

City of Fort Lauderdale

Event No. 454

Public Works Asset Management Consulting Services

July 7, 2025



Stantec

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1. Executive Summary

1. Executive Summary

Stantec Consulting Services Inc. (Stantec) is pleased to submit the Statement of Qualifications package in response to the **City of Fort Lauderdale, Florida's (City) Event No. 454 Request for Qualifications (RFQ) for Public Works Asset Management Consulting Services**. Drawing from deep local presence and national expertise, our team brings a proven, strategic approach to infrastructure stewardship. The comprehensive and strategic Asset Management Program described in our approach moves beyond simply maintaining assets; it aims to establish asset management as a foundational, strategic function that directly supports the City's long-term aspirations. This program is meticulously crafted to align with the City's key strategic goals: fostering a **resilient and sustainable** community, promoting **mobility-oriented** solutions, ensuring a **community-focused** approach, cultivating an **innovative and adaptive** spirit, and upholding principles of **transparent and accountable** governance. By integrating international best practices with Fort Lauderdale's unique challenges and community vision, Stantec is committed to delivering a program that exceeds all requirements outlined in the City's RFQ.

About Stantec

Stantec, a corporation founded in 1954, provides professional design and consulting services in engineering, architecture, landscape architecture, planning, surveying, geotechnical, environmental sciences, construction engineering inspections, construction management, project management, and project economics for infrastructure and facilities projects. Continually striving to balance economic, environmental, and social responsibilities, we are recognized as a world-class leader and innovator in the delivery of sustainable solutions.

Headquartered in Edmonton, Alberta, Canada, Stantec maintains a strong footprint across North America, with over 200 offices and more than 9,200 team members in the United States. Wherever you need us, there's a good chance Stantec is already there. We have 14 offices across Florida with over 675 staff statewide, but our **Jacksonville (Salisbury Road) office will serve as the main office** for this project.

Stantec brings a deep understanding of Florida's infrastructure, regulatory landscape, and community priorities, built through decades of experience supporting local governments across the state. We have been awarded over 50 continuing services contracts with Florida municipalities, including Davie, Hallandale, Deerfield Beach, Plantation, Sunrise, Coral Springs, Tamarac, Pompano Beach, Fort Lauderdale, Riviera Beach, West Palm Beach, Golden Beach, North Miami Beach, Miami Beach, Doral, Miami, Coral Gables, Key Biscayne, Cutler Bay, Palmetto Bay, and Pinecrest. This extensive local experience gives us a strong grasp of regional challenges such as climate vulnerability, coastal infrastructure resilience, and equitable service delivery—insights that we will bring directly to this program.

Our Project Team

The key staff selected for this project bring a high level of experience and technical expertise, positioning them to effectively support the City's goals. Under the leadership of **Project Manager James Hale**, each team member has been carefully chosen for their proven success on projects of similar size and complexity. **Principal In Charge Andrew Burnham** brings a strong familiarity with the City of Fort Lauderdale, having worked with the City on a range of financial services projects. To further strengthen our team, we are partnering with subcontractors—**RADISE International, Craig A. Smith & Associates, Brizaga and EnviroWaste**—each offering specialized knowledge and familiarity with the City's needs.



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Stantec in Florida

Stantec has extensive experience in developing work under municipal service contracts in South Florida, with a focus on defining scope, fees, and deliverables at the outset. Additionally, Stantec brings several key differentiators that make us uniquely suited to partner with the City on this effort:

Deep Florida Experience: We've supported municipal AM programs and GIS initiatives across Florida, including Palm Beach and Pinellas counties, ensuring familiarity with local regulations, standards, and environmental needs.

Integrated Technical Teams: Our in-house staff includes licensed engineers, certified GIS professionals, certified asset management specialists, and environmental planners.

Field-Verified Data Collection:

Stantec's sub-contractors use data gathering protocols, advanced mobile mapping, and NASSCO PACP-based CCTV tools to efficiently collect asset information.

Decision Support Tools: Stantec uses a risk-based, data-driven process to prioritize Capital Improvement Plans, aligning projects with the City's strategic goals and level of service (LOS). This approach helps allocate limited budgets to high-impact, high-value projects, promoting effective and sustainable infrastructure development.

Project Key Staff		
Role	Staff	Office Location
Principal in Charge	Andrew Burnham	Tampa, Florida
Project Manager	James Hale	Jacksonville, Florida
Senior Technical Advisor	Laith Alfaqih	Cincinnati, Ohio
Asset Condition Assessments	Craig Omundsen	Winnipeg, Manitoba
Asset Criticality & Risk Management	Scott Bash	Bellevue, Washington
Change Management	Hani Alkhouli	Tampa, Florida
AMS Development	Erin McLachlan Sanchez	Portland, Oregon
Financial Strategy	Kyle Stevens	Tampa, Florida
Funding Strategy	Emily Snyder	Asheville, North Carolina
CMOM & Capacity Analysis	Harold Schmidt	Tampa, Florida
Data Management	Brandon Rolo	New York, New York
Cityworks	Tanya Camacho	Clearwater, Florida
Geotechnical Engineering	Subcontractor: RADISE	Riviera Beach, Florida
Surveying & Utility Locate	Subcontractor: CSA	Deerfield Beach, Florida
Community Outreach & Engagement	Subcontractor: Brizaga	Fort Lauderdale, Florida
CCTV	Subcontractor: EnviroWaste	Davie, Florida

CASE STUDY:

Palm Beach County's Asset Management Transformation

Since 2017, Stantec has worked with the Palm Beach County Water Utility Department (PBCWUD) on the utility's Asset Management (AM) Program and AM transformation. The comprehensive project has seen significantly increased cross-departmental engagement, shifting the organization from siloed operations to a unified, discipline-based approach to asset management. As a result, PBCWUD is experiencing improved business processes and enhanced operational efficiency, elevating the utility's reputation among local and national stakeholders. With Stantec's support **PBCWUD achieved ISO 55001 Certification, marking them as the first water utility in North America** to be certified for its continued commitment to managing public assets in accordance with the highest industry standards. PBCWUD remains committed to continuously strengthening its asset management system toward building long-term reliability, resilience, and sustainability in service to its community.

PBCWUD staff are driven by a common purpose to truly embrace our core values of delivering the best water, best service, and best environmental stewardship. Gaining ISO55001 certification shows a clear commitment to best practice and continual improvement in core business functions. This is a great accolade for the organization.

**- John Acton, Assistant Director
Palm Beach County Water
Utility Department**

Key Elements of Our Proposal

Stantec's approach to delivering an Asset Management (AM) Program for the City of Fort Lauderdale is grounded in a strategic, data-driven framework that emphasizes both immediate improvements and long-term sustainability. Led by Project Manager James Hale, our team will work in close partnership with City staff and trusted subcontractors to improve the quality of asset data, enhance organizational capacity, and implement a clear, phased pathway for asset management planning.

3 Key Elements of Our Asset Management Approach

1. Strategic Framework and Development

At its core, Stantec's approach will establish a robust Asset Management (AM) Policy, define clear AM Objectives, and develop a comprehensive Levels of Service (LOS) framework. This framework will link performance targets with customer expectations and the City's strategic goals, incorporating both technical and customer-focused measures. Building on this foundation, Stantec will create a unifying Strategic Asset Management Plan (SAMP) and detailed, asset-specific Asset Management Plans (AMPs) for stormwater, domestic water, wastewater, roadways, seawalls, and bridges. These plans will translate high-level policy into actionable programs, grounded in data, performance metrics, and risk analysis. They will include detailed asset inventories, condition assessments, lifecycle strategies, and renewal analyses, while also refining business processes to meet industry standards, including ISO 55001.

2. Data Integrity, Risk Management, and Performance Tracking

A fundamental part of the program involves a systematic approach to data collection, conversion, and migration. This begins with meticulously validating and enhancing the accuracy of existing GIS databases for all Public Works assets, ensuring a precise foundation for all asset management activities. This validation will be complemented by comprehensive data collection efforts from both field surveys (with our subcontractor Craig A. Smith & Associates) and desktop extraction, creating a complete and accurate geo-coded asset registry. Stantec will also conduct capacity analyses of infrastructure systems to prepare for future demands, including climate change scenarios, and seamlessly integrate GIS databases into the City's asset management software, such as Cityworks, for efficient tracking and reporting.

Stantec will lead a citywide condition assessment program across all infrastructure types to inform asset health and likelihood of failure. This data will feed into Critical Asset Identification & Risk Plans, where a "triple bottom line" methodology (social, environmental, and financial impact) and Enterprise Risk Management (ERM) principles will be used to assess and prioritize risks. For wastewater and stormwater systems, a comprehensive Capacity, Management, Operations, and Maintenance (CMOM) program will be developed in alignment with EPA guidelines to ensure reliability and regulatory compliance. A robust performance tracking system with clear Key Performance Indicators (KPIs) will promote accountability and transparency, designed for continuous improvement and potential ISO 55001 certification. To ensure successful adoption, Stantec will integrate a formal Change Management Strategy, leveraging the ADKAR framework, and provide comprehensive documentation and governance support, with tight integration into the City's Cityworks system.

3. Capacity Building, Financial Sustainability, and Regulatory Compliance

Stantec is committed to fostering a culture of asset stewardship through structured staff training and public education programs, including the Institute of Asset Management (IAM) Asset Management Certificate Training. Community outreach, in collaboration with Brizaga, will enhance public understanding and engagement. Leveraging extensive financial consulting experience, Stantec will prepare detailed financial forecasting and funding options, including lifecycle cost estimates, multi-year projections, and scenario modeling to identify sustainable financing mechanisms. Finally, Stantec will ensure all program activities are fully compliant with relevant regulatory requirements and property coordination needs, guiding the City through permitting and legal processes.

This integrated and forward-thinking program will empower Fort Lauderdale to make defensible, timely, and fiscally responsible infrastructure decisions, ultimately enhancing service reliability, improving public safety, fostering environmental stewardship, and ensuring long-term sustainability and resilience for its community.

Cityworks GIS Management

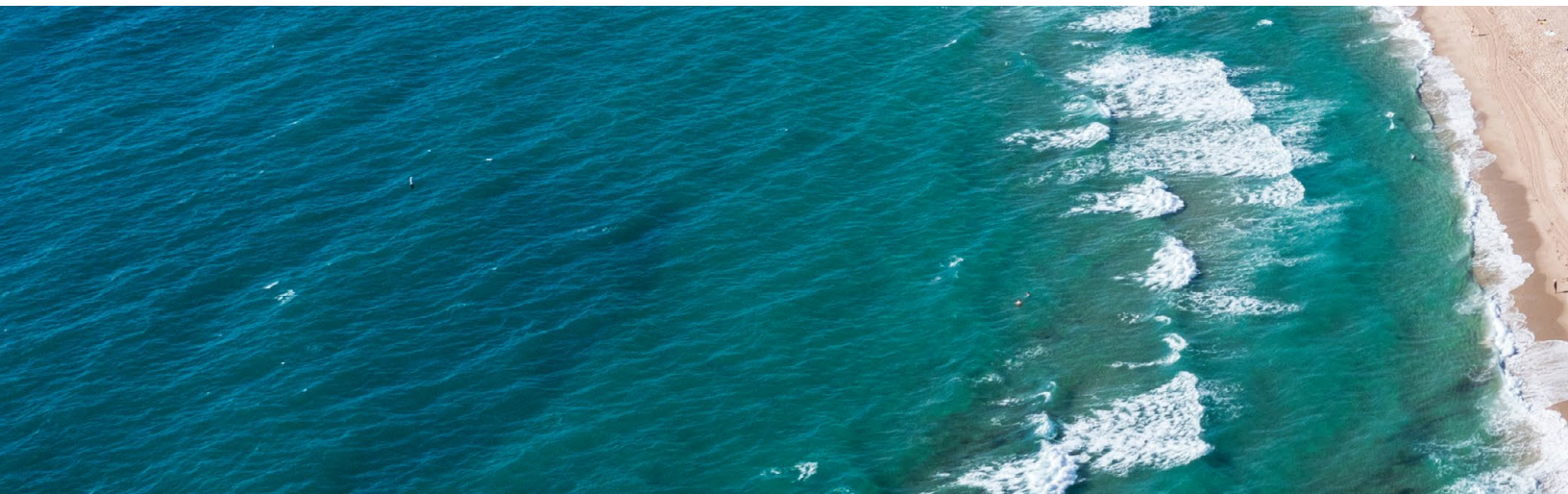
Stantec holds **Cityworks Platinum Implementation Partner** status, the highest level of partnership recognized. This designation reflects Stantec's deep expertise and proven success in deploying Cityworks solutions across a wide range of municipal and utility clients. Our Platinum status signals that our team is not only technically proficient but also a trusted advisor in helping organizations like the City of Fort Lauderdale to modernize their asset management systems and achieve strategic goals.

Key Highlights of Stantec's Cityworks Platinum Status

- **Extensive Implementation Experience:** Stantec has led numerous successful Cityworks implementations, including for major cities like Atlanta and Marshall, helping them transition legacy systems to modern, GIS-centric asset management platforms.
- **Comprehensive Services:** Their support includes everything from system configuration, data migration, and GIS integration to training, process improvement, and long-term support.
- **Strategic Alignment:** Stantec's approach aligns with Cityworks' focus on improving operational efficiency, regulatory compliance, and data-driven decision-making.
- **Innovation and Customization:** They tailor solutions to each client's needs, often integrating third-party tools and developing custom workflows to enhance functionality.

Stantec views asset management as a strategic function that aligns infrastructure decisions with community goals and regulatory requirements. By integrating international best practices—such as the IAM and ISO 55000 series—into a framework tailored to the City's unique context, our methodology strengthens relevance, effectiveness, and long-term value. Our proposed program directly supports the City's strategic plan, Press Play Fort Lauderdale, by advancing key goals such as building resilience, improving mobility, promoting equity, fostering innovation, and ensuring transparency. By establishing clear policies, measurable objectives, and a robust planning framework, Stantec will ensure that all asset-related decisions—from prioritization to funding—are traceable, defensible, and aligned with the City's broader vision. Stantec is fully committed to delivering a forward-thinking Asset Management Program that not only meets the scope of work outlined in the RFQ but also empowers the City to maintain high service standards and make informed, accountable infrastructure investments well into the future.

Stantec will work closely with the City to meaningfully enhance service reliability, public safety, environmental stewardship, and regulatory compliance—ultimately strengthening the long-term sustainability, resilience, and quality of life for the City of Fort Lauderdale and its residents.





2. Experience and Qualifications

2. Experience and Qualifications

Stantec, a corporation founded in 1954, provides professional design and consulting services in engineering, architecture, planning, surveying, geotechnical, environmental sciences, construction management, project management, and more. Continually striving to balance economic, environmental, and social responsibilities, we are recognized as a world-class leader and innovator in the delivery of sustainable solutions. The Stantec community unites more than 32,000 employees working in over 450 locations across the globe offering a wide range of services to improve communities. Our local strength, knowledge, and relationships, coupled with our world-class expertise, have allowed us to go anywhere to meet our clients' needs in more creative and personalized ways. With long-term commitment to the people and places we serve, Stantec has the unique ability to connect to projects on a personal level and advance the quality of life in communities across the globe.

Stantec is a publicly traded corporation on the TSX and NYSE under the symbol STN. Information regarding our corporate governance can be found on our website at Stantec.com.

\$5.9B

Annual Revenue
2024

32K

Employees in over
450 locations
across 6 continents

#1

Most Sustainable Corporation
among Industry Peers
2024 Corporate Knights Global 100

Stantec's Commitment to Sustainability

Sustainability isn't just what we do. It's who we are.

At Stantec, sustainability is a catalyst to our success. Sustainability is embedded in Stantec's people, our projects, and our direction. Continually striving to balance economic, environmental, and social responsibilities, we are recognized as a world-class leader and innovator in the delivery of sustainable solutions.

We continue to support the United Nations Global Compact because we believe in its mission and because our expertise directly contributes to the success of the Sustainable Development Goals. Across every business line and region, we deliver climate change services and advise on best practices for mitigation of emissions and adaptation to climate change events. Using our financial systems, we track and publicly disclose the percentage of Stantec's overall gross revenue that comes from projects that align with Sustainable Development Goals targets.

Sustainability at Stantec is built on the premise that positive economic results are possible when we effectively manage our environmental, social, and governance affairs. We are committed to sustainability leadership in our operations and project work. In our markets, for our clients, and throughout our Company we advance initiatives that support a more sustainable world.



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November 14, 2001

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Stantec's Management & Technology Consulting

Management & Technology Consulting Practice has been operating for over 20 years, and offers 60+ consultants with over 600 years of combined experience. As a group, we work together and learn from each other's experiences. This combination of diverse backgrounds and experiences has made us who we are today - **a trusted source to our clients in providing independent and objective utility management and financial services to local governments and utilities, including over 350 locations throughout the United States.**

600+

Combined years of experience

>500

Communities in our benchmarking database

>30%

Of the U.S. population served

Management & Technology Consulting Practice Areas

Asset Management	CMMS/EAM Solutions	Economics	Financial Services
Maximize performance, governance and sustainability	Asset information systems and data management solutions	Unbiased benefit cost analysis and forecasting	Sustainable, affordable financial analysis and planning
Funding	Regulatory & Policy	Strategic Planning	Technology Consulting
Identify, secure and manage alternative funding (grants/loans)	Compliance evaluations and support services	Transform agencies through people/process changes and implementation	Data analytics and digital planning to improve performance

Asset Management Services

Stantec is a global leader in consulting and infrastructure asset management. We bring together multidisciplinary expertise to deliver client-focused solutions across infrastructure, energy, environment, architecture, and community development. Our services span the full asset life-cycle—from planning and engineering to implementation and long-term performance management—all underpinned by strong community engagement and a commitment to innovation.

Laith Alfaqih, Scott Bash, Erin McLachlan Sanchez, and Craig Omundsen have been instrumental in shaping international best practices, contributing to ISO 5500X, the Institute of Asset Management (IAM), the American Water Works Association (AWWA) or the International Infrastructure Management Manual (IIMM), including providing advise for their ongoing development. We bring deep expertise in engineering, finance, data analytics, IT systems, and customer service to create strategic and operational asset management plans that are both practical and future-ready. With successful programs implemented for utilities across North America, the UK, Australia, and New Zealand, Stantec is uniquely equipped to support the City of Fort Lauderdale in building a tailored, results-driven asset management framework that addresses the entire asset life-cycle.

Asset Management Service Offerings

Strategy, Policy & Plans	Strategic Asset Management Plans	Business Evaluations & Decision Making	Risk Management
Asset Life-Cycle Management	Financial Analysis & Management System	Decision Support Systems	Performance Indicators / Measures / Metrics
Condition Assessment	Business Process Analysis	Continuous Improvement	Technology Planning & Implementation
Digital Transformation	Operational Readiness	Capital Improvement Program	Levels of Service

Project Experience

Stantec brings extensive experience supporting municipalities across Florida and beyond in advancing their asset management programs and delivering projects aligned with the Additional Scope areas outlined in section 3.4 of the RFQ. The following tables provide an overview of clients we have assisted in recent years, highlighting both our asset management work and our relevant Florida-based project experience. To offer deeper insight into our capabilities, we have included five detailed project summaries demonstrating our experience assisting communities with asset management. We encourage you to reach out to all of the respective references included in these project summaries to learn first hand about our exemplary work.

