolitan Sewer District of Greater Cincinnati (MSDGC), OH

Quality Assurance Lead for developing an Asset Management Plan to provide a defensible, risk-based capital planning program to increase reliability and minimize life-cycle costs for sewer treatment and pumping facilities. Project activities included developing risk assessment guidelines, including asset hierarchy, condition assessment, consequence of failure and asset risk, conducting field condition and risk assessments for seven treatment plants and 100 pump stations, developing and implementing a process to identify necessary capital projects and prioritize them, and configuring a custom asset management system tool to assess risk, develop projects and produce project nomination forms.

### **Risk Assessment, Project Prioritization and Asset Management**

New York City Department of Environmental Protection, NY

Program Task Leader for the condition and risk assessment of assets covering water, wastewater, stormwater, and all facilities owned and operated by NYCDEP, including over 50,000 equipment assets at treatment and pumping facilities and 200,000 pipe assets, including water, sewer and stormwater mains. The outcome of the data collection and evaluation was a 4- and 10-year capital plan for renewal and replacement of assets based on risk and remaining life. Business case templates and prioritization using a custom Arcadis-designed tool facilitated the CIP creation. Guidelines documents, tools and staff training will allow NYCDEP staff to make this an ongoing program. Tools included a custom asset management information system that stored all risk data and created business cases. Phase III is underway and will update the CIP through new risk assessment and business cases for treatment plant and pumping asset.





# Matthew Kiefer, PE

## Service Area 3 Infrastructure QA/QC

### Key Information

#### Education/Qualifications

BS Civil Engineering  
University of Dayton 2005

#### Years of Experience

Total – 17  
With Arcadis – 1

#### Professional Registrations/ Certifications

Professional Engineer – NC,  
OH  
NCEES P.E. Record No. 22-  
953-16

#### Office Location

Raleigh, NC

Specializing in large diameter condition assessments, Matt is a National Technical Manager for sewer condition assessment and rehabilitation design. His 17-years of experience includes a strong background in project management and extensive hands-on experience performing condition assessments and overseeing the sewer inspection process and field work. Matt has managed several recent Condition Assessment projects with over 900,000 linear feet of sewer inspected which included CCTV, sonar, laser, H2S measurements, personnel-entry, manhole inspections, and ultimately rehabilitation recommendations, detailed design, and construction oversight.

From assessment to detailed design, Matt’s focus is providing his clients with practical and cost-effective solutions to inspect and repair large diameter sewers. On past projects, his practical rehabilitation solutions for cost effective cementitious and shotcrete rehabilitation saved his clients upwards of \$30 million when compared to other rehabilitation options under evaluation.

### Relevant Experience

#### Alum Creek (North & Middle) Sewer Assessment and Detailed Design

City of Columbus, Columbus, OH

Project Manager overseeing inspection, evaluation, detailed design and services during construction of around 87,000 LF of 42-inch to 96-inch reinforced concrete sewer and the associated repairs. Inspection was completed using CCTV, Sonar, Laser, and man entry methods. The condition of the concrete was evaluated and summarized in a Condition Assessment Report along with a comparison of rehabilitation alternatives such as CIPP lining, slip lining, and cementitious repairs. The report evaluated and determined the most cost-effective method to reduce the probability of failure for the sewer over its life cycle. Mr. Kiefer also led the detailed design effort which included liner design, bypass pumping, plans, specifications, and contract documents. Mr. Kiefer oversaw the construction of 18,555 LF of 66" to 96" continuous shotcrete lining and 33,959 SF of cementitious spot repairs.

#### Storm Sewer LDCA Phase 2

City of Columbus, OH

Project Manager for sewer inspection access planning, maintenance of traffic (MOT), CCTV inspection, and manhole inspections of approximately 100,000 LF of 36- to 120-inch RCP storm sewers and over 200 manholes.