Selection of Asset Management Projects

	Water	Transportation	Grounds	Wastewater	Surface Water
AZ - Surprise				•	•
CA - Contra Costa	•	•	•	•	•
CA - Fullerton	•				•
CA - Los Alamos Dept Public Utilities				•	•
DC - DC Water	•			•	•
FL - Collier County	•	•	•	•	•
FL - Palm Beach County	•			•	
FL - Pinellas County Water Utilities Dept	•			•	
GA - Atlanta DWM	•			•	•
GA - Fulton County	•	•		•	•
MI - Marshall	•	•	•	•	•
OH - Aurora	•	•	•	•	•
OH - Cincinnati, MSD	•			•	•
OH - Lorain	•			•	•
OK - Oklahoma City	•		•	•	•
OR - Portland Water Bureau	•			•	•
TN - Chattanooga				•	•
TX - Carrollton	•			•	•
VA - Henrico County	•			•	•
VA - Newport News	•	•	•	•	•
VA - Prince William County	•			•	
VA - Richmond Dept of Public Utilities	•			•	•
VA - Western Virginia Water Authority	•			•	•
WA - Bellevue	•	•		•	•
WA - Bremerton	•	•	•	•	•
WA - Everett	•			•	
WA - Gig Harbor	•	•	•	•	•
WA - Kenmore	•	•	•		•
WA - King County WTD			•	•	
WA - Lake Stevens			•		
WA - Olympia	•		•	•	•
WA - Pierce County	•	•		•	•
WA - Port of Seattle	•	•	•	•	•
WA - Seattle Public Utilities	•			•	•
WA - Shoreline	•	•	•	•	•
WA - Redmond	•	•	•	•	•
WA - Yakima	•	•		•	•

Selection of Florida Project Experience

Client	Project	Roadway	Stormwater	Water & Sewer	Environmental Engineering	Grants	Cost Estimating	Construction Administration
City of Hallandale Beach	Sea Level Rise & Critical Infrastructure Analysis	•	•				•	
	Foster Road 12" WM Improvements	•		•			•	•
	5 Year Watershed Master Plan					•	•	
	Golden Isles Safe Neighborhood District	•	•	•	•	•	•	•
City of Sunrise	SW 121 Avenue Water Main Improvements	•		•			•	•
	Lift Stations #122, 128, & 210	•		•			•	•
	Sawgrass Int'l Corp. Parkway-Reuse Main & ASR RAW Watermain	•		•			•	•
Miami-Dade WASD	Miami Dade Pump Station Improvement Program (PSIP)			•				•
	NW 47th Avenue Water and Sewer Main Improvements	•		•	•			•
	NW 107th Avenue 36-inch FM	•		•	•			•
	Redundant 36" Transmission Force Main along Snake Creek Canal	•		•				
Village of Palmetto Bay	Palmetto Bay Dog Park	•	•				•	
	Palmetto Bay Sports Complex	•	•	•			•	
	Thalatta Park Shoreline Improvements				•	•	•	•
	Drainage Improvements Phases 1-5	•	•					
Town of Cutler Bay	Franjo Park		•	•		•	•	
	Caribbean Boulevard JPA	•	•		•	•		
	Whispering Pines Parking Improvements	•	•				•	
City of Key West	Sailfish Pier Replacement			•	•			•
	Dolphin Pier Replacement			•	•			•
City of Coral Gables	Kerdyk Tennis Center Phase 1 & 2		•			•	•	
	Public Works Generator					•	•	
City of South Miami	South Miami Park Improvements		•				•	
	SW 62nd Avenue LAP Improvements	•						
City of North Bay Village	Treasure Island Conceptual Master Plan and Traffic Calming	•	•			•		
	North Bay Island Paving Improvements	•	•				•	•
City of Miami Beach	Dade Canal Seawalls and Traffic Calming		•		•		•	•
	Venetian Island Outfall Seawalls		•		•		•	•
	Sunset Island 3 and 4 Neighborhood Improvements		•	•	•		•	•
City of Miami	The Roads Neighborhood Improvements	•	•	•				
	NW 16th Street Improvements	•	•	•				
	Grove Park Phase 3	•	•	•			•	•
	Morningside Park Sewer Connection	•	•					•
Village of Key Biscayne	Crandon Blvd Improvements	•	•	•			•	•
	Village Green Field Improvements	•	•					•
	Village Green Dog Park	•	•					•



Asset Management & ISO 55001 Certification Journey

Palm Beach County Water Utilities Department | Palm Beach, Florida

Project Description

Palm Beach County Water Utilities Department (PBCWUD) has achieved the prestigious ISO 55001 certification for its Asset Management (AM) System—becoming the first water utility in North America to reach this milestone. This internationally recognized standard sets the benchmark for managing assets responsibly over their full life-cycle, focusing on cost, risk, and performance.

PBCWUD’s success was made possible through its long-term collaboration with Stantec, who played a pivotal role in guiding the utility’s asset management transformation. The partnership began in 2016, when Stantec developed a customized roadmap based on PBCWUD’s vision and organizational maturity. This roadmap shaped the Asset Management Improvement Plan, placing people at the center of change and laying the foundation for ISO certification.

Over the course of five years, Stantec supported PBCWUD through 150+ interviews, 2,000+ labor hours, and the implementation of a computerized maintenance management system and robust change management strategy. Stantec helped define a clear framework focused on documentation, people,

processes, systems, data, risk, and supply chain—aligned with the Institute of Asset Management’s 39 subject areas.

Thanks to this structured and collaborative approach, PBCWUD trained staff across all departments—including operations, maintenance, engineering, finance, and HR—breaking down silos and embedding asset management as a core discipline across the organization.

“This certification reflects our shared commitment to excellence and continuous improvement,” said John Acton, Assistant Director of PBCWUD. “Stantec was instrumental in helping us build a system that ensures we consistently deliver the best water, service, and environmental stewardship to our community.”

While achieving ISO 55001 marks a significant accomplishment, both PBCWUD and Stantec recognize it as just the beginning. The utility continues to evolve its asset management practices, demonstrating industry leadership and a deep commitment to long-term sustainability and service.

Additional Details

Dates: 2017 - Present

Estimated Cost: \$700,000

Actual Cost: \$700,000

Key Staff:

Laith Alfaqih

James Hale

Craig Omundsen

Reference

Melody Laven

Technical Compliance Manager

(561) 493-6211

mqlaven@pcbwater.com

Palm Beach County

301 North Olive Avenue

West Palm Beach, FL 33401



Asset Risk Management & Wastewater Collection GIS

Pinellas County Utilities | Clearwater, Florida

Project Description

Stantec partnered with Pinellas County Utilities (PCU) to develop a comprehensive Sewer Collection System Asset Management Plan, designed to help the utility manage risk and optimize investments using GIS as the authoritative system of record. This plan enables PCU to make smarter, data-driven decisions about when and where to replace infrastructure and how best to prioritize capital improvements.

As a foundational step, Stantec helped mature PCU's asset inventory in GIS, ensuring that it contained critical information such as asset age, material, performance history, and relationships to service levels. We performed a data gap analysis, piloted the ArcGIS Utility Network, and documented the asset hierarchy—down to pump station components and system valves. To break down data silos, we made recommendations for standardization and integration across disconnected systems such as CCTV, SCADA, condition inspections, and hydraulic models. We also worked closely with PCU's IT team to develop data exchange protocols and updated GIS schemas to support risk-based planning.

Stantec then guided PCU through a full Business Risk Exposure (BRE) analysis, using existing databases and

software systems to assess both the likelihood and consequence of asset failure. The results, calculated at the asset level within GIS, allowed PCU to prioritize its Capital Improvement Projects (CIPs) and evaluate different funding strategies. By involving departments across the utility—finance, operations, engineering—we ensured that all perspectives on asset value were considered. The BRE process allowed PCU to align on a shared framework for minimizing risk and maximizing asset value.

A key outcome of this work was the identification of high-risk sewer pipes nearing the end of their service life. One such pipe, flagged through the BRE analysis, ultimately failed—discharging 300,000 gallons of sewage. While unfortunate, the incident validated the accuracy and importance of the risk model developed through this project.

PCU is now using the BRE results and enhanced GIS capabilities as a foundation for future planning and investment. This project demonstrated the real-world value of an enterprise GIS solution and how structured, risk-informed asset management can help utilities avoid failures, improve performance, and make better use of limited resources.

Additional Details

Dates: 2021 - Present

Estimated Cost: \$530,000

Actual Cost: \$530,000

Key Staff:

Laith Alfaqih
James Hale
Brandon Rolo
Craig Omundsen

Reference

Shane Gendron

Project Coordinator
(727) 582-2385

SGendron@pinellas.gov

Pinellas County

14 South Fort Harrison Avenue
Clearwater, FL 33769



Institute of Asset Management Certificate Training

Fairfax County Maintenance & Stormwater Management Division | Fairfax, Virginia

Project Description

Stantec’s asset management specialists delivered and facilitated Institute of Asset Management (IAM) Certificate Training for staff within Fairfax County’s Maintenance & Stormwater Management Division (MSMD). As part of this effort, Stantec also proctored the IAM Certificate in Asset Management Exam, supporting Fairfax County’s strategic goal of advancing as a mature asset management organization.

Fairfax County’s commitment to enhancing its asset management capabilities reflects the same dedication Stantec brings to every engagement. With decades of global experience in the evolution and implementation of asset management frameworks—including deep involvement with the IAM—Stantec continues to serve as a trusted partner for organizations seeking to embed best practices aligned with ISO 55000 standards.

The IAM Certificate Training is structured around five core modules that represent internationally recognized good practice in asset management:

1. Principles of Asset Management
2. Asset Management Policy, Strategy, and Planning
3. Life-Cycle Decisions and Activities
4. Assessing and Managing Asset Management Risks
5. Financial and Business Impact

Stantec delivered the training on-site at Fairfax County’s offices in a structured format tailored to professionals with foundational experience in asset management. The program incorporated adult learning principles and combined theory, real-world case studies, and interactive exercises to create an engaging and practical learning experience. Printed training materials were provided to ensure participants could follow along and retain key concepts.

By completing this certification training, MSMD staff are better equipped to apply asset management principles across the full life-cycle of infrastructure. Stantec’s partnership has not only strengthened internal capabilities but also supported the County’s long-term mission to manage infrastructure more strategically, sustainably, and cost-effectively.

Additional Details

Dates: August 2024 - October 2024

Estimated Cost: \$36,000

Actual Cost: \$36,000

Key Staff:

Laith Alfaqih
Craig Omundsen

Reference

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Assistant Division Director
(703) 324-3151

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County of Fairfax

12000 Government Center Parkway
Fairfax, VA 22035



Asset Management Improvement Project

City of Lorain Utilities Department | Lorain, Ohio

Project Description

Stantec’s asset management and GIS specialists are collaborating with the City of Lorain’s Utilities Department to develop and implement a risk-based Decision Support System (DSS) that will strengthen how the city prioritizes assets, manages maintenance programs, and plans capital improvements. This comprehensive framework is designed to enhance oversight of the city’s asset inventory and apply structured risk management processes across its water, wastewater, and stormwater systems.

At the core of this effort is the use of the Cityworks platform, which is enabling Lorain to integrate maintenance management, risk analysis, and capital and operational prioritization into one cohesive system. This supports the city’s goal of achieving better long-term performance and reliability of its critical infrastructure assets. Stantec is guiding the Utilities Department through the evaluation and implementation of asset management practices across its distribution and conveyance systems. This includes defining internal and external levels of service, developing key performance indicators (KPIs), and introducing standardized performance measures to monitor and guide operations.

One of the key components of the project is the creation and deployment of a Business Risk Exposure (BRE) system, which allows the city to systematically assess risk by evaluating both the likelihood and consequence of asset failure. The BRE approach is directly aligned with the City’s strategic objectives and helps ensure that capital and maintenance resources are targeted where they will have the greatest impact.

The team’s initial focus has been on strengthening asset risk management. By leveraging existing data from the city’s Engineering and Operations & Maintenance departments, Stantec has helped Lorain assess and prioritize infrastructure vulnerabilities. This allows the city to make proactive, data-driven decisions about repairs and replacements—reducing the risk of failure and minimizing service disruptions for residents.

Through this partnership, Lorain is establishing a solid foundation for sustainable infrastructure management, ensuring better service delivery, greater operational efficiency, and long-term cost savings.

Additional Details

Dates: 2022 - Present

Estimated Cost: \$350,000

Actual Cost: \$350,000

Key Staff:

Laith Alfaqih
James Hale
Craig Omundsen
Brandon Rolo

Reference

Joseph Carbonaro

Director of Utilities
(440) 242-8657

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City of Lorain Utilities Department

1106 W 1st Street
Lorain, OH 44052



Digital Transformation Program & New EAM Software Asset-Risk Management Framework

District of Columbia Water & Sewer Authority | Washington, DC

Project Description

DC Water engaged Stantec to lead a strategic, multi-phased implementation of the Cityworks (Trimble Unity) Asset Management System (AMS), aiming to modernize the management of both linear and vertical assets across the utility. Recognizing the limitations of existing legacy systems and the growing need for a centralized, data-driven solution, DC Water sought Stantec’s expertise to guide the transition to a robust, integrated, and GIS-centric asset management platform. This initiative supports DC Water’s long-term vision of enhancing asset reliability, improving operational performance, and enabling proactive decision-making.

The project is being delivered through a strong collaboration between Stantec’s team and DC Water’s internal Core Team, ensuring the AMS is tailored to meet the utility’s unique operational requirements, departmental workflows, and enterprise goals. This partnership-driven approach facilitates clear communication, stakeholder engagement, and organizational alignment throughout the implementation process.

The first phase of the project establishes a comprehensive foundation, including detailed project

planning, business process analysis, and integration of existing GIS data to support a smooth transition. A key milestone in this stage is the configuration of core Cityworks modules—Respond, Admin, Storeroom, and Mobile—through a series of interactive workshops. These sessions ensure that each module is designed to align with user expectations and operational realities.

Subsequent phases of the project focus on thorough system testing to validate the AMS configuration and ensure seamless integration with existing technologies. Stantec will also lead comprehensive training programs to prepare DC Water staff for successful adoption, coupled with go-live support and post-launch stabilization to ensure a smooth and efficient rollout.

Ultimately, this implementation will equip DC Water with a modern, scalable, and sustainable asset management system that enhances visibility into asset performance, streamlines maintenance operations, supports regulatory compliance, and empowers the organization to make informed, data-driven decisions that benefit both internal operations and the communities they serve.

Additional Details

Dates: 2024 - Present

Estimated Cost: \$4,500,000

Actual Cost: \$4,500,000

Key Staff:

Laith Alfaqih
James Hale
Tanya Comacho

Reference

Salil Kharkar

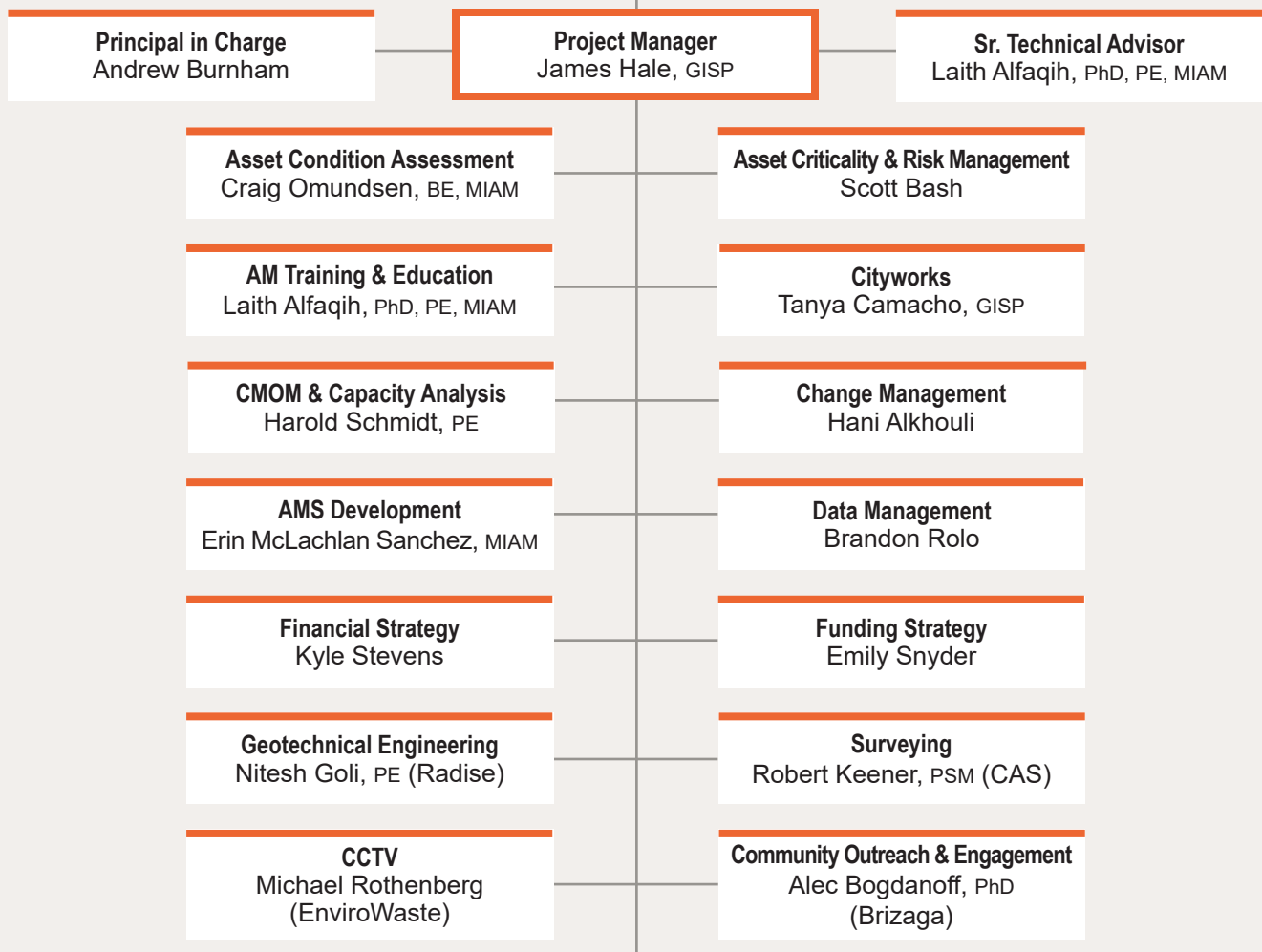
VP & Senior Technical Advisor to COO
(202) 812-0013
skharkar@dcwater.com

District of Columbia Water & Sewer Authority

1385 Canal Street SE
Washington, DC 20003

Project Team

Each team member has been thoughtfully selected for their demonstrated success on projects of similar scope and complexity. Committed to collaboration, innovation, and responsiveness, our team is fully prepared to guide the project from planning through completion. Below is the organizational chart illustrating the structure of our project team. **James Hale** brings extensive experience in successfully managing complex projects and delivering data management solutions that enhance organizational efficiency and support informed decision-making. As the senior technical advisor and lead for AM training and education, **Laith Alfaqih** contributes decades of expertise, offering best practice guidance tailored to the needs of City staff. **Erin McLachlan Sanchez**, **Scott Bash**, and **Craig Omundsen** add further strength to the team with their AM networks and experience in developing levels of service and risk management frameworks. Following the organizational chart, you will find key staff summaries highlighting the expertise and roles of our core team members. Full resumes for key personnel are provided in the Appendix.



Additional Scope Staff

1. **Civil Engineering** Shehab Bata, PE
2. **Stormwater** Ben Quartermaine, PE
3. **Water & Wastewater** Eduardo Torres, PE
4. **Roadways** Fadi Jadoun, PE
5. **Seawalls & Bridges** Mohti Soni, PE
6. **Asset Management** Craig Omundsen, MIAM
7. **Benefit Cost Analysis** Erin McLachlan Sanchez
8. **Visualization Tools** Brandon Rolo
9. **Assessment Techniques** Leanne Whiteley-Lagace
10. **Utilities Engineering (Subsurface)** Dave Clarke, PE
11. **Surveying & GIS** James Hale
12. **Electrical Engineering** Bradley Buchanan, PE
13. **Biological Services** Sharon Ewe
14. **Coastal Engineering** Ramon Castella, PE
15. **Cultural Resources** Rebecca O'Sullivan
16. **Architecture** Robert Lara, AIA
17. **Community Relations** Alec Bogdanoff, PhD (Brizaga)
18. **Grants Coordination** Jacqui May, PhD
19. **Field Inspections** Marc Lean, PE
20. **Geotechnical Engineering & Testing** Nitesh Goli, PE (Radise)
21. **Historic Preservation** Lucy Jones
22. **Environmental Engineering** Laith Alfaqih, PE
23. **Landscape Architecture** Kevin Mangan
24. **Marine Engineering** Matthew Starr, PG
25. **Mechanical Engineering** Jeovanni Ayala-Lugo, PE
26. **Planning Services** Matt Lewis
27. **Traffic Engineering** Christian Kline, PE
28. **Project Management** James Hale, GISP
29. **Project Staff Extension** James Hale, GISP
30. **Computerized Software Visualization** Tim Berggren
31. **Value, Risk & Benefit to Cost Analysis** Erin McLachlan Sanchez



James Hale, GISP
Role: Project Manager
Office: Jacksonville, Florida

As Project Manager, James will oversee the day-to-day activities of the project, managing our team to maintain focus on key issues and the project schedule. He will participate in all meetings and presentations with the City including staff, management and Board. With over 20 years experience, James is an expert with a wide range of GIS technology projects, including asset management.



Andrew Burnham
Role: Principal In Charge
Office: Tampa, Florida

As Principal in Charge, Andrew will leverage his national expertise in the wastewater industry to guide the team on best practices and emerging trends. With extensive experience supporting the City on financial services projects, he brings valuable familiarity that will benefit this effort. Andrew will serve as a resource to the team, providing guidance on an as-needed basis throughout the project



Laith Alfaqih, PhD, PE, MIAM
Role: Sr. Technical Advisor &
AM Training & Education
Office: Cincinnati, Ohio

As Sr. Technical Advisor, Laith will be on hand to offer AM expertise to the team. He will review aspects of the AM system and ensure alignment with best practices. As the AM Training & Education lead, Laith will use his experience as a MIAM-certified professional and a certified trainer and auditor for IAM to develop and implement a training and education program suited to the City's needs.



Craig Omundsen, MIAM
Role: Asset Condition Assessment
Office: Winnipeg, Manitoba, Canada

With over 20 years experience in asset management, Craig will lead the Asset Condition Assessment efforts for the project. Craig previously acted as the Asset Management Manager for North Miami Beach Water, where he focused on improving condition and performance assessment approaches for risk planning and coordination efforts in decision making. Craig also eliminated silos between capital planning and O&M.



Scott Bash
Role: Asset Criticality & Risk Management
Office: Bellevue, Washington

Scott has been a US Delegate to the ISO 55000 Technical Committee since 2015 and will lead the Asset Criticality & Risk Management related efforts. Prior to joining Stantec, Scott spent 4 years as Deputy Director of Assets and Technology for Sound Transit in Washington, where he developed an AM system in alignment with ISO 55001.



Tanya Camacho, GISP
Role: Cityworks
Office: Clearwater, Florida

Tanya is a Chief GIS/EAM Analyst for Stantec's Asset Management and Geospatial Services with over 16 years in the field. She has extensive experience with Cityworks and water resources GIS applications, and will lead Cityworks efforts for the project.



Harold Schmidt, Jr., PE
Role: CMOM & Capacity Analysis
Office: Tampa, Florida

Harold will apply more than 40 years of experience to his role as CMOM & Capacity Analysis lead. Harold has experience in the planning, permitting, design, construction management, and start-up of over \$3.5B worth of wastewater capital improvement projects.



Erin McLachlan Sanchez, MIAM
Role: AMS Development
Office: Portland, Oregon

During Erin's 23 years of experience, she has helped utilities develop and implement practical asset management policies and strategies that support levels of service delivery. Erin uses her strong analytical capabilities to provide a collaborative, whole system approach to asset life-cycle management, recognizing and utilizing risk to balance believable goals.

**Hani Alkoulhi****Role:** Change Management**Office:** Tampa, Florida

As leader of Change Management for the project, Hani will apply his 28 years of experience supporting water and wastewater utilities in asset management, strategic planning and organizational performance. His background leading value optimization strategy development and implementation through transforming processes, technology, and people directly supports the implementation of Effective Utility Management principles.

**Brandon Rolo****Role:** Data Management**Office:** New York, New York

As the Data Management lead, Brandon will use his 8+ years of experience in Asset Management to align data collection efforts with the City's goals. Brandon is a resourceful, results-oriented professional with a background in geoscience and experience leveraging geospatial data to improve performance. Brandon has a history of successfully leveraging the full suite of ESRI Software to assist clients with all aspects of geospatial data collection, management, and analysis.

**Emily Snyder****Role:** Funding Strategy**Office:** Asheville, North Carolina

Emily is a capital planning and funding specialist with 18 years of experience supporting complex infrastructure projects. Emily understands the financial challenges facing cities and utilities in maintaining and expanding their infrastructure to meet the needs of today and tomorrow. She assists with the full grant life-cycle including identification, application and compliance.

**Kyle Stevens****Role:** Financial Strategy**Office:** Tampa, Florida

As the Financial Strategy lead, Kyle will apply his 14 years of experience in utilities financial services to the project. Kyle is an expert in populating and customizing long-term financial planning, cost allocation, rate design, impact fee and miscellaneous service fee models. He has superior financial, business and analytical skills that provide clients with exemplary financial analysis based on application of sound financial and economic concepts.

**Nitesh Goli, PE****Role:** Geotechnical Engineering**Office:** Riviera Beach, Florida

Joining our team from subcontractor RADISE, Nitesh will act as the Geotechnical Engineering lead. Nitesh has over 8 years of experience in geotechnical engineering services for water resources and transportation projects in South Florida. He is experienced in analyzing geotechnical data, performing the appropriate field site inspections and monitoring, calculations and preparing geotechnical and technical reports.

**Robert Keener****Role:** Surveying**Office:** Deerfield Beach, Florida

Joining our team from subcontractor Craig A. Smith & Associates (CAS), Robert has over 45 years experience in the fields of survey, engineering and utility construction. Now the Vice President of Survey / Geomatics at CAS, Robert has worked on projects across Florida including the City of Ft. Lauderdale's Water Distribution System Mapping Update, making him a familiar, expert resource.

**Michael Rothenberg****Role:** CCTV**Office:** Davie, Florida

Joining our team from subcontractor EnviroWaste, Michael will lead CCTV related tasks. Michael will apply 34 years of experience managing contracts, schedules, and customer expectations while balancing his crew's experience and production requirements. His emphasis on communication and transparency will provide detailed reports of findings, recommendations and timelines for needed follow ups.

**Alec Bogdanoff, PhD****Role:** Community Outreach & Engagement**Office:** Fort Lauderdale, Florida

Joining our team from subcontractor Brizaga, Alec will lead all Community Outreach & Engagement efforts for the project. Alec's wealth of experience in communications and outreach paired with his knowledge and familiarity with the City of Fort Lauderdale makes him an ideal choice to ensure messages are clear, relevant and composed to connect with the community.



3. Approach to Scope of Work

3. Approach to Scope of Work

The City of Fort Lauderdale has laid out a forward-thinking vision to modernize and unify its asset management systems across multiple infrastructure classes, including stormwater, domestic water, wastewater, roadways, seawalls, and bridges. This effort demands more than just technical execution; it requires a trusted partner with the capability to transform fragmented data and information into actionable insights, convert compliance obligations into strategic opportunities, and embed resilience into long-term public infrastructure decisions.

Stantec is dedicated to delivering high-value outcomes through consistent, quality-driven project management. Our proven framework emphasizes efficient, cost-effective execution of planning, task delivery, and final deliverables. By placing the right people in the right roles and applying standardized tools and processes, we allow reliable and repeatable success across all engagements.

Project Management

We take project management seriously. At Stantec, it's a core competency that ensures progress and results. Our Project Manager will lead using industry best practices and **Stantec's Project Management Framework**, which aligns with ISO 9001 standards. This framework outlines key tasks across four stages—Initiate, Plan, Control, and Close-Out—to manage risk and maintain quality throughout the project.

Quality Control

At Stantec, we raise the bar on excellence. Through a thorough quality control program, we ensure our services are meticulously reviewed to minimize errors and omissions, delivering top-tier results to clients. Every deliverable undergoes rigorous evaluation before issuance, underscoring our commitment to reliability and precision. This dedication reinforces our reputation for unparalleled quality and client satisfaction.

Schedule Management

During scope development for each project, our Project Manager will work with the City to establish a detailed schedule with tasks, subtasks, dependencies, predecessors, and key milestones. Collaborative development of the schedule with the project team keeps everyone aware of milestones and dependencies that must be prioritized and tracked to avoid schedule slip.

The following proposed timeline outlines a clear and efficient schedule to ensure the successful execution and completion of the project within the optimum time frame. Delivery will commence upon receipt of the City's official notice to proceed, with all timeline milestones tracked in calendar days from that date. Each activity is carefully sequenced to minimize delays and ensure coordinated progress, with project completion targeted within the designated period.

Stantec's Project Management Framework	
0	Prepare a proposal that includes a preliminary Project Plan including scope, project budget, resources, deliverables, and schedule. Conduct and document an independent review of the final proposal, as required.
1	Obtain written instructions to proceed and obtain an approved contract with the client. Obtain written agreements for subs (third party providers).
2	Prepare a Project Plan to an appropriate level of detail. Conduct and document an independent review as required.
3	Establish hard copy and/or electronic project record directories and file project records accordingly.
4	Complete a Health, Safety, Security & Environment (HSSE) risk management assessment and documents for all proposals and projects involving field work.
5	Monitor the project financials on a regular basis, including weekly time charges, timely invoicing, accounts receivable (AR), and estimates to complete.
6	Promptly communicate changes to agreed services to the client and obtain required written approvals in a timely manner.
7	Conduct and document a quality review of final deliverables prior to issue.
8	Conduct and document a technical independent review of final deliverables prior to issue.
9	Close the project financials and files.

Workload

Stantec has 14 offices within the State of Florida with over 675 staff and one in Broward County to aid in this contract (Deerfield Beach). Our Deerfield Beach office is a few minutes away from the City of Fort Lauderdale, so we can easily facilitate face-to-face meetings on short notice, as well as respond to any emergencies that may arise. Our highly-skilled personnel are specialists who not only look at what to do, but why, so that decisions are made in an informed environment. Our team is comprised of experts in their field, able and ready to work on this project right away.

Stantec has the necessary, immediate, and sustaining capacity to accomplish the required task order work through the duration of this contract. We anticipate that our staff will be at least 50% available at that time and our management team even more so. This will allow us to bring the appropriate level of resources and experience for the successful completion of these projects.

Our organizational chart demonstrates our depth across the breadth of the City's needs, and additional resources from over 250 personnel in the South Florida area are available to support our local team, if necessary. As a firm, the depth of our flexible staffing structure allows for additional personnel in each of the required disciplines to be added to the team in the event of an unexpected workload conflict. Every person on the organizational chart has multiple backup resources to handle the workload.

Facilities, Technological Capabilities, and Resources

Stantec staff are very familiar with the City software such as Microsoft Windows operating system, Microsoft Word, Excel, and Access Software, and Bentley Microstation and Autodesk CADD software. Stantec's Team has daily access to a wide array of state-of-the-art software and equipment. Our primary software packages, such as AutoCAD Civil 3D, REVIT, ICPR, Microstation, and StarNet are network licensed, offering our team the flexibility to adapt to increased project demands.

For Water/Wastewater, Stantec is experienced in using all major water and wastewater system modeling software programs in its planning efforts. InfoWater was developed from our legacy firm MWH; it was so successful that it spun off as Innovyze which is now a separate entity. Other software includes WaterCAD, WaterGEMS, and SewerCAD.

AI-Powered Performance Measurement for Corridor Operations

Stantec has developed of an AI-Based Decision Support System (AI-DSS) Performance Measurement Framework for Tennessee Department of Transportation (TDOT), providing a robust analytics environment to evaluate system performance across critical dimensions: mobility, safety, and environmental sustainability. This involved:

- **Data Integration:** Connecting to seven real-time and archival data sources, including traffic detectors, signal systems, connected vehicle feeds, and incident logs, using SQL-based data pipelines and cloud-hosted environments to create a unified data model.
- **Key Performance Indicators (KPIs):** Developing a comprehensive suite of KPIs to reflect AI-DSS operational objectives, offering measurable insights into travel time reliability, response effectiveness, throughput gains, and emissions reduction.
- **Advanced Analytics & Visualization:** Applying time series analysis and anomaly detection to assess performance trends and predictive accuracy. Insights are visualized through interactive Power BI dashboards, enabling TDOT leadership and local agencies to monitor corridor conditions in near real-time and make data-driven operational adjustments.

AI-DSS provides a technical backbone for performance management and establishes a replicable model for future AI-enhanced transportation deployments, setting a new precedent for combining AI, systems engineering, and modern analytics for transparent, agile, and measurable improvements.

County Profile Tool for Long-Range Planning

Stantec created a powerful County Profile Tool for TDOT for long-range planning, which is a digital service with a modern interface that integrates data from over 30 sources into a robust data warehouse. This tool is indispensable for planning teams to facilitate informed, data-driven decisions for developing sustainable, equitable, and efficient transportation systems across Tennessee. The tool provides:

- **Detailed Insights:** Easy access to comprehensive transportation and census information, revealing residents' travel patterns and motivations.
- **Demographic Analysis:** Deep insights into county demographics, including age, income, and employment, alongside assessments of transportation infrastructure like road networks and public transit.
- **Travel Behavior Analysis:** A unique strength in uncovering the "how" and "why" of travel behavior, dissecting modes of transportation and the motivations behind travel choices (e.g., commuting, healthcare access, shopping).

By providing a holistic view of transportation and demographics, the County Profile Tool for long-range planning will empower City planners to create future transportation networks that are both resilient and equitable, ensuring everyone has access to safe and efficient mobility options.

Financial Analysis and Management System (FAMS)

Stantec's Financial Analysis and Management System (FAMS) offers a transformative approach to financial planning and management. In today's dynamic environment, the ability to rapidly assess financial impacts, forecast "what-if" scenarios, and make data-driven decisions is paramount. FAMS provides this capability through an intuitive, cloud-based platform, enabling the City of Fort Lauderdale to achieve long-term financial sustainability, optimize resource allocation, and enhance transparency in its financial operations. Backed by Stantec's deep industry expertise, FAMS is more than just software; it's a strategic partner for navigating financial challenges and securing a resilient future. Below are several of FAMS' key features and capabilities:

- **Real-Time, Intelligent Financial Modeling:** FAMS provides a dynamic platform for real-time financial forecasting, moving beyond static spreadsheets to offer a living model of your organization's financial health.
- **"What-If" Scenario Planning:** Easily create, compare, and share multiple financial scenarios side-by-side. This allows for rapid evaluation of various strategic options, such as rate adjustments, capital project impacts, or changes in operational costs, enabling agile decision-making.
- **Cloud-Based Accessibility (Microsoft Azure Marketplace):** As a secure, web-based application available on the Microsoft Azure Marketplace, FAMS offers 24/7 access from any device. This provides flexibility, collaboration across teams, and continuous updates with the latest features and innovations.
- **User-Friendly Interface:** Designed for ease of use, FAMS simplifies complex financial analysis, making it accessible to a broader range of users within your organization. Its intuitive interface optimizes decision-making by allowing quick toggling between defined inputs, assumptions, and scenarios.
- **Data Integration and Management:** FAMS is built to integrate with existing financial reporting systems, allowing for efficient data updating and providing a single source of truth for your financial data. It allows for flexible management of data from various sources.
- **Version Control and Collaboration:** The web-based nature of FAMS eliminates concerns about improper inputs, errors, or version control. It facilitates seamless scenario sharing among multiple users and provides alerts about data updates, fostering collaborative financial planning.
- **Designed for Municipalities and Utilities:** While scalable, the current version of FAMS is particularly well-suited for small to mid-sized municipalities and utilities, offering self-guided setup and minimal customization for quick implementation.

Benefits of Implementing FAMS

FAMS offers several key benefits designed to improve financial planning and management for organizations. A primary advantage is **enhanced financial sustainability**. FAMS allows organizations to swiftly create and model sustainable financial plans. This proactive approach helps identify potential difficulties in advance and charts clear paths to achieve prioritized objectives. It also enables optimizing the mix of debt and cash funding for capital projects and developing smooth, predictable rate adjustment plans. FAMS significantly **improves decision-making**. The system's ability to forecast and model various "what-if" scenarios, and understand the impact of changing conditions, empowers quicker, more decisive, and data-driven actions. You can even run FAMS live during meetings to assess the real-time impacts of proposed changes, facilitating dynamic discussions and immediate insights.

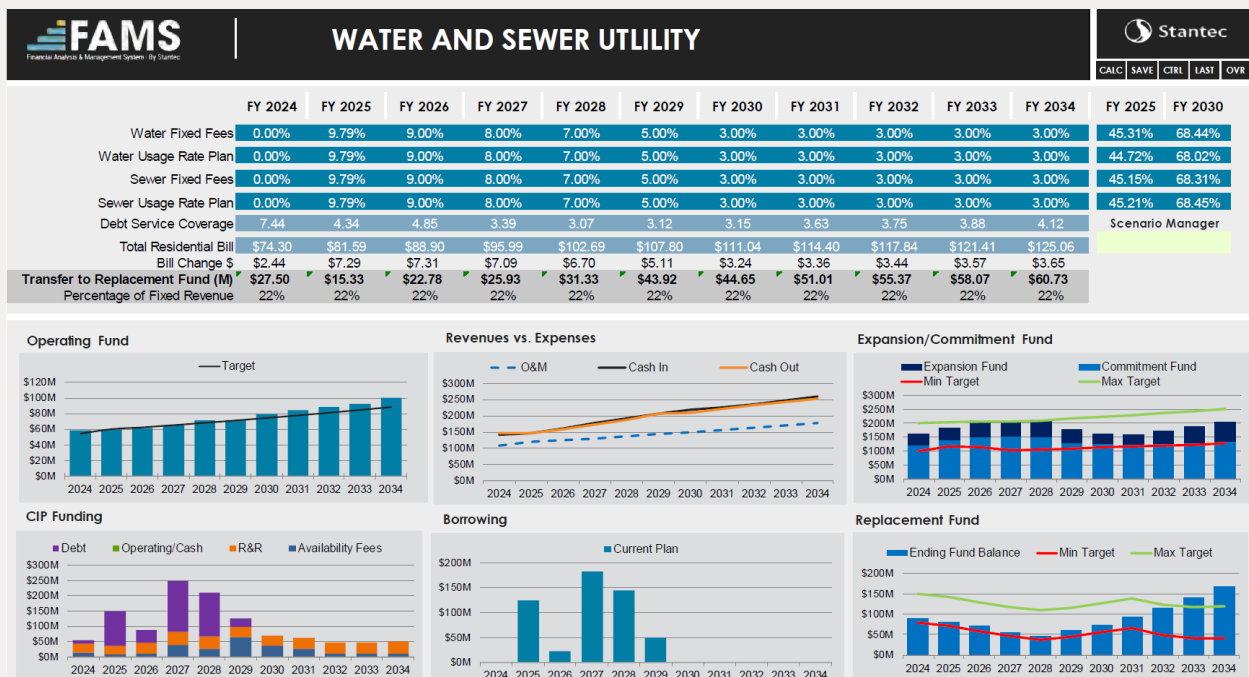
The City of Fort Lauderdale will also experience **increased efficiency and productivity**. FAMS automates financial modeling and scenario management, which drastically reduces manual effort and boosts overall productivity. Its efficient data updating and user-friendly interface saves valuable time and resources, allowing teams to focus on strategic initiatives rather than tedious data manipulation.

FAMS is backed by Stantec expertise. The platform is built upon decades of Stantec's extensive experience in financial planning, funding, life cycle cost analysis, asset management, and business case evaluation specifically tailored for local governments and utilities. Clients also benefit from direct access to technical support and consulting services from Stantec's industry experts, ensuring comprehensive assistance and guidance.

Customized FAMS Modeling

These models can be tailored to the unique specifications of Northern Water, including, but not limited to:

- Customized reporting to display capital funding optimization for each capital project with funding by source and year.
- Tailored pro forma and revenue and expense forecasts to match the client's forecasting and reporting.
- Automatically calculated inter-fund transfers, internal and external to each enterprise or municipal fund, based on financial policies.
- Ability to model multiple rate increases per year. Customized financial targets following client policies and objectives, with additional key performance indicators to support informed decision-making.



Asset Management & Data Collection

Stantec and our sub-consultants bring experience in delivering municipal asset management programs, with an integrated team of engineers, GIS analysts, asset management professionals, and utility planners. Our approach aligns with global best practices, including the Institute of Asset Management (IAM) framework, International Organization for Standardization (ISO) 55000 series, Environmental Protection Agency (EPA) Capacity, Management, Operations, and Maintenance (CMOM) standards, and British Standards Institute (BSI) Publicly Available Specification (PAS) 55 specifications, while remaining flexible enough to meet local regulatory conditions, community expectations, and budget constraints.

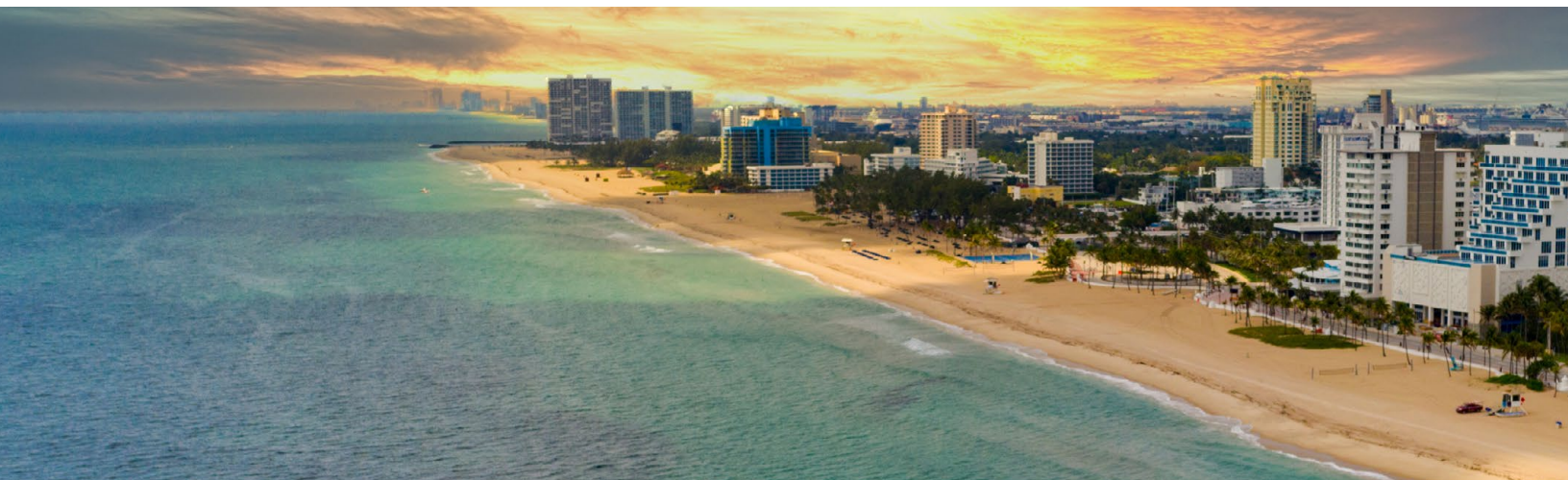
Stantec and our sub-consultants are honored to support the City of Fort Lauderdale in achieving its strategic goals through a comprehensive asset management program that enhances infrastructure resilience, supports neighborhood vitality, and prepares the City for future growth. Our approach aligns directly with **Press Play Fort Lauderdale: Our City, Our Strategic Plan 2029**, ensuring every task contributes to a more **sustainable, connected, equitable, and well-managed community**.

We understand the criticality of building a comprehensive, well-integrated GIS database that not only reflects the current state of City assets but also serves as the foundation for an enduring and adaptable Asset Management (AM) Program.