### **Scioto Main Trunk Sewer Condition Assessment**

City of Columbus, Columbus, OH

Project Manager for the condition assessment of the Scioto Main Trunk and related sewers using CCTV, Laser, Sonar, and man-entry inspection methods. Overall, the project consists of approximately 105,000 feet of 36-inch to 180-inch concrete pipe. Portions of the project consist of a deep tunnel with access shafts spaced at around 2,000-3,000 feet making access a challenge. Our team's inspectors entered the trunk sewer and performed analysis of the concrete using multiple test methods such as the Schmidt Hammer Testing, pH testing, and rebar locating. Hydrogen sulfide was also monitored at various locations. Mr. Kiefer and his team is developing a comprehensive Technical Memorandum summarizing the condition and recommendations for rehabilitation including.

### **Blacklick Creek Main Trunk Sewer Condition Assessment**

City of Columbus, Columbus, OH

Project Manager for the condition assessment of the Blacklick Creek Main Trunks which consist of 94,200 feet of 48-inch to 96-inch concrete pipe and three subtrunks that consist of 23,800 feet of 42-inch concrete pipe using CCTV, Laser, Sonar, and man-entry inspection methods. To gain a further understanding of the condition of the sewers, structural inspectors entered the sewers to perform concrete testing on various defects observed in the videos. Hydrogen sulfide, which is typically found in sanitary sewers but negatively affects concrete, was monitored at various location. Mr. Kiefer and his team developed a comprehensive Technical Memorandum summarizing the condition and recommendations for rehabilitation. Hatch designed and oversaw the construction of 5,752 LF of 96" continuous shotcrete lining.

### **Blenheim/Glencoe Integrated Solution (Blueprint Clintonville)**

City of Columbus, Columbus, OH

Project Manager responsible for supporting the prime engineering firm in completing stormwater redirection from downspouts on private property. Residential downspouts were redirected to bioretention basins to minimize stormwater infiltration into the sanitary laterals. In addition, the main sewer lines and service laterals were lined. The overall project reduces I/I, improves

water quality using green infrastructure, and reduces sewer overflows and water in basement throughout the 248-acre project area which includes over 900 properties in the Clintonville area.

### **Blueprint Columbus – Kent/Fairwood Area Project**

City of Columbus, Columbus, OH

Project Manager responsible for overseeing work on this critical project for the City of Columbus Blueprint program. The project tasks included inflow & infiltration (I/I) reduction, stormwater quantity control, and treatment of stormwater with Green Infrastructure. Mr. Kiefer guided the team during field investigations, hydraulic and hydrologic analyses, evaluation of alignment alternatives, green infrastructure improvements, and detailed design of the selected alternative.

### **Blueprint Columbus – Artane/Parkwood Area Project**

City of Columbus, Columbus, OH

Project Manager, as a subconsultant, overseeing detailed field investigations as well as the detailed design of green infrastructure and stormwater infrastructure improvements. The Linden project area has a total of 7 sanitary sewer overflows (SSOs) that discharge near vulnerable population within 500 feet of a school. In addition, there were over 350 WIBs between January 1, 2010 and July 31, 2013. These critical SSOs and WIBs will be mitigated by reducing inflow and infiltration using lateral sewer lining, roof drain redirection, sump pumps, and green infrastructure. Mr. Kiefer led the team in completing the detailed design drawings and contract documents for bid.

### **Barthman/Parsons Inflow and Infiltration Project**

City of Columbus, Columbus, OH

Project Manager and point-of-contact between the prime engineering firm and the sewer inspection contractors. Mr. Kiefer was responsible for monitoring the sewer system condition assessment using sewer cleaning and televising techniques for this Inflow and Infiltration (I/I) remediation project. The project covered approximately 2,000 acres and over 400,000 feet of sewer lines.



# Melissa Pomales, PE, ENV SP, PMP

## Consulting and Business Advisory QA/QC

### Key Information

#### Education/Qualifications

MBA, Finance, Indiana University Kelley School of Business, 2014

MS, Civil Engineering, Cornell University, 2004

BS, Civil Engineering, Cornell University, 2003

#### Years of Experience

Total – 20

With Arcadis – 16

#### Professional Registrations/ Certifications

Professional Engineer – FL,  
Puerto Rico

Project Management

Professional – US

Environmental Sustainability  
Professional

Asset Management –  
Institute of Asset  
Management

#### Office Location

Miami, FL

Ms. Pomales is a licensed Professional Engineer and Project Management Professional, with a diverse and broad range of experience in program and project management, utility consulting and business advisory, procurement and strategic planning, feasibility and financial analyses, planning, and design. Ms. Pomales is the Florida Area Leader for our Water Business Line and is located in our Plantation office, providing ready access to the senior leadership team of the firm.