Asset Management and Data Collection Program Pathway

Our **Project Manager, James Hale**, will lead the Stantec team in close collaboration with City staff and Stantec's subcontractors to improve asset management data and increase the City's asset management capabilities. Our primary objective will be to maximize the effectiveness of financial and human resources, enabling the City to meet its level of service (LOS) objectives while maintaining optimized whole life-cycle costs (WLC) for each asset class. Stantec's approach follows a structured, phased pathway that supports the full life-cycle of AM planning, from initial condition data gathering to long-term capital improvement strategies. Our methodology is adaptable, scalable, and designed for both immediate implementation of quick wins and long-term sustainable outcomes.

The following pages detail how Stantec will implement a structured 9-phase Asset Management Program Pathway tailored to support the City of Fort Lauderdale in building a resilient, data-driven asset management framework. This phased approach ensures a comprehensive progression from foundational awareness and data validation to advanced planning, risk assessment, and community engagement. Beginning with staff training and strategic roadmap development, the program moves through key technical and operational stages including GIS data updates, condition assessments, policy refinement, capacity analysis, and risk-based prioritization. The pathway concludes with financial planning and ongoing capacity building, ensuring long-term sustainability and alignment with the City's strategic goals.



Phase 1: Asset Management Awareness Training and AM Strategic Roadmap

Task 1: Asset Management

The foundation of any successful asset management program is shared understanding. Stantec is endorsed by the IAM to deliver IAM Asset Management Certificate training, which the team will initiate the AM Program with, by delivering AM awareness training to City staff and stakeholders. This training introduces key terminology, definitions, and AM practices, providing participants an understanding of the activities they should be performing, and how their roles contribute to the broader AM objectives. The goal is to promote a culture that values risk-based, data-driven decision-making and fosters cross-departmental alignment. Following the AM awareness training, Stantec will engage with City leadership and staff to assess the AM maturity of Public Works to develop an AM strategic roadmap. The maturity assessment used for evaluating an organization's current capabilities, processes, and performance in asset management includes assessment of:

- Asset Management Strategy and Planning Processes
- Decision Making for Capital Planning and Operations and Maintenance
- Life-cycle Delivery of your Asset Portfolios
- Asset Data and Information Management
- Procurement, Leadership, Culture and Competencies
- Risk Management, Management Reviews and Internal Audits



Stantec is an endorsed Asset Management Maturity Assessor with the IAM. The AM Maturity Assessment forms the basis for developing the AM Strategic Roadmap which will enhance Public Works' ability to manage its assets effectively. It serves as a high-level, long-term action plan for developing the necessary resources, processes, competencies, and technologies to achieve asset management objectives and realize value from your assets.

Phase 2: Validation, Data Collection and Updating GIS Databases

Task 2: Data Collection

This phase involves a comprehensive review of the City's existing GIS and asset data. Stantec will perform a detailed gap analysis across all infrastructure types, identifying missing or outdated records. Stantec will validate existing datasets for all Public Works Assets and validate its geo-referencing accuracy, collecting supplemental information where gaps persist as directed by City staff. Stantec's sub-consultants will collect and Stantec will update the City's GIS databases for stormwater, water, wastewater, roadways, seawalls, and bridges. The updated datasets will ensure comprehensive, accurate records to support ongoing asset planning, analysis, and reporting, for the purpose of populating and implementing the City's strategic AM Program.

Phase 3: Condition Assessment Data Improvements

Task 2: Data Collection

Stantec will engage our sub-contractors to collect updated condition assessment data using technologies such as mobile GPS, CCTV, National Association of Sewer Service Companies (NASSCO) condition codes, and lidar scanning. All collected data will be validated for spatial accuracy and metadata consistency before being integrated into a unified, geo-referenced GIS database that aligns with Cityworks.

Phase 4: Refinement of Asset Management Policies, Strategies, and Plans

Task 1: Asset Management

In this phase, Stantec will assist the City in preparing an AM Policy, a Strategic Asset Management Plan (SAMP), and individual Asset Management Plans (AMPs) for each infrastructure class. These plans will define asset hierarchies, condition and performance baselines, levels of service (LOS), life-cycle cost models, and rehabilitation or renewal strategies. All documents will align with ISO 5500 series, the IAM framework, and EPA asset management guidelines to support informed, transparent, risk-based, data-driven, decision-making.

Phase 5: Capacity Analysis

Task 2: Data Collection

Stantec will perform capacity analyses as requested by City staff to determine whether current and projected service demands can be met under various growth and climate scenarios. The analysis of existing and proposed City Public Works assets, including stormwater, domestic water, wastewater, roadways, seawalls, and bridges assets will help the City proactively identify constraints and inform future system upgrades to determine whether systems are adequately sized to meet future demands for various built-out scenarios.

Phase 6: Critical Asset Identification, Risk Assessment and Prioritization

Task 1: Asset Management

Using current condition data and risk modeling, Stantec will conduct a risk-based assessment of the City's assets to determine how to reduce the risks associated with the City's asset portfolios. This phase includes refining likelihood of failure (LOF) criteria, criticality scoring criteria based on consequence of failure (COF), risk heat maps, and risk-based prioritization tools to support capital and maintenance planning. Assets that present the highest risks to service continuity, public and staff safety, and environmental protection will be flagged for inclusion in the City's Capital Investment Plans (CIPs) and operations and maintenance (O&M) programs.

Phase 7: Implementation of the Capacity, Management, Operations, and Maintenance (CMOM) Program

Task 2: Data Collection

Stantec will lead the development of a customized Capacity, Management, Operations, and Maintenance (CMOM) program for the City's wastewater and stormwater systems, following EPA 305-B-05-002 guidelines. This includes creating operation protocols, maintenance tracking systems, inspection schedules, and evaluation methods for system capacity under different conditions. We will collaborate with City staff when responding to regulatory agencies and to expedite any required permits and compliance actions.

Phase 8: Financial Planning and Funding Strategy

Task 1: Asset Management

To support the City's long-term infrastructure goals, Stantec will prepare detailed life-cycle cost estimates, financial forecasts, and investment schedules. We will also identify and evaluate external funding opportunities, including grants, revolving loan funds, public-private partnerships (P3s), and municipal bonds. These forecasts will help define affordable LOS and support sound, forward-looking budget planning.

Phase 9: Capacity Building and Community Outreach

Task 2: Data Collection

Finally, Stantec will develop and deliver capacity building training programs to build internal capacity across Public Works, GIS, and the O&M teams. This includes in-house training sessions, manuals, and knowledge transfer strategies to ensure staff are fully equipped to contribute to successfully achieving the City's LOS. Stantec will collaborate with Brizaga to support community engagement by preparing visual outreach materials and participating in public meetings, Homeowner's Association (HOA) events, and City Commission briefings to inform stakeholders and the community - building trust and securing support for the AM program.

Task 1: Asset Management

Stantec views asset management as a strategic function, not just an operational necessity. Our approach is grounded in international best practices but customized to the City of Fort Lauderdale's unique context, challenges, and community vision. Stantec's delivery of the AM Program will address each requirement outlined in the RFQ, in **alignment with Press Play Fort Lauderdale: Our City, Our Strategic Plan 2029**. Our team has aligned directly with these priorities, bringing the expertise, innovation, and collaborative spirit needed to help the City achieve its goals. From data-driven decision-making and infrastructure planning to community engagement and risk management, our personnel are equipped to support Fort Lauderdale's commitment to resilience, inclusivity, and sustainable growth. We understand the City's emphasis on performance measurement, fiscal responsibility, and continuous improvement; and our approach is designed to integrate seamlessly with these principles. Specific goals Stantec will align the AM Program to are discussed within the Strategic Goal Alignment sections.

Strategic Goal Alignment



Resilient & Sustainable: Stantec assesses climate vulnerability, flood risk, and service continuity to manage assets for longevity and environmental impact mitigation.

Mobility-Oriented: Stantec incorporates multi-modal connectivity, pedestrian infrastructure, and street-level enhancements into roadway asset planning.



Community Focus:

Our team at Stantec will embed equity metrics and neighborhood-level input into our planning process to ensure fair investment across all communities.



Innovation & Technology Adaptation: Stantec empowers City staff with tools, training, and process improvements to enable long-term independence and adaptability.

Customer Service: Transparency and accountability is priority with every decision, from asset prioritization to funding, every step is based on clearly documented assumptions, traceable data, and risk-informed logic.

Policy, Objectives, Levels of Service, Strategy & Plan Revision

Stantec's approach to asset management policy, strategy, and plan development is centered on establishing a robust, integrated framework that aligns with the City of Fort Lauderdale's vision, strategic goals, and operational capabilities. Our objective is to ensure that all investment decisions, service delivery priorities, and asset interventions are traceable back to a clear line of sight between day-to-day activities and the City's overarching objectives.

This alignment, commonly referred to as "line-of-sight" management, ensures that City staff at all levels understand not only how tasks are performed, but why they are essential. It empowers front-line workers and decision-makers alike to deliver value in ways that are consistent with corporate goals and service expectations.

Revision of Asset Management Policy and Objectives

Working alongside City leadership and operational teams, Stantec will revise a City-specific AM Policy that reflects local values, service drivers, and regulatory realities. This policy will be understandable and actionable by staff at all levels, aligned with organizational priorities, service expectations, and community needs, and endorsed by leadership and positioned for long-term institutional adoption.

From this foundation, we will define AM Objectives, which are measurable goals derived from the AM policy. These objectives will serve as performance anchors for all AM programs and initiatives. Our team will validate the objectives through engagement with department leads and staff to ensure alignment with operational realities, existing initiatives, and capacity constraints.

Revision and Updating of Levels of Service (LOS) Framework

A critical outcome of an AM Program is the development of a comprehensive LOS framework that clearly links performance targets with customer LOS, AM Objectives and the City's strategic plan, as shown below. LOS define the outcomes and outputs that customers can expect from asset-based activities and are measured through defined performance indicators. By articulating the service outcomes tied to infrastructure investments, LOS provide a foundation for consistent, transparent, and evidence-based decision-making.

To support this, Stantec will establish a robust decision-making framework that aligns LOS with the City's strategic priorities. This framework will demonstrate how high-level goals are translated into performance indicators for asset management, service delivery, and operations. The LOS framework guides the prioritization of activities and the effective allocation of resources, ensuring staff efforts are aligned with measurable value.

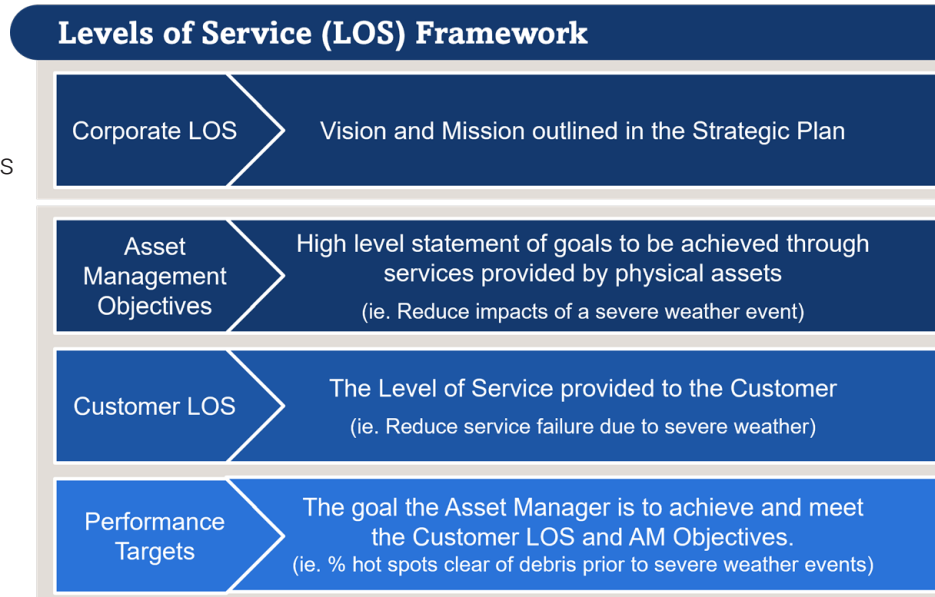
The process begins with a comprehensive review of the City's existing LOS indicators, including existing Key Performance Indicators (KPIs). These indicators will be assessed against the City's vision, community values, and best practices across peer municipalities to identify opportunities for alignment and enhancement. Following this, a series of collaborative workshops will be conducted with City staff to refine LOS categories and define service objectives. These sessions will result in the establishment of LOS categories such as reliability, safety, and responsiveness, and the development of intent statements, KPIs, performance targets, data requirements, ownership assignments, and practical considerations for the measurement and reporting of LOS KPIs.

Both technical and customer-focused LOS indicators will be advanced. Technical LOS will capture quantifiable measures of asset performance, such as availability, capacity, and response time, while customer LOS will reflect perceptions of service quality, including roadway condition, water aesthetics, and service reliability. Together, these indicators ensure that both the physical functionality and user experience are reflected in infrastructure performance evaluations.

To formalize this process, Stantec will develop a Performance Management System Framework to define LOS and performance indicators, establish governance structures for oversight, outline procedures for reporting, and propose communication protocols for internal coordination. In parallel, we will assess the City's data readiness by evaluating current system capabilities, including Cityworks, and identifying any gaps that could affect LOS tracking. Where deficiencies are identified, Stantec will recommend scalable improvements or interim processes to ensure continued progress. Once the LOS indicators and framework are finalized, Stantec will assist in launching a pilot phase using a subset of KPIs. These indicators will be integrated into dashboards and visual tools to support proactive decision-making in maintenance, operations, and capital planning. The visualized results will provide clarity, accountability, and the ability to adjust strategies based on measurable performance trends.

Finally, although the initial LOS framework will be built primarily with City staff input, Fort Lauderdale may choose to initiate a subsequent community engagement phase to gather input from residents, elected officials, and stakeholders. This step would validate LOS metrics and targets from a community perspective and align service outcomes with customer willingness to pay. Depending on City preference, this phase can be conducted concurrently with or after initial implementation.

By integrating the LOS framework and decision-making framework, the City will be empowered to deliver services more efficiently, monitor performance more transparently, and align operational activities with long-term strategic goals—all while enhancing the quality of life for the City of Fort Lauderdale residents.



Development of Strategic Asset Management Plan and Asset Management Plans

Following the establishment of the City's AM Policy, Objectives, and LOS, Stantec will proceed with the development of a **Strategic Asset Management Plan (SAMP)** and **Asset-Specific AMPs** for stormwater, domestic water, wastewater, roadways, seawalls, and bridges. These plans will form the operational backbone of the City's infrastructure strategy, translating high-level policy into actionable programs and long-term delivery plans grounded in data, performance, and risk analysis.

The **SAMP** will serve as a unifying framework, connecting the City's organizational objectives and LOS commitments with capital investment planning, asset life-cycle strategies, and performance tracking processes. It will document the strategic direction for asset stewardship and include a decision-making framework that ensures organizational consistency and transparency. The SAMP and AMPs will also align with the City's Capital Improvement Planning (CIP) cycles and regulatory reporting obligations, ensuring they function as both a long-range strategy and an operational guide.

Each **Asset Management Plan (AMP)** will include a detailed asset inventory and condition summary supported by a structured **Asset Condition and Asset Health Assessment Framework**. This framework is essential for evaluating asset reliability and determining **likelihood of failure**, which in turn informs asset-risk profiles. By identifying deteriorating assets early, the City can implement targeted interventions that extend asset life, reduce life-cycle costs, and maintain service levels.

The **asset life-cycle strategies** will guide asset management decisions from planning through decommissioning. Our team will develop life-cycle models that provide clear guidance for capital upgrades, maintenance interventions, and eventual replacement or refurbishment. These strategies will ensure that decisions about asset investment and maintenance are made with full consideration of the long-term cost, risk, and performance impacts, providing sustained service delivery at optimal cost.

We will also conduct a **replacement and refurbishment analysis** for each major asset class. This analysis will be informed by a comprehensive dataset including condition assessments, performance trends, cost histories, remaining useful life estimates, and failure probabilities. The outcome will be clear, prioritized timelines and investment thresholds for asset renewal, supporting predictable and defensible financial planning.

In parallel, Stantec will support the refinement of the City's **asset management business processes** to increase consistency, transparency, and compliance with industry standards such as ISO 55001. Business process enhancements will include:

- Implementation of risk-based asset replacement analysis protocols;
- Root Cause Analysis (RCA) frameworks to investigate asset failures;
- Standardized failure codes and historical failure trend analysis;
- Performance monitoring systems to evaluate results against key AM objectives and KPIs;
- Internal audit processes that verify adherence to AM procedures, led by trained, objective staff;
- Management review cycles to analyze overall asset performance and ensure continuous improvement.

Through this integrated, data-rich, and operationally grounded approach, the SAMP and accompanying AMPs will serve as living documents that not only inform capital and maintenance investments, but also empower City staff with the systems and structures needed to proactively manage assets in alignment with Fort Lauderdale's long-term goals for sustainability, resilience, safety, and efficiency.

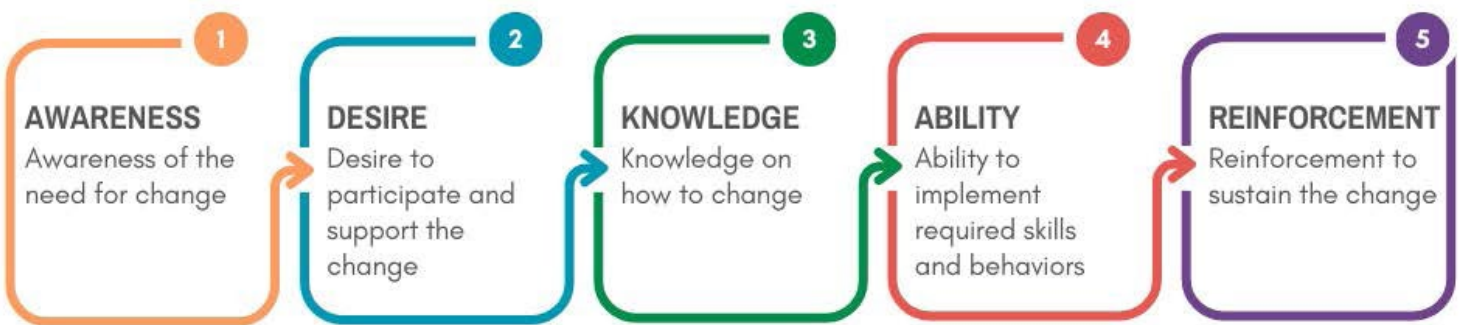
Performance Tracking, Change Management & Continuous Improvement

Stantec will support the City of Fort Lauderdale in establishing a **robust performance management system that promotes accountability, transparency, and strategic alignment across all asset management functions**. KPIs will be developed in close collaboration with City staff to reflect the City's AM objectives and LOS targets. Each metric will be clearly tied to a strategic initiative or LOS category, assigned to a responsible department or role, and supported by baseline and benchmark data wherever available. Reporting protocols will be established to ensure performance is monitored regularly, with defined milestones used to measure progress and trigger course corrections where needed.

This performance tracking framework will be designed not only to guide day-to-day operational decisions but also to serve as a foundation for long-term improvement and regulatory alignment, including potential future certification under ISO 55000 standards. With clearly defined ownership, data integrity protocols, and integration into existing systems such as Cityworks, the City will gain the tools and structure needed to make defensible, timely, and data-driven decisions about infrastructure investment and service delivery.

To ensure that this system is embraced and sustained, Stantec will integrate a formal Change Management Strategy into the performance improvement process. **Organizational Change Management (OCM) Services** are essential for organizations navigating the complexities of transformation. The comprehensive planning framework encompasses several critical stages to ensure **successful adaptation and sustained improvement**. The process starts by defining success / starting with the end in mind, establishing clear objectives and metrics that align with the asset management and overall organizational goals. Understanding the impact of change on various stakeholders is paramount, allowing us to enable roles effectively and ensure everyone is prepared for the transition.

Stantec's OCM planning leverages the **Awareness, Desire, Knowledge, Ability, Reinforcement (ADKAR) assessment framework** shown in the figure below. ADKAR is a framework designed to guide individuals through the change process. By assessing these five elements, OCM planning with Fairfax County can identify the specific actions needed to support employees at each stage, ensuring they understand the reasons for change, have the desire to participate, possess the necessary knowledge and skills, and receive ongoing reinforcement to sustain the change.



3-Stage OCM Approach

Our team uses the 3-stage approach to OCM as the basis for developing the primary plan to managing the changes resulting from asset management. Each of the 3 stages, described below, will be detailed in an OCM Framework.

1. Preparing

This initial stage is about assessing the magnitude of the change, the scale required of the change management program, the required sponsorship for change, and the overall change management team structure. The topics to be addressed during the OCM preparation and planning stage include: What is the change? Why are we changing? What are we trying to achieve? What are the impacts on people, roles, expectations? What will it take to be successful?

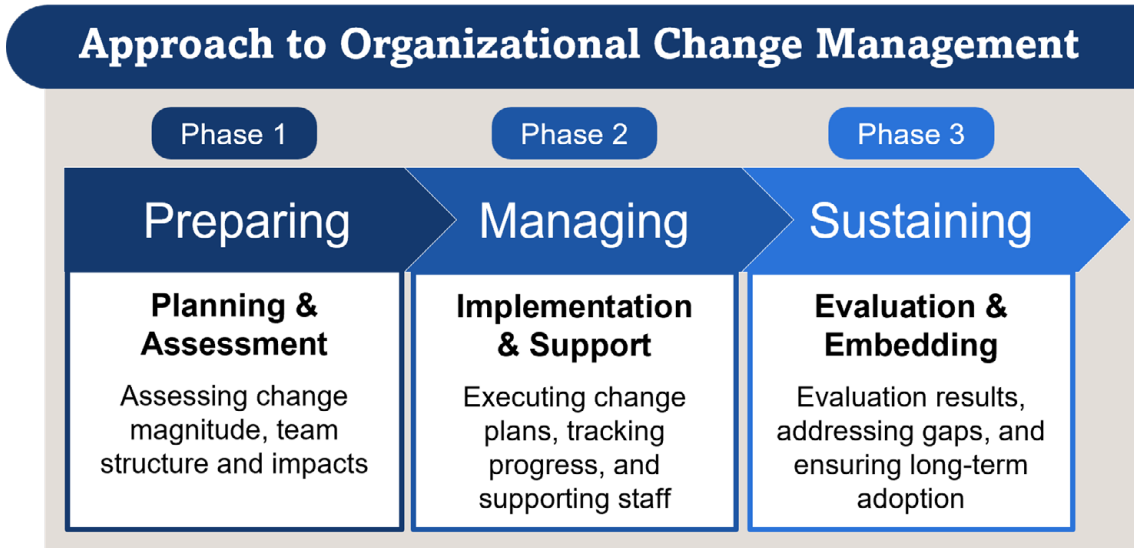
2. Managing

This stage is managing the change, tracking progress and adjusting actions as needed. It comprises the core plans that people often equate to change management and is based on the change readiness survey results. These include the organizational tools that help individuals go through the change process with a focus on the actions to prepare, equip and support staff through the change process. Stantec will propose recommendations during the planning stage including sponsor role and responsibilities, and an engagement strategy for addressing potential resistance.

3. Sustaining

This stage is about maintaining a culture of results, making change “stick” over the long term by evaluating results of the change management activities, determining the root cause of any gaps, and implementing corrective action. This must continue well beyond implementation of new processes and any associated new systems or technology. The OCM planning will propose recommendations on how change management activities must be evaluated, how to determine the root cause of any gaps, and implement corrective action(s).

In parallel, we will assist in updating existing Standard Operating Procedures (SOPs), policies, and internal processes to embed change management procedures directly into each asset management function. By institutionalizing change readiness, Fort Lauderdale will enhance its ability to respond to emerging challenges, adopt new technologies, and continuously improve the effectiveness of its asset management system.



Together, this integrated approach to performance tracking and change management will position the City of Fort Lauderdale to:

- Make defensible and timely investment decisions;
- Improve service reliability, safety, and cost-effectiveness;
- Build internal capacity and resilience to adapt to evolving needs;
- Strengthen public trust and transparency; and
- Deliver on the infrastructure and organizational goals set forth in Press Play Fort Lauderdale: Our City, Our Strategic Plan 2029.

Documentation & Governance Support

Stantec will develop a full suite of documents, memorandums, and progress reports necessary to support the development of a comprehensive asset management system for the City of Fort Lauderdale's Public Works asset portfolio. These deliverables will be structured to promote transparency, accountability, and data integrity across all departments involved in asset planning and operations.

At the core of our approach is the establishment of a **robust asset management governance framework**. This framework will define the roles, responsibilities, policies, and processes required to guide asset-related decision-making and ensure that all information used for planning and reporting is accurate, consistent, complete, and secure. Effective governance will facilitate better accountability, financial efficiency, customer service performance, and risk mitigation, while also supporting more transparent and defensible decisions across the asset life-cycle.

To operationalize this framework, Stantec will **prepare and maintain clear and timely documentation** throughout the engagement. This includes technical memorandums detailing analytical methodologies, asset data interpretations, risk scoring, and policy recommendations; progress reports aligned with major project milestones; and decision logs that clearly capture key findings, rationales, and next steps. These documents will not only support internal project coordination, but also serve as auditable records for Commission oversight, interdepartmental alignment, and regulatory compliance.

Our documentation process will be tightly integrated with the City's Cityworks. **Cityworks acts as the system of record for asset information, organizing maintenance history, operational data, inventory tracking, and providing data to assist with renewals planning**. Stantec will collaborate with City staff to ensure information captured through our work, such as asset performance trends, condition ratings, preventive maintenance strategies, and life-cycle forecasts, is fully incorporated into Cityworks.

As part of this process, Stantec will also support configuration and documentation of key Cityworks modules including:

- Asset Registry and Classification (location, condition, history, cost codes).
- Work Order and Preventive Maintenance Tracking.
- Resource and Inventory Management.
- Performance Reporting and Audit Logs.

This alignment between governance documentation and enterprise data systems ensures that asset management becomes a repeatable, standardized process, not a one-time effort. By embedding governance into the City's day-to-day workflows and performance reporting cycles, Fort Lauderdale will be better equipped to drive long-term asset optimization, ensure regulatory readiness, and make fiscally responsible infrastructure decisions.



Strategic Goal Alignment



Through our structured and system-integrated documentation approach, Stantec supports the Guiding Principles of the City's Strategic Plan by enabling smarter resource management, strengthening organizational processes, and ensuring that all asset decisions are informed by accurate data and governed by best practices.

Critical Asset Identification & Risk Plans

Effective asset management requires the ability to identify and proactively manage the most critical assets – those whose failure would significantly impact service levels, safety, the environment, or economic vitality.

Our methodology for asset criticality is grounded in the “triple bottom line” framework, which evaluates Consequence of Failure (COF) across four dimensions:

- **Social Impact** – e.g., LOS failure, service interruptions, public health risks.
- **Environmental Impact** – e.g., flooding, contamination, coastal erosion.
- **Financial Impact** – e.g., cost of emergency response, asset replacement, legal liability.

Subject Matter Experts (SMEs) from Stantec will lead the facilitation of workshops and technical reviews to assess COF scores across the City’s diverse infrastructure portfolio. This assessment will be paired with LOF derived from detailed condition evaluations, asset age, material data, and known failure modes. We then apply our risk matrix, consistent with ISO 31000, to calculate risk scores and generate a citywide risk profile.

Stantec’s framework also applies **Enterprise Risk Management (ERM) principles**, treating risk as a strategic lever rather than a reactive obligation. Risk responses will be structured according to the “Four T’s”:

- **Tolerate:** Accept and monitor the risk if the impact is manageable.
- **Transfer:** Shift risk through insurance, contracts, or partnerships.
- **Treat:** Reduce the probability or consequence through proactive maintenance or upgrades.
- **Terminate:** Remove the source of risk by eliminating vulnerable assets or practices.

These responses are prioritized based on the City’s risk appetite (the amount of risk the City is willing to pursue in service of its goals) and risk tolerance (the amount of residual risk it is willing to accept after treatment).

Stantec will support the City in visualizing risk analysis outputs through visualization tools such as Power BI dashboards, enabling the Public Works Department and City leaders to interactively explore:

- High-risk asset clusters by geographic area.
- Trends in asset condition deterioration.
- Multi-year projections of capital investment needs.
- “What-if” scenarios for resiliency planning.

By producing these condition, criticality, and risk profiles, Stantec will provide not just a static risk registry but a living tool for infrastructure decision-making. This ensures capital investments and maintenance plans are justified, transparent, and aligned with the City’s broader strategic goals, including environmental stewardship, fiscal responsibility, neighborhood equity, and public safety.



Strategic Goal Alignment



Safe & Prepared Community: Stantec’s approach to risk assessment will enable the City to make informed, data-driven decisions that enhance resilience, reduce life-cycle costs, and improve service continuity.

Staff Training & Public Education

Stantec will provide structured and impactful training and education programs to City of Fort Lauderdale staff, project stakeholders, and community representatives to build internal capacity and strengthen public understanding of asset management principles. Our approach includes the preparation of customized educational materials, delivery of in-depth training sessions, and development of engaging presentations designed for both technical and non-technical audiences.

A central component of our offering is the **Institute of Asset Management (IAM) Asset Management Certificate Training**, a program that fosters an organizational culture where asset stewardship is valued, understood, and actively practiced across all levels. This training ensures that individuals recognize how their roles contribute to the City's asset management objectives and promotes alignment between staff and the strategic outcomes they support. By clarifying the purpose, context, business rationale, and expected outcomes of asset management, the training improves staff engagement, boosts productivity, and empowers employees to make informed, value-driven decisions. **Stantec is endorsed by the IAM to deliver this training.**

Our training framework is tailored to the maturity level and structure of the City's departments. For internal teams, we will focus on practical skills and system literacy (e.g., use of Cityworks, performance tracking, condition assessments, and SOP updates), while for leadership and project managers, we will provide modules on life-cycle decision-making, risk-based prioritization, and governance alignment. For community-facing sessions and outreach, Stantec will work with Brizaga and City staff to prepare and participate in City Commission meetings, public meetings and advisory boards - helping to communicate the benefits of asset management initiatives and encouraging community involvement in infrastructure decisions.



Training sessions will be delivered in a variety of formats, including workshops, lunch-and-learn sessions, and web-based modules, to ensure flexibility and accessibility. Educational materials will include summary guides, visual workflows, decision trees, and role-specific references to reinforce key concepts.

This comprehensive training and outreach strategy will help ensure that asset management is not just a technical process, but a shared responsibility embraced across the organization and supported by the broader community.

Strategic Goal Alignment

 <p>GOAL 3+4 Infrastructure & Resilience</p>	 <p>GOAL 5 Public Places</p>	 <p>OVERALL Guiding Principles</p>
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Through our inclusive and responsive training approach, Stantec supports the City's Strategic goals by enhancing transparency and public engagement in infrastructure initiatives, developing staff capabilities and fostering a value-based organization and embedding asset management awareness into the City's long-term culture of service excellence.

Financial Forecasting & Funding Options

Stantec has provided a variety of financial consulting services for the City since 2009. We first completed a comprehensive rate study for the City's Stormwater Management Program in 2011. More recently, we assisted City staff in evaluating the overall rate impact of the updated capital needs of the system. We analyzed the impact of the capital needs upon the stormwater system (approximately \$1 billion over three phases) and performed a high-level forecast of the rates and debt required to pay for the projects. It was determined that the magnitude of the capital needs was such that the burden may be too large to recover the cost solely based on increasing the current level of the stormwater rates.

For this AM Program Stantec will prepare **life-cycle cost estimates, multi-year financial projections, and a funding strategy** to support the City of Fort Lauderdale in identifying the most effective and sustainable approach for implementing its asset management program. Our analysis will guide capital investment decisions and long-term maintenance planning across all asset classes, including stormwater, water, wastewater, roadways, seawalls, and bridges.

Central to this process is the application of **Asset Replacement and Refurbishment Analysis**, which is critical for determining the optimal timing for major reinvestments. Our approach relies on a comprehensive dataset, including asset condition, performance history, remaining useful life, and cost trends, to evaluate when and how assets should be refurbished or replaced. By leveraging this data, Stantec will collaborate with City staff to identify high-risk or under performing assets and develop cost-effective strategies that minimize risk, improve system reliability, and extend asset service life.

These forecasts will be complemented by scenario-based modeling, enabling City decision-makers to evaluate trade-offs under varying assumptions for growth, climate risk, budget availability, and service levels. In addition to baseline funding needs, Stantec will prepare a flexible financial roadmap that considers a range of financing options, including grants, public-private partnerships (P3s), and bonding mechanisms, in alignment with the City's capital planning priorities and funding capacity.

Our recommendations will be aligned with the City's Capital Improvement Planning (CIP) cycles and designed to inform both short-term actions and long-term financial sustainability. The outcome will be a strategic asset management implementation plan that prioritizes resources, supports transparent decision-making, and helps the City achieve its infrastructure, service, and resiliency goals.



Strategic Goal Alignment



Through this fiscally responsible and data-driven approach, Stantec advances:

Infrastructure & Resilience by promoting resilient infrastructure investments that support environmental and service sustainability.

Business Growth & Support by fostering smart, long-term capital strategies that contribute to local and regional economic vitality.

Regulatory Compliance & Property Coordination

Stantec will ensure that all activities related to the development and implementation of the City's AMPs are fully compliant with the requirements of regulatory agencies that have jurisdiction or oversight. This includes local, state, and federal entities involved in permitting, environmental protection, infrastructure development, and utility operations.

Our local team brings experience in coordinating with regulatory bodies and will guide the City through the full life-cycle of compliance, from early project scoping through to permit acquisition and final documentation. This includes support for right-of-way (ROW) acquisition, preparation of legal mapping and legal descriptions, coordination of environmental and infrastructure permits, and alignment with relevant codes, guidelines, and reporting obligations.

We will identify all **applicable regulatory requirements** early in the planning process and work collaboratively with City staff to **track and manage permitting needs across all asset classes, including stormwater, wastewater, water, bridges, seawalls, and roadways**. Our process includes the preparation of necessary forms, supporting technical documentation, and correspondence required by agencies, ensuring timely review and approval. By embedding compliance considerations into asset management, Stantec ensures that implementation strategies are realistic, legally sound, and executable, without delays due to avoidable permitting or jurisdictional conflicts. This integrated approach supports the City's commitment to safe, responsible infrastructure development and enables smoother project execution down the line.



Strategic Goal Alignment



By ensuring regulatory compliance and, Stantec helps advance:

Public Safety by reducing risk and ensuring regulatory readiness across critical public works systems.

Housing by supporting balanced, legally compliant infrastructure growth that meets the needs of a dynamic and growing population.



Data Collection, Conversion, Migration & Condition Assessments

Stantec understands that accurate, actionable data is critical to effective infrastructure management. With extensive experience in data-driven studies, our team will enhance GIS accuracy, support Cityworks implementation, collect detailed field data, and conduct capacity analyses to build reliable geospatial datasets to support the City of Fort Lauderdale’s AM related strategic goals.

Data Collection, Conversion, Migration & Condition Assessments

Stantec will apply a systematic and collaborative approach to support the City of Fort Lauderdale in implementing data collection, conversion and migration. Our strategy will provide City staff with complete, accurate, and geo-referenced infrastructure to update Cityworks, ready to support performance monitoring, investment planning, and regulatory compliance.

GIS Validation and Accuracy Enhancement

Stantec will begin by validating the City’s existing GIS databases for all Public Works assets. Working closely with the Public Works, GIS, and IT Departments, our team will verify geo-referencing accuracy, metadata consistency, and database completeness. This includes checking horizontal and vertical precision, correcting misaligned features, validating coordinate systems, and confirming attribute integrity. Our team employs advanced spatial analytics and QA/QC routines to ensure that your ESRI GIS platform serves as a reliable foundation for asset management.

Capacity Analysis of Infrastructure Systems

To ensure that infrastructure systems are adequately sized for current and future service demands, at the request of the City Stantec will perform capacity analyses across all major asset classes for stormwater, domestic water, wastewater, roadways, seawalls, and bridges. This includes modeling the capacity of existing systems under various built-out and climate change scenarios and evaluating proposed infrastructure expansions. Our results will help the City prioritize upgrades and ensure infrastructure resilience aligned with projected growth.

This work advances Goal 3 (Infrastructure & Resilience) by preparing infrastructure for climate impacts and population growth, and Goal 2 (Housing) through long-term infrastructure planning.

Strategic Goal Alignment



GOAL 1
Public Safety

GOAL 3+4
Infrastructure & Resilience

OVERALL
Guiding Principles

Strategic Goal Alignment



OVERALL
Guiding Principles

Strategic Goal Alignment



GOAL 2
Housing

GOAL 3+4
Infrastructure & Resilience

Comprehensive Data Collection for GIS Completion

At the City's request Stantec will collaborate with Craig A. Smith & Associates (CAS) for survey works to collect asset data from the field required to update the City's ERSI GIS. For desktop data collection, Stantec has qualified and experienced staff that will extract data and information from existing information (such as as-builts). This effort will include detailed inventory of physical attributes (e.g., capacity, material, installation year), condition observations, and structural features. Data in the field will be gathered using mobile-enabled tools, field inspections, sensor-based scanning, CCTV inspections via our subcontractor, and historical document reviews. All collected data will be fully geocoded and classified for seamless GIS integration, enabling the City to maintain a centralized and complete asset registry.

GIS-to-Asset Management System Integration

To support system-wide interoperability, Stantec will assist the City with incorporating the validated GIS databases into your asset management software system of choice. This includes formatting, cataloging, and mapping the data structures to align with the software's schema, ensuring compatibility with asset tracking, maintenance scheduling, and reporting functions. Our team has significant experience with provision of data transformation scripts, metadata definitions, and user documentation to support system longevity and in-house operability.

Citywide Condition Assessment for Asset Management Program

Stantec will collaborate with City staff and sub-contractors to lead a citywide condition assessment program for the multiple infrastructure types for stormwater, domestic water, wastewater, roadways, seawalls, and bridges. These assessments will capture current asset condition, inform LOF criteria, and populate the baseline data required for building AM strategies. Using approaches, such as NASSCO ratings, bridge inspection standards, pavement indexing, and structural surveys, Stantec will deliver a multi-asset condition dataset that is standardized and ready for risk analysis, forecasting, and prioritization.



Strategic Goal Alignment



Strategic Goal Alignment



Strategic Goal Alignment



CMOM Program Development and Implementation

For the City's wastewater and stormwater collection systems, Stantec will develop the Capacity, Management, Operations, and Maintenance (CMOM) program in full alignment with EPA 305-B-05-002 guidelines. This includes defining inspection protocols, maintenance routines, capacity modeling, and performance targets. The CMOM framework will address both system reliability and regulatory compliance, and will be tailored to Fort Lauderdale's geographic, climatic, and service delivery context. Our team will provide operational workflows, tracking dashboards, and compliance documentation to support implementation.

Community Outreach and Stakeholder Engagement

Stantec recognizes that public awareness and stakeholder confidence are essential to program success. We will support the City by collaborating with Brizaga in preparing and presenting materials for Commission meetings, advisory boards, and other outreach forums. These materials will include clear and engaging visual aids, infographics, fact sheets, and program updates that communicate the value, impact, and progress of the asset management program. Our goal is to build transparency, trust, and shared ownership among residents, officials, and community groups.

As discussed in the previous section, to ensure that this system is embraced and sustained, Stantec will integrate a formal Change Management Strategy into the performance improvement process. OCM Services are essential for organizations navigating the complexities of transformation. The comprehensive planning framework encompasses several critical stages to ensure successful adaptation and sustained improvement. The process starts by defining success / starting with the end in mind, establishing clear objectives and metrics that align with the asset management and overall organizational goals. Understanding the impact of change on various stakeholders is paramount, allowing us to enable roles effectively and ensure everyone is prepared for the transition.



Strategic Goal Alignment



Strategic Goal Alignment



Additional Scope Areas

Stantec is well-positioned to support the City of Fort Lauderdale across the full range of additional scope areas outlined in the RFQ, bringing deep bench strength, specialized expertise, and a trusted network of subcontractors. Our multidisciplinary team includes experts in civil, coastal, electrical, mechanical, environmental, and geotechnical engineering, as well as architecture, planning, historic preservation, and landscape architecture. We offer proven capabilities in utilities engineering, surveying and GIS, biological services, cultural resources, and traffic engineering. From field inspections to grant coordination and benefit-cost analysis, our integrated approach ensures seamless delivery across disciplines. With robust experience in stormwater visualization tools, asset evaluation, and community engagement, Stantec delivers the technical excellence and local knowledge needed to help the City meet its infrastructure, planning, and sustainability goals.

The following pages briefly outline Stantec's capabilities in each area listed in the RFQ's section 3.4 Additional Scope Details.

1. Civil Engineering (General)

Stantec brings a deep bench of civil engineering expertise, grounded in a commitment to resilient, sustainable, and community-focused infrastructure. Led by **Shehab Bata**, our teams are experienced in planning, designing, and implementing complex transportation systems that not only meet today's needs but are built to withstand tomorrow's challenges. Whether restoring critical infrastructure after natural disasters, as demonstrated in our award-winning example of the emergency restoration of Ocean Drive in Cape May, or enhancing inter modal connectivity in dense urban environments like the Court Square 2 Subway Transfer in New York, we deliver **innovative, integrated solutions**. Our work on the San Ysidro Land Port of Entry exemplifies our ability to manage large-scale, high-security, and fast-tracked projects, using tools like Virtual Reality to ensure stakeholder alignment and operational efficiency. Across all projects, our civil engineers collaborate seamlessly with architects, structural, mechanical, and electrical teams to ensure that every element, from streetscapes to transit centers, is functional, resilient, and contextually appropriate.



2. Stormwater Engineering

The Stantec Team has vast experience in drainage projects in the South Florida area. We are the local experts for drainage facilities of all types including their benefits and cost, and this additional scope area will be led by **Ben Quartermaine**. We have experience with exfiltration trench systems, dry and wet detention, pump stations, gravity well, pumped wells, underground storage and direct outfall to drainage canal and other water bodies. Our approach to roadway and drainage design starts by evaluating all possible solutions for effectiveness, cost and permit-ability, especially when considering SFWMD and their requirements for permit. We also recognize that the City falls under Broward County EPGM for stormwater permitting on a smaller scale, and we are prepared to assist in permitting through that agency as well.