### Relevant Experience

#### Water Master Plan

City of Hollywood, Hollywood, FL

Advisor and QA/QC support for the development of a 20-year Water Master Plan that includes assessing the current condition and remaining useful life of the water system assets, updating of demands and needs, and prioritizing projects that address aging infrastructure, consider climate adaptation, improve reliability of service, enhance operational efficiencies, and provide for process optimization.

#### Engineering Services for Water Mains and Sewer Replacement Projects along the City's Brick Streets Restoration Program

Orlando Utilities Commission, Orlando, FL

Advisor and QA/QC support for the development of a replacement program of water mains and sewers along City's Brick Streets. Reviewed GIS analysis and supported program scheduling development.

#### Risk and Resilience Assessments for Puerto Rico Aqueduct and Sewer Authority (PRASA) Large Water Systems

PRASA, San Juan, Puerto Rico

Project Manager and Quality Assurance/Quality Control Lead for the completion of risk and resilience assessments for five large water systems (total population served of approximately 1 million), in support of compliance with America's Water Infrastructure Act of 2018.

#### Wastewater Pump Station Asset Management and Master Plan

City of Plant City, FL

Quality Assurance and Capital Planning Task Technical Advisor for asset management activities and development of a wastewater pump station master plan.



**Tallahassee Engineering Services, Water Resources Engineering**

City of Tallahassee, Tallahassee, FL

Account Leader, Advisor, and QA/QC support for various task orders under this continuing services agreement, including preparation of the 20-year water Master Plan update, Wells 26 and 23 operational evaluations and Well 23 Pilot Study and Treatment Design.

**Planning, Engineering and Environmental Services for San Francisco Seawall Earthquake Safety and Disaster Prevention Program**

Port of San Francisco, San Francisco, CA

Program Controls Leader for the \$450 million Seawall earthquake and resilience program, providing program-wide schedule, budget, contract administration and oversight.

**Asset Management Framework Development**

Miami-Dade Water and Sewer Department, Miami, FL

Project Manager for the development of an enterprise-wide Asset Management Framework to implement across water and sewer with optimized business practices, an effective technology portfolio and high-level organizational awareness for staff knowledge and training.

**Superaqueduct Water Treatment Plant, Raw Water Pump Station, and Interconnections Condition Assessment**

Puerto Rico Aqueduct and Sewer Authority, PR

Project Manager and lead condition assessment engineer for the assessment of the physical condition and operational/maintenance practices of the 100 MGD North Coast Superaqueduct System.

**Utua Urbano WTP Clarifier Assessment and Facility Rehabilitation**

Puerto Rico Aqueduct and Sewer Authority, Puerto Rico

Project Manager for the design, bid and construction of rehabilitation upgrades of the Utua Urbano WTP. Conducted field assessments to improve clarifier performance, reviewed design plans of rehabilitation activities including, filter upgrades, chemical application systems upgrades, and treated water storage expansion; supported contractor bid process, and served as owner's representative during construction.

**Facility Assessments of Hurricane Maria Recovery Efforts for Water and Sewer Infrastructure**

PRASA, San Juan, Puerto Rico

Principal in Charge for team leading facility assessments and developing preliminary cost estimates for all water and sewer infrastructure owned and operated by the PRASA. Lead consultant providing support for insurance claims and Federal Emergency Management Agency requests.

**Program Management of Hurricane Sandy Recovery and Resiliency Portfolio Project Controls**

New York City Mayor's Office of Recovery and Resiliency (NYC ORR), New York, NY

Program Manager for embedded team within the NYC ORR, charged with providing monitoring and oversight services of the Recovery and Resiliency program, totalling over 1,000 projects with a combined program budget of \$23 billion. Managed a team of five full-time and eight part-time (remote) employees. Supported client in development of strategy and plan for transitioning program tracking, controls and monitoring activities to internal ORR team.