We model all our drainage designs using advanced **software programs like ICPR, HEC and GIS** to establish the effectiveness of the proposed solutions for varying storm events. But we can also simplify the drainage design and permitting by utilizing the SFWMD Cascade program when a simple pre- versus post-developmental analysis is warranted; a more practical approach when handling park projects and neighborhood pathway and sidewalk plans. Our Team will provide several solutions with their associated cost estimates and our recommendations for the City's evaluation. When the proposed solution is selected, we will prepare plans and specifications in accordance to local, state and federal regulations. Our familiarity with these projects will allow us to quickly execute project design, permitting and construction.

Palm and Hibiscus Island Neighborhood Improvements

Currently under construction in Miami Beach, this project consists of full infrastructure improvements including drainage and roadway for over 100 acres of a residential neighborhood on these islands off the MacArthur Causeway. The area is tidally influenced and many of the roadways were built below the seasonal high tides. Thus, the streets flooded several times during the year. The existing drainage system did not meet the minimum standards established by the City and was extremely flood prone. Stantec analyzed several solutions including pump assisted wells, exfiltration trenches and a large pump station. The City decided to go with a large pump stations for each island with discharge outfalls to Biscayne Bay. Additional elements of the project included full roadway reconstruction, undergrounding of existing utilities, new curb and gutter, lighting improvements, and landscaping.

The Stantec team is also experienced in the preparation and execution of Stormwater Master Plans and Floodplain Management Plans. Our team has the expertise in local drainage solutions and hydraulic modeling to prepare a superior master plan that will focus on feasible solutions. We have not only planned but also constructed the drainage facilities including pump stations, exfiltration trench systems, direct outfalls to canals or other water bodies, gravity and drainage wells. **Our extensive experience in local drainage systems and conditions will help strengthen the master plan by providing viable solutions with accurate cost and schedules.** Drainage solutions would be provided for varying levels of protection, including schematic design and cost estimates. This allows the City to submit for grant funding for projects that provide higher level protection with funding that was previously beyond the City's reach. These projects providing protection for 25-year and 100-year storms would be eligible for credit under Federal Emergency Management Agency's Community Rating system to potentially improve the City's Class.

Additionally, Stantec can provide GIS services for modeling, mapping and asset management. We recently provided these services to the City of Riviera Beach for their entire citywide stormwater system and are currently supplying the same services for the City of Tamarac.

3. Water & Wastewater

Our team has vast experience with local utilities, including the City of Fort Lauderdale, and many of the adjacent cities, in the areas of water distribution, wastewater collection, Sanitary Sewer Evaluation Survey (SSES), lift stations, booster stations, fire suppression systems, water reuse (reclaimed), water and irrigation well design and hydrogeology of the area. Led by **Eduardo Torres**, our team is familiar with the local, county, and regional regulatory requirements, permitting processes, and the typical conditions placed upon construction and operational permits.

Over the years, these relationships have allowed us the opportunity to work closely with clients on projects for planning and implementation of facilities. We have completed campus wide SSES and lift station improvements at Florida International University (FIU) and completed the design of numerous pump station rehabilitation projects for **Miami-Dade Water and Sewer Department** as part of their consent decree program. On water & sewer projects, we have represented cities and institutions such as Fort Lauderdale, Sunrise, Deerfield Beach, Oakland Park, Pompano Beach, Davie, Hallandale Beach, Lauderhill, Plantation and BCED as well as Miami-Dade Water and Sewer Department. These long-term relationships illustrate our ability to solve diverse and complex programs and to create practical and concise solutions that can be implemented. Our services have even extended to projects involving conversion of overhead utilities to underground.

The **Palm & Hibiscus Islands project in Miami Beach** is one such example, as well as the successfully completed Golden beach CIP project. Both large-scale capital projects included facilities for electrical and communication companies. Stantec was the utility coordinator for all of the relocations created by the I-595 express corridor expansion and has served as the District Utility Coordination Consultant for FDOT District 4. We conducted integrity assessment, designed and permitted thousands of linear feet of large diameter water main and force main for various municipal and county utilities that involve standard installation as well as aerial crossings of canals and directional bore, micro-tunneling and jack and bore techniques. Of particular note, we designed and permitted 750 LF of a 24" force main for the Town of Palm Beach in just 38 days from NTP to acquisition of permits in order to meet a severe time restraint created by the start of the FDOT Flagler Memorial Bridge construction project. This was performed under the Town's continuing services contract.

Hydrology & Hydraulic Engineering

Stantec has extensive experience in all aspects of Hydrology and Hydraulic engineering services including incorporating hydrology and hydraulic considerations at the preliminary and conceptual design state, through detailed design, construction, and project closeout. **Our team has prepared hundreds of stormwater management plans and reports for projects of all types and all sizes**, including a recently developed stormwater management plan for the City of Miami Beach with similar characteristics to the City of Ft. Lauderdale. The project was modeled to address Sea Level Rise impacts and presented seawall improvements and harmonization at private properties. Recent local projects in Southeast Florida include: small lot developments and infrastructure upgrades; community-level development plans, infrastructure upgrades, and transportation projects; large-scale multi-community development plans and large-scale transportation projects.

Stantec's work on stormwater management plans and reports includes complete hydrological and hydraulic analysis of the project area, Hydrologic and Hydraulic modeling, the preparation of stormwater management plans, and in most cases, the subsequent design of the stormwater management infrastructure. This experience also includes projects requiring interim and ultimate measures to facilitate site constraints, project staging plans, and operational considerations. Stantec utilizes both standard and novel modeling software, including the use of standard riverine analyses utilizing traditional steady and unsteady state one-dimensional (1-D) tools like HEC-HMS and HEC-RAS to model water surface elevations within the channel, and innovative two-dimensional modeling such as TWFLOW, FLO-2D, and the new HEC-RAS tools to determine the area affected by overbank flooding. Drainage network modeling experience includes the use of ICPR, SWMM, and XPSMM to develop stormwater management plans, size BMPs and stormwater features, and plan for impacts to features from sea level rise.

Our approach to the City's Hydrologic and Hydraulic needs will **build upon lessons learned and an understanding of operations and project requirements that we have spent years developing while working on similar scopes** of work with other local municipalities, such as Deerfield Beach, Plantation, Hallandale Beach, and Golden Beach. Effective hydraulic systems try to work with the project constraints to the greatest extent possible. There are multiple objectives that need to be met and the hydraulic conditions are only one of these objectives.

4. Roadways

Stantec has extensive experience in all levels of roadway improvements- major and minor, bridges, beautifying areas with streetscape and landscaping while providing necessary infrastructure upgrades including drainage, water, and sewer. Additional experience includes numerous roadway improvements for **FDOT, Broward, Miami Dade and Palm Beach County** and numerous municipalities involving full reconstruction, street widenings, resurfacing, drainage upgrades, signalized intersections, and traffic calming, as well as major highway and interchange work. Pedestrian safety is our utmost concern, with critical thinking philosophy applied to sidewalk setbacks, ADA ramp locations, crosswalk identification, mixed-use bike and pedestrian applications, wayfinding signage, adequate safety lighting, bus stops and school bus routes. **Fadi Jadoun** will lead these additional services to provide an integrated approach with innovative solutions to satisfy the City and its residents.

The roadway portion is often the most expensive part of these types of projects. Our team will evaluate the roadway and prepare a resurfacing plan to try to minimize the cost to the project but still deliver a good product. Many times, the base of a roadway is sound and milling & resurfacing or partial reconstruction are sufficient to repair the road. Some smaller areas may need full reconstruction, but by carefully analyzing and delineating the condition of the roadway, we will help extend the City's budget.

Our approach to a roadway design starts by evaluating all possible **solutions for effectiveness, cost and permissibility**. Our team will provide several solutions with their associated cost estimates and our recommendations for the City's evaluation. When the proposed solution is selected, we will prepare plans and specifications in accordance to local, state and federal regulations. Our familiarity with these projects will allow us to quickly get the project designed, permitted, and constructed.

NE/NW 84th Avenue Corridor Improvements

This project for the City of Plantation consisted of traffic calming and lane reduction, drainage, lighting, signalization and streetscaping improvements for nearly a mile of urban roadway that implemented the traffic calming elements, as well as a central storm water trunk line, not only for drainage of the road and mixed-use pathways, but also as a means of conveyance for adjacent property owners to use to reduce flooding potential in the area. In order to provide the necessary width for the mixed use pathway, retaining walls were used to pull the edge of water back from the wet retention area so that the pathways could be pulled back away from the road. To minimize costs, a resurfacing plan with a combination of overlay, milling and resurfacing and partial reconstruction was developed. Additional elements of the project included colored concrete curbing and sidewalk, paver brick cross walks, decorative lighting installation, landscaping and irrigation, utility relocation, entrance signage and signalization. The project was the second phase of the Plantation Midtown Greenway Improvement projects with a mile of American Express Way also completed by Stantec four years previously.

5. Seawalls & Bridges

Seawalls

While public sector work comprises the bulk of our workload in this area, we have also provided seawall design on the private side. **Mohit Soni** will lead this scope with an experienced Stantec team who has completed repairs and/or replacement of seawalls for the **Ocean Reef Club (Key Largo), the Atrium Marina (Aventura) and Moon Bay Condominiums (Key Largo)**. Additionally, our transportation division has provided seawall and retaining wall design on numerous bridges and causeways throughout Florida.

The type of seawalls that we have experience with range from precast concrete seawalls to steel and aluminum sheet piling seawalls. The design approach has utilized numerous systems varying from cantilever seawall systems to tiebacks using deadman or plate anchors to grouted tiebacks. When upland construction has presented a problem with utilizing tiebacks, we have designed systems with batter piles to meet lateral loads while being more cost efficient. The approach must consider the geometry of the proposed seawall, the geology and soil conditions of the specific area, the potential restrictions to types of construction based on adjacent upland facilities, and the environmental conditions and subsequent restrictions imposed by the regulatory agencies.

We are currently working with the **City of Miami Beach providing seawall design and construction services** on their publicly owned properties that abut water. Our Venetian Island seawall projects included raising the public seawalls and properties in the City owned stormwater easements to a minimum of 5.70' NAVD, which was almost 3 feet higher than the existing seawalls. When coupled with our similar work on the Dade Canal, Lincoln Canal, Bay Canal, Collins Canal, Brittany Bay Park, Normandie Shores, Shane Rowing Center and Indian River Drive improvements, Stantec has designed improvements to over 2000 LF of new seawall for the City. Aside from Miami Beach, our team has also designed the improvements to 1700 LF of seawall in No Name Harbor at Bill Baggs State Park on Key Biscayne, and well over 1500 LF of seawalls for the City of Tamarac in their flood control canal system. Additionally, for Docks and Piers, Stantec is assisting the City of Clearwater with their Imagine Clearwater Waterfront revitalization project that includes seawalls, marinas, boardwalks, pedestrian venues, bridge structures and various park amenities to promote the City's waterfront area.

Locally, we have provided **dock design for numerous marinas including Crandon Park Marina, Matheson Hammock Marina, Pelican Harbor Marina, Atrium Marina, and Garrison Bight Marina (Key West)**. On the parks design side, we have designed boardwalks at Deerfield Island Park, Waterway Park, Flamingo West Park, Coconut Creek Recreation Complex Park, Fern Forest Nature Center, and the Bobcat Boardwalk at Shark Valley in Everglades National Park. Additionally, our team designed a number of scenic overlooks and fishing docks at Snyder Park, Caporella Park, Flamingo West Park, Big Pine Key Park and Waterway Park. For FDEP, we have designed over 2000 LF of elevated boardwalk in numerous State Parks as well as five different dune crossovers for St. Lucie County.

Bridges

Our team has vast experience in determining the extent of repairs and providing designs that decrease life-cycle costs, are constructible and maintainable, and reduce impact to the traveling public. Whether an assignment is to provide emergency repairs, perform inspections, or deliver engineering services for an improvement or study, the City needs a trusted partner who understands all aspects of bridge design and **Mohit Soni** will also lead this additional scope on behalf of Stantec.

Signature design projects include the **ten (10) Las Olas area bridge renovations in Fort Lauderdale**, the 10th Avenue North and the 6th Avenue South Bridges over the E-3 Canal in Palm Beach County, SR-A1A MacArthur Causeway Bridge Rehabilitation in Miami-Dade County, Tamiami Trail Bridges in the Florida Everglades, the West Mashta Bridge on Key Biscayne, the Palmetto Expressway/SR-836 Interchange bridges, and a number of projects performed under our FDOT Continuing Service contracts for minor bridge design.

6. Asset Management

Stantec offers robust Asset Management capabilities that integrate data analytics, field assessments, and long-term strategic planning to help clients make informed decisions about their infrastructure. Our approach, led by **Craig Omundsen**, is designed to **optimize asset performance, extend service life, and maximize return on investment while aligning with budgetary and operational goals**. These capabilities are thoroughly addressed in the section for Task 1: Asset Management, where we detail our process for asset inventory, condition assessment, criticality analysis, and the development of prioritized maintenance and capital improvement plans. This comprehensive approach ensures the City has a clear, actionable roadmap for managing its infrastructure efficiently and sustainably.

In addition, Stantec leverages industry-leading tools and technologies—including GIS integration, mobile data collection, and predictive modeling—to support proactive asset management and facilitate real-time decision-making. Our team has successfully implemented asset management programs for municipalities across Florida and nationwide, providing scalable solutions that evolve with the needs of each client. This experience positions us to deliver a program tailored to the City's infrastructure goals, regulatory requirements, and long-term resiliency objectives.

7. Benefit Cost Analysis

Led by **Erin McLachlan Sanchez**, Stantec applies a forward-thinking, inclusive approach to Benefit-Cost Analysis (BCA) that goes beyond traditional metrics to capture the full value of infrastructure investments. Our methodology integrates **economic, environmental, and social indicators, often referred to as the triple bottom line**, to assess both direct and indirect project impacts. We begin by defining project goals in collaboration with diverse stakeholders, ensuring that the analysis reflects community values and long-term resilience. Our BCAs consider not only risk reduction and infrastructure protection, but also broader benefits such as improved access to jobs and services, environmental justice, and enhanced public health. Metrics may include reductions in air pollution, restoration of sensitive habitats, mitigation of extreme heat, and improvements in quality of life for vulnerable populations.

Tottenville Shoreline Protection Project - Staten Island

For the Tottenville Shoreline Protection Project in Staten Island, our team developed a custom blend of nature-based solutions to address coastal erosion and storm surge risk. The BCA demonstrated that integrating ecological enhancements—such as wetland restoration, native plantings, and green infrastructure—alongside engineered protections would yield long-term resilience and community value. The project also delivered social benefits through ADA-accessible trails, educational opportunities, and new public spaces, all while meeting critical risk reduction criteria. By embedding resilience and equity into the BCA process, we help clients make informed, future-ready decisions that maximize return on investment and deliver lasting benefits for communities today and tomorrow.

8. Visualization Tools

Stantec's data visualization capabilities are at the forefront of digital transformation in infrastructure and community planning. **Brandon Rolo** will lead this additional service, reaching back to our deep bench of specialists who integrate vast and varied datasets from sensors, mobile devices, satellite imagery, and live camera feeds- into intuitive, **web-based dashboards and platforms that support real-time decision-making**. These tools are not only visually compelling but are also grounded in robust data governance and analytics frameworks. By applying **machine learning and predictive modeling, we help clients understand complex relationships such as population movement, travel behavior, and infrastructure performance**. Our visualization outputs have been instrumental in projects ranging from smart mobility readiness assessments to COVID-19 travel impact studies, enabling stakeholders to interpret millions of data points quickly and effectively.

Our visualization tools support broader community development goals, including **equity analysis, sustainability planning, and public health access**. By spatially integrating location-based services data with census and planning context, we evaluate disparities in access to essential services—such as healthcare, education, employment, and fresh food—and develop targeted strategies to close those gaps. These insights allow clients to prioritize infrastructure investments, implement micromobility and parking strategies, and forecast future needs with confidence. Ultimately, our **visualization services empower clients to make transparent, data-driven decisions that enhance operational efficiency, improve safety, and build public trust**—delivering smarter, more resilient, and more equitable communities.

Stantec developed a GIS-based visualization tool for decision support that prioritizes water infrastructure projects using a risk-based approach for the City of Fullerton. By analyzing both the risk of failure, including the critical factor of fire flow availability, the tool provides an easy to understand visual of the assets most at risk of failure, including potential service disruptions and lack of fire flow availability. This digital visualization tool empowers the City to strategically select and monitor pipe rehabilitation and replacement projects to reduce the City's risk relating to their watermains, aligning investments with areas of highest need to improve overall system reliability.

9. Assessment Techniques

Stantec takes a collaborative, forward-thinking approach to infrastructure assessment, working closely with utilities to explore and implement innovative techniques that enhance asset reliability, performance, and long-term value. **Leanne Whiteley-Lagace** will lead the additional scope to support the City in navigating the challenges of aging infrastructure and constrained budgets by adapting proven technologies from industries such as transportation, water utilities, and manufacturing. Through our work with the Water Research Foundation and a global network of cities, utilities, technology providers, and academic institutions, we are **identifying and evaluating emerging tools that support predictive maintenance, real-time monitoring, and data-driven decision-making**. This integrated, cross-sector model ensures that our solutions are not only technically robust but also tailored to the evolving operational needs and sustainability goals of the utilities we serve.



Stantec's RT3000 is a state-of-the-art mobile road pavement data collection system designed to capture high-resolution, georeferenced roadway data with exceptional accuracy. Equipped with advanced sensors and imaging technologies, including the Applanix POS LV system, the RT3000 ensures continuous positioning even in GPS-challenged environments. It collects detailed pavement condition data, including surface distress, rutting, and roughness, alongside high-resolution videolog imagery, all in a single pass. This data is essential for asset inventory, condition assessments, and long-term infrastructure planning.

An example of a notable application of the RT3000 was in a large-scale pavement survey for the New Jersey Department of Transportation, where Stantec assessed over 17,000 miles of non-Federal Aid routes. The data collected was integrated into RoadMatrix, Stantec's proprietary pavement asset management platform. RoadMatrix uses this information to analyze current pavement conditions, model future deterioration, and guide cost-effective maintenance and rehabilitation strategies. Together, the RT3000 and RoadMatrix provide a powerful, data-driven foundation for optimizing roadway performance and investment planning.

10. Utilities Engineering (Subsurface Engineering)

Stantec will deliver subsurface utility engineering services through a collaboration with internal Stantec staff and **subcontractor Craig A. Smith & Associates (CAS)**. Our combined services will reduce risk, control costs, and streamline project delivery, and our combined experience spans the full lifecycle of utility coordination, from early-stage investigations and utility detection in high-risk environments to design, approvals, construction support, and 3D as-built documentation. Led by **Dave Clarke**, at the request of the City our combined team can identify underground infrastructure, verify utility asset locations, and coordinate with responsible agencies to ensure coordination of essential services such as water, sewer, electricity, and telecommunications. **Our collaborative approach, combined with strong relationships with utility providers and technical stakeholders, enables us to deliver innovative, sustainable, and constructible solutions that enhance the long-term success of infrastructure projects.**

Our experience includes major infrastructure programs such as the Brisbane Metro, where we developed a comprehensive utilities register, conflict matrix, and concept utility mitigation strategy, followed by utility coordination activities and a 3D utilities model designed for highly congested sites. On the North East Link Early Works and Primary Package in Victoria, we managed the relocation of over 100 utility assets, coordinated with multiple service providers, and applied digital engineering tools to enable real-time information sharing and clash-free design. We also supported RMIT University with a campus-wide infrastructure asset assessment, overcoming challenges in legacy data and underground service mapping through cloud-based tools and large-scale data capture. These projects demonstrate our ability to manage complex utility environments, mitigate environmental and construction risks, and deliver data-driven solutions that support resilient, future-ready infrastructure.

11. Surveying and Geographic Information Systems

Accurate and up-to-date geospatial data is foundational to effective asset management and service delivery. Stantec and **subcontractor Craig A. Smith & Associates (CAS)** offer comprehensive surveying and Geographic Information System (GIS) services designed to support the City's operational goals and long-term strategic vision. Led by **James Hale**, our team provide the full range of surveying and GIS services, including boundary, topographic, utility, and construction surveys, all performed using the latest technologies. These surveys ensure precision in mapping and data collection, which is critical for capital improvement projects, permitting, and infrastructure maintenance.

Our GIS specialists will work closely with field survey teams to integrate new data into the City's enterprise GIS. This includes **updating asset inventories, refining spatial accuracy, and enhancing attribute data to support decision-making** across departments. Stantec also develops custom GIS tools and dashboards that align with the City's performance management systems, enabling real-time insights and improved service delivery.

Stantec has been instrumental in developing and implementing risk-based decision support systems (DSS) for various organizations using GIS. For the City of Fullerton, Stantec developed a GIS dashboard to prioritize water infrastructure using Likelihood of Failure (LOF) and Consequence of Failure (COF) factors, including fire flow availability, to conduct risk assessments to identify infrastructure most likely to fail and cause significant disruption. This digital service allows the city to select and track pipe rehabilitation and replacement projects based on multiple risk factors and fire flow availability, ultimately guiding investment strategies for critical replacements to enhance system performance.

By combining high-quality field data with advanced GIS capabilities and visualizations such as the City of Fullerton DSS, Stantec and CAS will help the City maintain a dynamic, reliable, and accessible geospatial database, supporting everything from emergency response and utility management to planning and public engagement.

12. Electrical Engineering

Stantec delivers electrical engineering services that prioritize safety, energy efficiency, and operational reliability. **Bradley Buchanan** will lead these additional services, which includes power distribution design, advanced automation, controls, system integration, and electrical servicing. Stantec's team works closely with clients to develop **intelligent, cost-effective strategies that reduce energy consumption while enhancing the functionality and comfort of facilities**. From arc flash studies and hazardous classification reviews to backup generation and uninterruptible power supply (UPS) systems, our designs are rooted in safety and resilience. We also integrate smart technologies and lighting systems that improve user experience and support long-term sustainability goals.

Our portfolio includes high-profile projects such as the **Atlassian Central tower in Sydney, where we contributed to the world's tallest hybrid timber building by integrating energy-efficient electrical systems and natural ventilation strategies**. At Loma Linda University Health, we engineered a first-of-its-kind electrical infrastructure solution to accommodate seismic movement in a base-isolated hospital tower. For the BMO Centre Expansion in Calgary and Optus Stadium in Perth, we delivered electrical and technology systems that enhance visitor experience, safety, and operational performance. Whether supporting healthcare, transportation, or entertainment infrastructure, our electrical engineering solutions are tailored to meet the unique demands of each project—ensuring reliability, innovation, and long-term value.

13. Biological Services

Stantec offers a full suite of biological and ecological services. These services, which will be led by **Sharon Ewe**, are designed to protect, restore, and enhance natural environments in both urban and rural contexts. Our team of biologists, specialized in botany, herpetofauna, avifauna, and aquatic fauna, works alongside environmental planners and engineers to deliver science-based solutions that support biodiversity, ecosystem resilience, and sustainable land use. Through biological inventories, ecological assessments, conservation planning, and environmental monitoring, we help clients meet regulatory requirements while advancing broader environmental goals.

Our approach is rooted in **nature-based solutions (NbS), integrating natural systems into infrastructure design to address climate change, enhance resilience, and deliver co-benefits for communities**. From restoring flood-damaged river corridors like Colorado's Big Thompson River to revitalizing oak ecosystems in Illinois' Deer Grove Forest Preserve, our work balances ecological integrity with stakeholder needs. We apply innovative tools such as cloud-based mapping, long-term monitoring, and public engagement to ensure that restoration efforts are both scientifically sound and community-supported. Whether supporting large-scale infrastructure like the Réseau express métropolitain (REM) light rail in Quebec or advancing ecological resilience through shoreline stabilization at Three Sisters Springs, pollinator habitat restoration with ComEd, or Arctic marine ecosystem research through the MARES program, Stantec brings the technical depth, scientific rigor, and interdisciplinary collaboration needed to deliver lasting environmental value across diverse ecosystems and geographies.

14. Coastal Engineering

Our expertise in coastal engineering, living shorelines, tidal mitigation, shoreline erosion, coastal modeling, breakwater design, beach nourishment, hydrographic surveying, state/ federal permitting, dredging, ecological assessments, local/ federal disaster response, bid documents, contractor procurement, and construction management has been beneficial to support other local municipalities in Florida. The operational knowledge learned through years of shoreline protection and coastal engineering projects for other clients in Florida, such as the City of Miami Beach, Monroe, Palm Beach, Santa Rosa and St. Lucie Counties, will be of direct benefit to the City. Coastal Engineering is a big part of what we do, and **Ramon Castella** will lead these additional services for the City of Fort Lauderdale.

Stantec played a key role in the **Coastal Study for the Broward County Convention Center**, providing advanced modeling and design services to enhance the site's resilience against extreme storm events. As part of the Convention Center's major expansion and renovation, which includes new event spaces and a 29-story hotel, the facility's waterfront location posed significant risks from storm surge and wave impacts. To address these challenges, we conducted a comprehensive extreme wind wave analysis to assess the potential impact of a 100-year storm event. Using sophisticated numerical modeling tools, including SWAN (Simulating Waves Nearshore) software and FUNWAVE, Stantec simulated wave behavior, runup, and overtopping under various storm scenarios. This analysis informed the design of a multi-tiered wave prevention strategy to protect both the convention center expansion and adjacent plaza areas from damaging wave forces. The outcome of this work was a set of design recommendations that not only mitigate storm surge risks but also support the long-term sustainability and functionality of the site. Stantec's contributions ensure that the Broward County Convention Center is better equipped to withstand future coastal hazards while continuing to serve as a major economic and tourism hub for Greater Fort Lauderdale.

Stantec as been an avid supporter of The Florida Shore & Beach Preservation Association since 1997, helping to protect and restore Florida's waterways, beaches and shorelines. The waterways are an essential economic driver and recreational resource, but their environmental importance and coastal resiliency functions are equally important for future generations of City residents and visitors.

15. Cultural Resources (Historic Archeology History, Ethnography)

Stantec offers comprehensive cultural resource management services that balance the preservation of heritage with the advancement of infrastructure and development. Our interdisciplinary team of archaeologists, historians, ethnographers, and Indigenous engagement specialists works collaboratively with clients, communities, and regulatory agencies to identify, document, and protect cultural and historical assets. **Rebecca O'Sullivan** will lead this additional scope, with Stantec providing services that include Historical Resources Impact Assessments (HRIAs), archival research, and field investigations. Our work on projects such as the **Sterling and Chiniak Highways in Alaska and the Fort Wainwright expansion has uncovered significant cultural materials, ranging from Dena'ina homes and Alutiiq settlements to ancient mammoth-hunting campsites**, demonstrating our ability to manage sensitive discoveries with respect and scientific rigor.

We approach each project with a deep commitment to cultural sensitivity and community collaboration. Whether stabilizing historic landscapes, as seen in our work on pipeline corridors and river crossings, or interpreting architectural history within evolving urban environments, we ensure compliance with local, state, and federal preservation laws while honoring the stories embedded in each site. Our team's experience spans from the Arctic's remote ecosystems—where we lead multi-agency research on Indigenous marine environments—to community-based heritage initiatives that engage local voices in shaping conservation strategies. At Stantec, we believe that understanding the past is essential to building a more inclusive and sustainable future, and we bring that philosophy to every cultural resource project we undertake.

16. Architecture

Stantec's architectural subject matter experts bring a deep understanding of how built environments influence health, sustainability, and long-term asset performance. Led by **Robert Lara**, our architects will provide additional scope of services, including input on the maintenance, functionality, and life-cycle planning of vertical infrastructure assets, such as municipal buildings, public facilities, and support structures. Stantec completed the architectural design for the **Nora Hotel in West Palm Beach**, Florida. Developed by New York-based BD Hotels, we served as the project's design architect and architect of record. This transformative development is the first vertical project in the district's revitalization and exemplifies our commitment to creating vibrant, community-focused spaces that blend luxury with urban connectivity. Designed to integrate seamlessly with the walkable, pedestrian-friendly character of the Nora District, the hotel reflects Stantec's holistic approach to architecture, which balancing aesthetics, functionality, and community engagement.

Our approach emphasizes the **creation of spaces that are engaging and uplifting, supporting the community's well-being while ensuring alignment with operational, accessibility, and environmental goals**. These experts will help the City evaluate the current condition and utilization of architectural assets, identify preservation or adaptation needs, and contribute to strategies that promote sustainable stewardship of civic spaces.

Their contributions will be especially valuable when determining service levels, performance standards, and renewal strategies for architectural assets within the broader asset portfolio. By focusing on long-term usability, design integrity, and responsible resource use, our architectural SMEs will help Fort Lauderdale align its facility management with both community expectations and infrastructure resilience goals.

17. Community Relations

Subcontractor Brizaga specializes in community outreach and strategic communications, ensuring that public engagement efforts are meaningful, inclusive, and effective. In cities like Fort Lauderdale, where infrastructure investment and long-term planning are essential, we recognize that **clear, accessible communication is key to building trust, supporting collaboration, and guiding informed decision-making**.

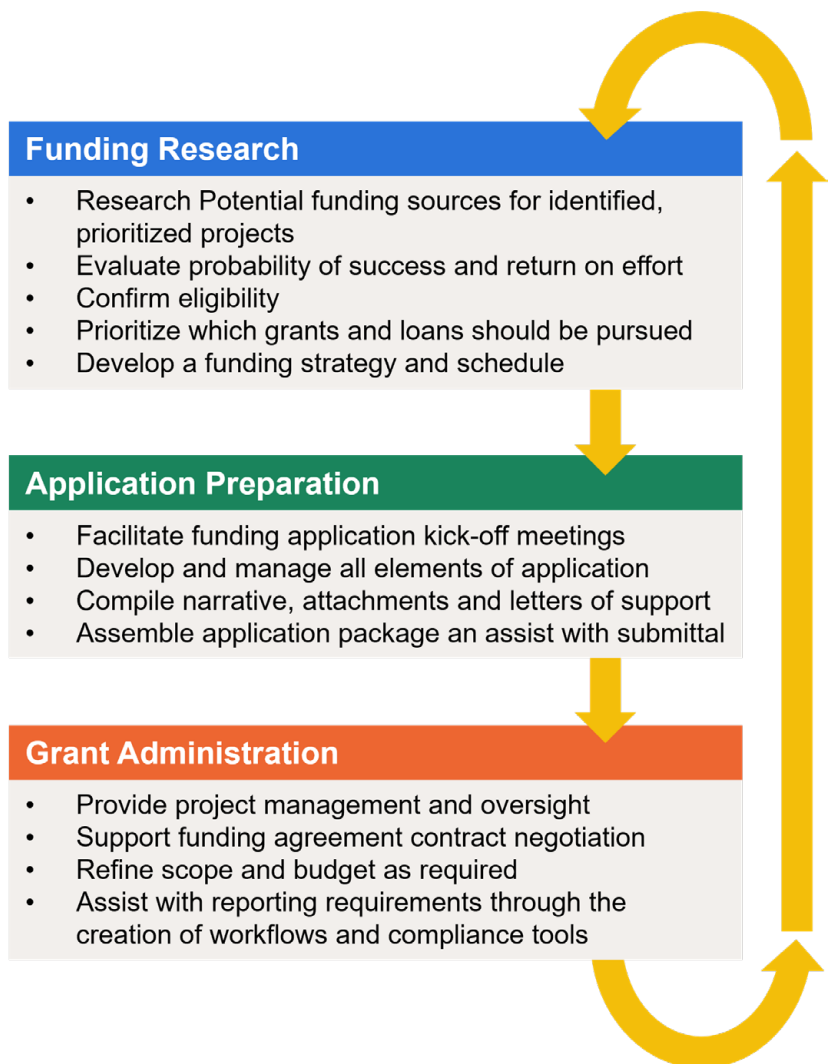
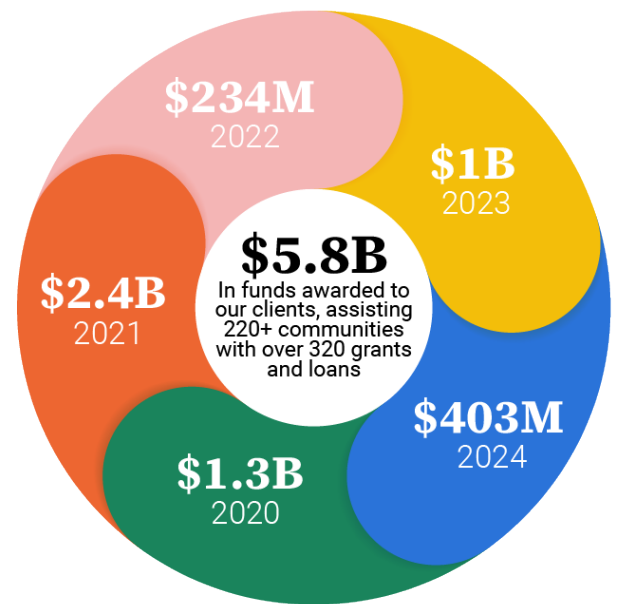
Our approach is rooted in proactive engagement, tailored messaging, and data-driven strategies to ensure that all stakeholders—residents, business owners, and public officials—are heard and kept informed throughout the lifecycle of capital and asset management projects. From our work across South Florida, we understand the importance of aligning messaging with the goals of resilience, equity, and long-term sustainability.

18. Grant Coordination, Including Preparation of Grant Applications and Deliverables

Securing essential funding is often the critical hurdle in transforming visionary projects into tangible realities. Stantec's North America Funding Program (NAFP) provides the City with a strategic advantage in this competitive landscape. Our **dedicated team of over 250 funding specialists, has a proven track record of securing over \$8 billion in funding across more than 100 funding programs**, from \$10,000 to over \$1 billion, for projects small and large. We demystify the funding process, from initial research and strategy to expert application preparation and rigorous grant administration, ensuring your projects are positioned for maximum funding success and long-term sustainability. The graph shows the distribution of the \$5.8 billion in total awards we secured for clients since 2019. We believe every dollar counts in seeing projects to completion.

Led by **Emily Snyder**, our Stantec team will begin connecting our funding specialists to our account managers who have clients with funding needs. Through the program, our funding specialists help our clients in three stages: **research and strategy, application preparation, and grant administration**. The adjacent figure illustrates the grant lifecycle, highlighting each stage of the process and our approach on how we identify the right grant resources; manage and prepare an application through approvals and submission; and assist with any grant agency coordination.

Stantec is one of the first substantial design firms to offer funding support as part of its services, and we work with both new and existing clients to help them reach their goals. From securing low-interest loans to facilitating government grants, the NAFP has saved clients millions of dollars and become a trusted partner in community development and transformational projects.



19. Field Inspections

The Stantec team includes a construction administration division fully staffed with knowledgeable inspectors experienced in all types of municipal projects. **Marc Lean** will lead the field inspection planning, scheduling, implementation, and reporting. This experienced group includes inspectors on projects ranging from small drainage systems, to larger pump stations, to collection and distribution systems, to HDD installations under canals and roadways. Additionally, we have building facility inspectors including licensed threshold and masonry inspectors. Stantec will provide municipal inspections of water, sewer, stormwater and roadway inspection and will supplement the field inspectors and building facility inspectors with Craig A. Smith and Associates (CAS), who has specialized expertise in surveying and utility locates.

All of our inspectors, and many of our engineers have special certifications for different trades or systems, and we assign these individuals to a project when needed. These include **structural, electrical, mechanical, LEED, pavement, maintenance of traffic**. Many of our staff have special OSHA training, including for confined spaces.

20. Geotechnical Engineering & Testing

Stantec's geotechnical services for the additional scope will be led by **RADISE International (RADISE)**. RADISE offers a full suite of geotechnical engineering services designed to support the planning, design, and construction of infrastructure projects. Project examples include the **design and evaluation of shallow and deep foundations, pavement systems, and retaining structures such as sheet piles, mechanically stabilized earth (MSE) walls, and gravity walls**. RADISE conducts slope stability analyses, erosion protection assessments, and bridge hydraulics and scour evaluations. Services also extend to settlement analysis, site suitability studies, groundwater seepage and hydrogeology assessments, groundwater flow modeling, and stormwater design assistance. Additionally, the team offers retention pond and sheet pile analysis, drilled shaft and pile driving evaluations, and Pile Integrity Testing (PIT).

Wherever infrastructure assets make contact with the ground, our team provides clarity, precision, and engineering insight to support safe, resilient, and cost-effective design and maintenance decisions. Through a combination of field investigations, laboratory testing, and data interpretation, Radise will help assess subsurface conditions that affect the performance of roadways, bridges, seawalls, and buried utilities.

Our work informs key asset management components such as condition assessment, risk modeling, and criticality scoring, ensuring that asset renewal and rehabilitation strategies account for geotechnical realities. We support the City in developing long-term plans that minimize risk, prevent structural failures, and enhance service reliability.

21. Historic Preservation

Historic preservation support will be led by **Lucy Jones**, a recognized expert in the protection, evaluation, and stewardship of culturally significant infrastructure and buildings. Lucy brings deep experience navigating the complexities of historic designation, regulatory compliance, adaptive reuse, and integration of preservation standards within modern infrastructure programs. An example of the work that Lucy's team can provide is exemplified by the project that Stantec led for the **Opa-locka Downtown Master Plan**, which includes a strong emphasis on historic preservation. The plan outlined a 10-year vision to transform the city's downtown into a vibrant, livable, and economically resilient area. Historic preservation was a central pillar of the plan, integrated alongside housing development, green space expansion, mobility improvements, and economic development. The strategy identifies key historic structures and districts for protection and adaptive reuse, helping the city's historic preservation.

Under her leadership, our team will assist the City of Fort Lauderdale in identifying and managing historic assets within the broader asset portfolio. This includes supporting the development of **preservation-sensitive asset management strategies, performing condition assessments that align with preservation standards, and advising on appropriate maintenance or operational practices that ensure regulatory compliance without compromising historical integrity**. Lucy will ensure that the City's asset management planning fully incorporates considerations for National Register properties, local landmarks, and other assets subject to preservation review. Her guidance will help balance operational functionality with cultural and architectural significance, ensuring the City's heritage assets are thoughtfully maintained and responsibly integrated into long-term infrastructure

22. Environmental Engineering

Lead by **Brooke Wolf**, Stantec's environmental team provides a wide array of expertise in the areas of natural, physical, and socio-economic impact analysis, documentation and mitigatory solutions. Our staff have well established reputations and are respected within the environmental regulatory community for the highest quality of work and responsiveness. Our capabilities are based on solid education, experience, and understanding of the need to balance development and the preservation of the environment.

Our Environmental Services of interest to the City include **Field Investigations, Environmental Reports, and Regulatory Permits. Field Investigations can cover Seagrass, Mangroves and Freshwater Emergents.** Other environmental investigations and reports include:

- Water Quality Studies
- Hardwood Hammocks
- Pineland Communities
- Threatened/Endangered Species Testing & Analysis/ Biological Assessments
- Contamination Assessment/Reports (Liability, Phase I and II Audits)
- Air Quality Evaluation/Reports
- Noise Study Assessments/Reports
- Socio-Economic Demographic Analysis
- Environmental Assessments
- Environmental Impact Statements
- Categorical Exclusions
- Re-evaluations
- Essential Fish Habitat

Our wide-ranging capabilities can help the City meet any environmental challenge that it may be faced with. Environmental permitting can be a confusing and complicated resulting in project delays or cancellation of necessary projects. Stantec experienced staff can help the City navigate through the process and offer solutions and accurate permitting timelines to successfully complete projects. Our permitting experience includes **Wetland Jurisdictional Determination, Florida Department of Environmental Protection (FDEP), South Florida Water Management District (SFWMD), U.S. Army Corps of Engineers (USACE), Wetland Impact Assessment + Functional Analysis, UMAM, WRAP / WATER, Mitigation Assessments, and Permit Compliance Monitoring.**

Our familiarity with agency staff is what sets us apart from most firms and allows us to arrange for more frequent face to face meetings prior to submission of applications, thus reducing agency RAI's and rejection of design. In fact, it should be noted that Stantec has a number of staff in South Florida that have worked for many of the agencies and can provide even more insight into the permitting scenario.

23. Landscape Architecture

Stantec's landscape architecture services for the additional scope will be led by **Kevin Mangan**, who brings a strong background in the design and delivery of landscaping enhancements that balance environmental function with community value. Through analysis, planning, and design, Kevin and his team create inspired landscapes that reflect local context, user needs, and long-term stewardship goals. An example of the work that the team has led includes the design of **Coachman Park**. The \$84 million project for the 24-acre urban waterfront redevelopment officially opened in June 2023 and now serves as a vibrant community destination, offering a wide range of amenities and public spaces that connect the downtown core to the Intracoastal Waterway. Key features include the Civic Gateway Plaza, which provides a welcoming entrance to the park and links it seamlessly with downtown, and the Bay Walk promenade, offering scenic views and pedestrian access along the waterfront.

Whether revitalizing an urban park, enhancing a waterfront corridor, restoring ecological assets, or integrating green infrastructure into transportation corridors, our landscape architects make meaningful contributions to community livability, environmental resilience, and spatial quality. We **transform physical constraints into design opportunities, helping clients navigate complex project conditions while advancing functionality, accessibility, and sustainability.**

Our work spans the full life-cycle—from concept development through construction documentation and implementation—and is rooted in creating spaces that are economically viable and environmentally responsible. We work collaboratively with engineers, planners, and stakeholders to ensure that open space elements complement larger infrastructure goals, particularly within the asset management context.

24. Marine Engineering

Led by **Matt Starr**, Stantec will bring deep experience in marine engineering, with a strong track record supporting municipalities across Florida. Our capabilities span living shorelines, tidal mitigation, erosion control, modeling, breakwater and beach nourishment design, hydrographic surveying, permitting at both state and federal levels, dredging, ecological assessments, and disaster response. We also manage the full project lifecycle, from bid documentation and contractor procurement to construction oversight. Our work with clients such as the **City of Miami Beach and counties including Monroe, Palm Beach, Santa Rosa, and St. Lucie** has equipped us with valuable operational insights that will directly benefit the City of Fort Lauderdale. Marine engineering is a core strength of our team, and our commitment to Fort Lauderdale is unwavering. A recent example of this dedication is our study for the **Broward County Convention Center**, which included an extreme wind wave analysis and resulted in actionable recommendations to reduce storm surge risks and protect critical infrastructure.