**Program and Project Management - Capital Improvements Program**

PRASA, San Juan, Puerto Rico

Principal in Charge for Program Management services for PRASA's operational regions (North and Metro Region). Managed resources and workload assignments and oversaw quality program for program team. Performed pre-construction management services including interagency coordination, stakeholder communication and engagement, coordination of planning and permitting, management of design process and quality assurance, and management and support of bid process.

**Program Management for Consulting (Bond) Engineer Requirements**

PRASA, San Juan, Puerto Rico

Program Manager of all Consulting/Bond Engineer annual responsibilities, including deliverables per Master Agreement of Trust with bondholders, supported issuance of more than \$3 billion in municipal bonds to fund capital program. Managed communication with PRASA and other stakeholders, including legal counsel, banking team, rating agencies, and local government agencies.



# Brent Alspach, PE, BCEE

## Membrane Technology (RO/NF)

### Key Information

#### Education/Qualifications

MS, Civil & Environmental Engineering, Cornell University, 1997  
 BS, Civil & Environmental Engineering, Cornell University, 1995

#### Years of Experience

Total – 26  
 With Arcadis – 25

#### Professional Registrations/Certifications

Professional Engineer – CA Board Certified  
 Environmental Engineer (BCEE)

#### Office Location

San Diego, CA

Mr. Alspach joined Arcadis in 1997 and serves as a Principal Environmental Engineer and the Director of Applied Research for the company’s Water Division. Mr. Alspach is an internationally recognized authority on desalination with over 100 publications and presentations covering subjects including applications, technology, process design, regulations, system optimization, troubleshooting, operations, concentrate management, and economics, among others. He is a contributor to the American Water Works Association (AWWA) Manuals of Practice for both reverse osmosis (RO) / nanofiltration (NF) (M46) and the forthcoming manual on inland desalination (M69). Mr. Alspach is the immediate past Chair of the AWWA Membrane Processes Committee, and he currently serves as both an AWWA Water Quality & Technology Division Trustee (Chair) and as a past President of the American Membrane Technology Association.

### Relevant Experience

#### Sustainable Water Infrastructure Project

City of Santa Monica, Santa Monica, CA

Technical Expert for the design of two advanced water treatment facilities to treat a complex blend of wastewater, brackish groundwater, and stormwater for subsurface injection and indirect potable reuse. Treatment processes at the two facilities include dissolved air flotation, ultrafiltration (UF), membrane bioreactors RO, and Ultraviolet (UV)-advanced oxidation. Working with the California Division of Drinking Water to obtain regulatory approval for the proposed facilities. Preparing performance-based specifications for treatment equipment procurement. Developed plan for reducing iron and manganese throughout the process train, including oxidation and removal particulate iron prior to RO and strategic protocol for maintaining manganese in soluble form for rejection by RO without substantive fouling.

#### Membrane Treatment Expert

Confidential Mining Client, NM

Served as a technical expert for identifying treatment technology for the removal of uranium and molybdenum from mining waters, particularly using membrane desalination (NF/RO). Prepared technical specifications and design criteria for treatment equipment procurement and reviewed proposals. Assessed additional treatment technologies for RO concentrate minimization and/or zero-liquid discharge. Supervised RO system start-up. Optimized RO system pretreatment to maximize recovery, minimize fouling, and reduce chemical cleaning requirements, including: antiscalant dosing and membrane filtration.



# Lauren DaCunha, PE

## Water / WW Hydraulic Modeling

### Key Information

#### Education/Qualifications

BS, Civil & Environmental Engineering Minor in Communication, University of South Florida, 2014,

#### Years of Experience

Total – 13  
With Arcadis – 13

#### Professional Registrations/Certifications

Professional Engineer – FL

#### Office Location

Tampa, FL

Ms. DaCunha specializes primarily in water and wastewater-related design, water modeling, and infrastructure condition assessment. Specifically, she has assisted in several condition assessments; completed designs and calculations; performed data collection and analysis; completed hydraulic analysis of several water distribution systems and created Geographic Information System (GIS) maps/figures; developed cost estimates and assisted in report, specification and contract writing; and several permitting and funding applications.

### Relevant Experience

#### Model Update and Calibration

City of Hollywood, FL

Arcadis was tasked with upgrading the city’s hydraulic water model to better represent the existing system. As a part of this model update and calibration, completed field C-factor and hydrant testing in the city’s water distribution system with city staff. Assisted in the analysis of field data and existing Supervisory Control and Data Acquisition data to determine a calibration day for the model. Reviewed population projection data up to the projected 2035 planning horizon and gathered proposed system improvements to be implemented into the model to apply demand for current and future scenarios and model calibration to provide the city with a realistic planning tool for the future and contributed to the training of city staff to use their newly calibrated model.

#### 2020 Master Plan Update

City of Tallahassee, Tallahassee, FL

The City of Tallahassee uses an average of approximately 35-mgd from approximately 30 active wells. The distribution system includes more than 1,200-mi of piping and eight elevated storage tanks. Responsibilities on the master plan update project included reviewing, updating, and calibrating the existing hydraulic model using GIS InfoWater; developing water demand projections for the next 20 years; evaluating the current water distribution system and water production capacity; developing alternatives for meeting increased water demands until 2040; and assembling the 20-year Capital Improvement Projects (CIP) and water master plan update report for the city.





# Michael Pilutti, PE

## Membrane Technology (RO/NF)

### Key Information

#### Education/Qualifications

BS, Civil Engineering,  
Virginia Youngstown State  
University, 1993

#### Years of Experience

Total – 29  
With Arcadis – 5

#### Professional Registrations/ Certifications

Professional Engineer – OH

#### Office Location

Columbus, OH

Mr. Pilutti is a Principal Water Engineer with 29 years of experience consisting of six years as the assistant director of a public water and sewer utility and 22 years as a consulting engineer. He is skilled in water treatment process design, reverse osmosis (RO) and nanofiltration, microfiltration and ultrafiltration (UF), desalination, water reuse, conventional and advanced water treatment, capital planning, infrastructure evaluation, condition assessments of water systems, cost estimating, commissioning, and operations. Mr. Pilutti serves as Membrane Treatment Technical Lead and Principal Water Engineer, applying his national expertise in the use of membrane technology for desalination and potable reuse. He leads the technical design of membrane treatment and other unit processes for Water Treatment Plant (WTPs) and provides technical leadership, guidance and mentoring of junior staff in the areas of membrane system application, design, construction, and start-up.

### Relevant Experience

#### WTP Membrane Softening System Replacement

City of Hollywood, Hollywood, FL

Lead Process Engineer for the concept design of a new membrane softening system for the existing 55-mgd Hollywood WTP. Conducted two separate, three-month pilot studies, one using a hybrid array of nanofiltration membranes, and the other using RO membranes to develop full-scale design data and evaluate alternative antiscalant to eliminate acidification of the membrane feedwater. Developed concept design of seven new membrane softening trains, each with a permeating capacity of 2-mgd, to replace the existing seven membrane softening trains.

#### North WTP

Lancaster Division of Water, OH

Lead Process Engineer responsible for the design of an 8-mgd nanofiltration membrane treatment facility for the North wellfield and treatment facility. Directed the design of facilities including raw water pumps; manganese greensand gravity filtration; cartridge filtration; four 2-mgd nanofiltration membrane arrays; degasification; clear well storage; high-service pumping; and new chemical storage and dosing systems including sodium hypochlorite, sodium permanganate, sodium bisulfite, caustic soda, scale inhibitor and corrosion inhibitor.

# About Arcadis

Arcadis is the leading global Design & Consultancy firm for natural and built assets. Applying our deep market sector insights and collective design, consultancy, engineering, project and management services we work in partnership with our clients to deliver exceptional and sustainable outcomes throughout the lifecycle of their natural and built assets. We are 35,000 people, active in over 70 countries that generate \$4.2 billion in revenues. We support UN-Habitat with knowledge and expertise to improve the quality of life in rapidly growing cities around the world.

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