25. Mechanical Engineering

Led by **Jeovanni Ayala-Lugo** Stantec's mechanical engineering team will deliver innovative, efficient, and sustainable solutions for the city. Our engineers bring deep technical expertise and a collaborative approach to designing systems that enhance building performance, occupant comfort, and long-term operational efficiency. Whether working on new construction, renovations, or complex retrofits, we integrate seamlessly with multidisciplinary teams to deliver coordinated, cost-effective designs. Our professionals work with **state-of-the-art software such as REVIT and Arcsys 3D which allows for 3D modeling and better conflict detection and resolution capabilities**. Their local knowledge of the Florida Building Code and local Land Development Codes allows our team to work more efficiently. Stantec's local services include HVAC system design, energy modeling, thermal comfort analysis, plumbing and piping systems, and building automation and controls.

Instrumentation and Controls (I/C) design plays a significant part in our work and our Deerfield Beach office supports many large-scale projects locally and throughout the Country. On a grand scale, Stantec was the Designer of Record for the **PCCP Pump Station in New Orleans, LA**, which handles over 24,300 CFS to help drain the City canal systems. Locally, this was most evident in our design work for the new **Basin D2 Pump Station project for the Town of Palm Beach**. As part of that project, the control building for the pump station was created from an old park maintenance building about 400 LF from the actual outfall for the pump station. The doors and windows were upgraded to meet Hurricane Code and new generators, fuel tanks and controls systems were installed. The old pump station at the Lake Worth lagoon was converted into an outfall control structure and the main structure was demolished to create a low profile affect. A large below-ground wet well was installed near the control structure to house the four storm water pumps which discharged water to the lagoon through three medium size diameter pipes (30") so that adequate clear cover could be attained beneath North Lake Way.

26. Planning Services

Stantec's planning support for this effort will be led by **Matt Lewis**, who brings proven experience in land use, infrastructure, and environmental planning at both the policy and project levels. Matt and his team provide strategic guidance to help municipalities like Fort Lauderdale integrate asset management long-range planning and capital program alignment. A major key to sustainable and cost-effective infrastructure delivery is making sound planning-stage decisions that mitigate long-term risks. Our **planning team specialize in comprehensive feasibility studies, conceptual engineering, and regulatory assessments that evaluate a project's potential for success across technical, environmental, and financial dimensions**. We help clients chart a clear and data-driven path forward, whether updating master plans, aligning investments with growth scenarios, or evaluating policy impacts on infrastructure needs.

Stantec played a key role in developing the **Palmer Ranch Master Plan, a long-term initiative guiding sustainable growth in a large mixed-use community in Sarasota County**. The plan integrates land use, transportation, environmental preservation, and community amenities to promote a balanced, livable environment. Stantec collaborated with local stakeholders and agencies to ensure alignment with regional goals, conducting land use analysis, infrastructure planning, and environmental assessments. With a focus on preserving natural resources and enhancing mobility, the project showcases Stantec's ability to deliver comprehensive planning solutions that support smart growth and long-term community resilience.

27. Traffic Engineering

Stantec's traffic engineering team, led by **Christian Kline**, delivers smart, practical mobility solutions focused on safety and efficiency. As part of the asset management program for the City of Fort Lauderdale, their role includes assessing the performance, condition, and maintenance of roadway and traffic control infrastructure. Using advanced modeling tools, the team analyzes signal timing, roadway geometry, and access management to reduce congestion and support multimodal growth. A key example is the **Underline Extension (Phases 3–9) in Miami-Dade, where Stantec is providing civil and traffic engineering services** to enhance safety and connectivity for pedestrians and cyclists, including intersection improvements and crash countermeasures to promote safer, more active travel options.

Our traffic engineering SMEs analyze current and future levels of service, considering demand shifts, network constraints, and evolving transportation behaviors. This includes examining how roadway and intersection assets perform under varying conditions, and identifying improvement strategies that extend asset life and enhance user experience. Their insights will feed directly into asset criticality scoring and risk assessments, supporting performance-based investment planning. We emphasize **adaptive reuse and retooling of existing infrastructure** where feasible, ensuring that the City achieves mobility improvements without unnecessary capital expenditures. Through collaborative design processes, including **public workshops, interactive simulations, and animated concept plans**, our traffic engineers facilitate transparent, community-informed decisions that align with neighborhood priorities and sustainability goals.

28. Project Management

Led by **James Hale**, our team will provide comprehensive program and project management services to City across various markets, including stormwater, water, wastewater, roadways, seawalls, and bridges. Our approach focuses on achieving predictable and successful project outcomes by integrating business, technical, and project management experts into your teams. Key aspects of Stantec's project management work include:

- **Comprehensive Project Lifecycle Management:** Stantec manages projects from inception through to handover and operations, covering strategy, planning, implementation, management, operational readiness, and control solutions.
- **Proactive Risk Mitigation:** Our creative and collaborative planning and controls approach aims to prevent problems from the start and provide early warnings for potential issues.
- **Technical Expertise:** With a large staff of technical experts across various disciplines, Stantec is uniquely qualified to provide project and construction management services that incorporate technical insight throughout the project lifecycle, including planning, technical studies, design, and quality management.
- **Technology and Continuous Improvement:** Stantec invests in technology, including integrated systems and digital tools, to support project teams with analytics, consistency, planning, scheduling, and performance workflows for continuous improvement.

Our team has a **scalable project management framework** that outlines expectations for project managers, promotes a disciplined delivery method, and supports compliance with ISO 9001:2015, ISO 45001:2018, and ISO 14001:2015 certifications. This **framework includes mandatory requirements, risk management, and quality delivery guidelines**. The project management for this Asset Management and Data Collection Program will be led by James Hale. James will lead using industry best practices and Stantec's Project Management Framework, which aligns with ISO 9001 standards. The project management framework is outlined at the beginning of Section 3 and provides the key tasks across four stages – Initiate, Plan, Control, and Close-Out – to manage risk and maintain quality throughout the project.

29. Project Staff Extension

Stantec provides project staff extension services where **our experts integrate directly into a client's team to fill specific skill gaps, provide specialized expertise, or increase project capacity**. This approach is a key part of Stantec's Project, Program, and Construction Management (PMCM) offerings and includes augmenting existing staff where Stantec staff become an extension of your own staff. We can embed professionals, whether project managers, engineers, scientists, or other technical specialists, directly into your team. Coordinated through our Project Manager **James Hale**, Stantec can provide staff who will provide flexible and scalable solutions to keep projects aligned with objectives and enhance predictable outcomes.

30. Computerized Stormwater Visualization Tools

Stantec brings industry-leading expertise in computerized stormwater visualization tools that transform raw infrastructure and environmental data into real-time, actionable insights. Led by **Tim Berggren**, our subject matter experts specialize in blending advanced analytics, digital visualization, and big data processing to support proactive stormwater management and long-range planning. By leveraging technologies such as digital twins, machine learning, AI, and live sensor feeds, our team helps municipalities like Fort Lauderdale gain greater visibility into system behavior, vulnerabilities, and performance outcomes. An example of the work our team can do is the **Hallandale Beach Sea Level Rise and Critical Infrastructure Analysis where the City of Hallandale Beach pursued a Florida Resilient Coastlines grant to determine the effects of sea level rise, storm surge, and flooding on their stormwater system and other infrastructure assets**. The City engaged us to assist in proactively identifying the effects of sea-level rise on their community, with the understanding that adverse impacts of sea-level rise pose economic, social, environmental, and public health and safety challenges. Stantec's vulnerability assessment measured the city's at-risk critical assets and infrastructure, considering stormwater infrastructure as well as public works and public utility infrastructure. Completing a physical survey of the entire city, Stantec collected invert elevation and asset location along with material data and developed a GIS bathtub model to create the assessment, which assisted in the development of a statewide standard process for vulnerability assessment. Our findings prompted the community to develop a watershed management plan, incorporating sea level rise and extreme rainfall data, and helped determine projects for future funding to address identified deficiencies.

Our approach starts by integrating diverse data sources—ranging from CCTV footage, mobile inspections, and flow meters to satellite imagery and smart sensors—into interactive models and dynamic dashboards. These tools simulate system responses to rainfall events, high tides, and other stressors in real time, enabling the City to assess stormwater capacity, flooding risk, and infrastructure resilience under various future scenarios. In addition to modeling and simulation, our team ensures **data governance and transparency** are built into every visualization platform, supporting accurate reporting and regulatory compliance. We tailor our solutions to each client's needs, whether by enhancing existing GIS-based tools or implementing custom-built platforms for predictive analytics and performance monitoring. With extensive experience supporting municipal clients in building **resilient, data-driven, and equitable communities**, our stormwater visualization experts will empower City staff to make smarter, faster decisions. These digital tools will also play a vital role in public engagement, offering clear, visual communication of complex data to residents and stakeholders.

31. Value, Risk, and Benefit to Cost Business Case Analysis

Stantec's additional scope for value, risk, and benefit-to-cost business case analysis will be led by **Erin McLachlan Sanchez**, who is a specialist in infrastructure economics and decision-support frameworks. Erin will collaborate with **Scott Bash**, the Asset Criticality and Risk Management Lead, and our team to **apply internationally recognized frameworks and public sector business case evaluation models to quantify the value of infrastructure investments over their full life-cycle**. This includes risk-adjusted cost projections, criticality-weighted prioritization, and benefit-cost modeling that considers economic, social, environmental, and technical impacts.

The Tottenville Shoreline Protection Project in Staten Island, New York, showcases an innovative use of Benefit-Cost Analysis (BCA) to enhance climate resilience and community value. Aiming to protect 5,700 linear feet of eroding shoreline, Stantec applied a triple bottom line approach—evaluating economic, environmental, and social outcomes—to shape a hybrid design of nature-based and engineered solutions. The project prioritized social resilience through ADA-compliant trails, public gathering areas, and educational features, while improving shoreline access and inclusivity. Engineered elements reduced wave impacts and accommodated sea level rise, complemented by natural features like swales and vegetated buffers for erosion and flood mitigation. Tottenville serves as a model for integrating risk reduction, sustainability, and community engagement into resilient coastal infrastructure.

Our team will leverage the work Stantec has completed in the past to collaborate with City staff to develop configurable evaluation tools that align with Fort Lauderdale's unique goals, regulatory requirements, and budget constraints. Whether guiding renewal prioritization, comparing capital scenarios, or preparing funding justifications, our analysis will be grounded in transparent criteria and aligned with performance objectives aligned with the goals of Press Play Fort Lauderdale: Our City, Our Strategic Plan 2029.

A nighttime photograph of a coastal cityscape. In the background, several high-rise buildings are illuminated against a dark, cloudy sky. The middle ground shows a residential area with houses and palm trees, some of which are lit up. In the foreground, there is a waterfront area with a dock, a building, and more palm trees. A large blue circular graphic is overlaid on the right side of the image, containing the text '4. References' in white.

4. References

REFERENCES

A minimum of three (3) references shall be provided:

1. Company Name: Palm Beach County Water Utilities Department

301 North Olive Avenue, West Palm Beach, FL 33401

Address:

Contact: Melody Laven

Phone #: 561-493-6211

Email: mqlaven@pbcwater.com

Contract Value: \$700,000

Year: 2017-Present

With Stantec's support Palm Beach County Water Utilities Department (PBCWUD) became the first North American water utility to achieve ISO 55001 certification, recognizing its excellence in asset management. Since 2016 Stantec has worked with PBCWUD to implement a robust, people-driven system to manage \$4.6 billion in assets, improve efficiency, reduce risks, and enhance service. The certification reflects PBCWUD's ongoing commitment to sustainability, operational excellence, and industry leadership.

Description:

2. Company Name: Pinellas County Utilities

14 South Fort Harrison Ave, Clearwater, FL 33769

Address:

Contact: Shane Gendron

Phone #: (727) 582-2385

Email: SGendron@pinellas.gov

Contract Value: \$530,000

Year: 2021-Present

Stantec partnered with Pinellas County Utilities (PCU) to develop a Sewer Collection System Asset Management Plan using GIS as the central system for managing asset risk. Through a comprehensive Business Risk Exposure (BRE) analysis, Stantec helped PCU integrate key asset data to prioritize capital improvements and optimize investments. The effort aligned input from multiple departments, improved data quality, and enhanced GIS capabilities. The approach successfully identified high-risk assets—one of which later failed—validating the model. PCU now uses this GIS-based BRE system as the foundation for future planning and investment decisions.

Description:

3. Company Name: Fairfax County Maintenance & Stormwater Management Division

12000 Government Center Parkway, Fairfax, Virginia
22035

Address:

Contact: Karlee Copeland

Phone #: 703-324-3151

Email: karlee.copeland@fairfaxcounty.gov

Contract Value: \$36,000

Year: 2024

In 2024, Stantec delivered and proctored the Institute of Asset Management (IAM) Certificate Training and Exam for Fairfax County's Maintenance & Stormwater Management Division (MSMD). The training, aligned with ISO 55000 and the IAM framework, covered five core asset management modules using a mix of theory, practical exercises, and real-world examples. This initiative supported Fairfax County's commitment to advancing its asset management practices, with Stantec leveraging its global expertise to enhance staff knowledge and professional development in infrastructure management.

Description:

4. **Company Name:** City of Lorain Utilities Department

1106 W 1st St, Lorain, OH 44052

Address:

Contact: Joseph Carbonaro

Phone #: 440-205-242-8657

Email: Joseph_Carbonaro@cityoflorain.org

Contract Value: \$350,000

Year: 2022-Present

Description:

Stantec partnered with Lorain's Utilities Department to develop a risk-based decision support system (DSS) that improved asset prioritization, maintenance, and capital planning for water, wastewater, and stormwater systems. Using the Cityworks platform, the project implemented asset management (AM) practices, defined service levels, established KPIs, and developed a Business Risk Exposure (BRE) system. Initial efforts focused on asset risk management by analyzing engineering and operations data to assess the likelihood and consequence of failure, helping the City align repair and replacement decisions with strategic goals and reduce service disruptions.

5. **Company Name:** District of Columbia Water & Sewer Authority

1385 Canal St. SE, Washington, DC 20003

Address:

Contact: Salil Kharkar

Phone #: (202) 812-0013

Email: skharkar@dcwater.com

Contract Value: \$4,500,000

Year: 2022-Present

Description:

DC Water engaged Stantec to lead a strategic, multi-phased implementation of the Cityworks (Trimble Unity) Asset Management System (AMS), aiming to modernize the management of both linear and vertical assets across the utility. Recognizing the limitations of existing legacy systems and the growing need for a centralized, data-driven solution, DC Water sought Stantec's expertise to guide the transition to a robust, integrated, and GIS-centric asset management platform. This initiative supports DC Water's long-term vision of enhancing asset reliability, improving operational performance, and enabling proactive decision-making.

An aerial photograph of a city skyline, featuring various high-rise buildings, some under construction with cranes, and a mix of residential and commercial structures. A large, semi-transparent blue circle is overlaid on the right side of the image, containing the text '5. M/WBE Participation' in white. The sky is blue with scattered white clouds.

5. M/WBE Participation

5. M/WBE Participation

Stantec is not certified as a minority or disadvantaged business entity. We recognize the value of services that qualified minority business firms offer. We actively seek the meaningful participation of disadvantaged, minority- and woman-owned business enterprises on our contracts. We consistently meet and often exceed participation targets when our clients require them. In fact, in many cases, Stantec seeks out specific minority partners that we know deliver high-quality work and service, regardless of whether there are minority goals in place.

We have added Radise International, LC to our team to provide geotechnical services. Radise holds many certifications including State of Florida M/WBE, FDOT DBE, and South Florida Water Management District SBE, all of which are documented in the 1.5 Licensing Requirements package uploaded to the City's bidsite.





6. Subcontractors

6. Subcontractors

To strengthen our team's capabilities and deepen our connection to the local community, Stantec has strategically partnered with three well-established South Florida firms: RADISE International (RADISE), Craig A. Smith & Associates (CSA), Brizaga and EnviroWaste Services Group. Each firm contributes valuable local experience, technical expertise, and a strong understanding of regional regulations, permitting processes, and environmental considerations. These partnerships enhance our ability to deliver comprehensive, context-sensitive solutions tailored to the specific needs of the City.

RADISE International

Founded in 1997, RADISE International, LC (RADISE) is a premier geotechnical and materials engineering and testing firm servicing a broad spectrum of industries, and specializing in geotechnical engineering, construction materials testing, and inspection services for over 26 years. RADISE has extensive experience providing professional engineering services throughout South Florida and has continuing Geotechnical Engineering Services and Material Testing contracts with Broward, Palm Beach and Miami Dade Counties, United States Army Corps of Engineers, South Florida Water Management District, Florida Department of Transportation, The School Boards of Palm Beach, Broward and Miami Dade Counties, and the Cities of West Palm Beach, Lake Worth, Greenacres, Fort Lauderdale and Miami Beach.

A minority owned business certified in the State of Florida DOT DBE, RADISE is a committed, professional, and cost-effective service provider, dedicated to providing the highest performance and ultimate in customer service. Regardless of the scale of the project, RADISE will develop a practical approach to successfully achieve client goals on schedule and within budget.



Contact:

Nitesh Goli, PE

Address:

4152 W Blue Heron Blvd
Suite 1114
Riviera Beach, FL 33404

Phone: (561) 841-0103

www.RADISE.com

Project Role:

Geotechnical Engineering & Testing

Brizaga, Inc.

Brizaga, Inc. (Brizaga) is a strategic consulting firm built to solve complex problems by leveraging science, communications, engineering, and policy. Brizaga's clients include private property owners, businesses, not-for-profit organizations, developers, and local governments. Brizaga's team works to plan for and address the impacts of rising seas, more frequent flooding, and a changing environment on property, infrastructure, community, and the local economy. Brizaga brings a unique perspective meshing physical science, engineering design, public policy and community engagement to create innovative and practical solutions in the face of more frequent flooding, rising tides, and a changing environment.



Contact:

Alec Bogdanoff, PhD

Address:

2101 W. Commerical Blvd.
Suite 4600
Fort Lauderdale, FL 33309

Phone: (954) 834-3533

www.Brizaga.com

Project Role:

Community Outreach & Engagement

Craig A. Smith & Associates

Established in 1980, Craig A. Smith and Associates (CAS) is a full service civil engineering practice with specialized expertise in engineering, surveying and mapping, construction management, utility locates and CAD design and development. CAS is a certified small business enterprise firm with Palm Beach County, City of West Palm Beach, and the South Florida Water Management District.

CAS is one of the oldest and well respected surveying firms in South Florida and provides complete land surveying services. Our surveying staff is comprised of licensed land surveyors who adhere to strict standards and give special attention to accuracy and detail. CAS utilizes the most modern electronic measurement equipment. Quality control measures are also implemented daily to ensure that our clients receive the highest quality service. CAS surveying services include:

- Mapping & Platting
- Boundary & Acreage Surveys
- Land Description Preparation
- Construction Surveys
- GPS Mapping
- Route Surveys
- Canal Cross-Sections
- Highway Construction Surveys
- Quantity Surveys
- Accident Surveys
- As-Built Certifications
- Mean High Water Surveys
- Aerial Drone Surveys



Contact:

Robert Keener

Address:

1425 E. Newport Center Drive
Deerfield Beach, FL 33442

Phone: (561) 314-4445

www.CraigASmith.com

Project Role:

Surveying & Utilities Locate

EnviroWaste Services Group

EnviroWaste Services Group, Inc. (EWSG) was formed in 1998 and is one of the leading sewer, water, and stormwater inspection and rehabilitation service companies in the Southeast. With Florida offices in Fort Lauderdale, Miami, Orlando, and Tampa, our full-service offering, state-of-the-art expertise, and unparalleled service provide you peace of mind the project will be completed efficiently and effectively. We use the most advanced industry technology and techniques in the areas of pipe bursting, slip lining, and pipeline video inspections. EWSG is uniquely positioned to deliver the required services for the Town of Malabar due to our extensive experience, specialized expertise, and commitment to environmental stewardship. With over 26 years in the field of municipal infrastructure maintenance, we have developed a robust framework for effectively inspecting and cleaning stormwater systems, including culverts, drains, and catch basins.

EnviroWaste Services Group has one of the largest fleets in the industry, with over 220 employees, 53 jet vacs, 25 CCTV inspection trucks, 30 vacuum pump trucks, and 8 industrial vacuum trucks to service our customers in a timely and responsive manner. Our regional presence allows us to efficiently and effectively respond to our clients' requirements through allocating resources among multiple locations as may be required. We start sooner, work smarter, and finish stronger, saving our clients both time and money.



Contact:

Mike Rothenberg

Address:

4595 Oakes Road
Davie, FL 33314

Phone: (305) 481-7135

www.Brizaga.com

Project Role:

CCTV



7.

Appendix

Project Team Resumes



Andrew Burnham

Principal In Charge | Tampa, Florida

Relevant Experience

Enterprise Fund Sustainability Model | City of Fort Lauderdale | Fort Lauderdale, Florida | Project Director

Andy served as project director for an integrated ten-year financial sustainability model of utility enterprise funds and airport, building, and parking special funds. The goal was to determine the current and projected financial condition of the City over a ten-year projection period and develop strategies to ensure financial sustainability that included cost reduction/containment measures and revenue diversification/enhancements. Where interfund transactions occur, the individual models are linked to reflect the flow of funds from and to each fund. The annual comprehensive financial sustainability analysis for the parking fund included the City's long-term plan for adequate parking supply and considered citizenry pricing sensitivity. The annual comprehensive financial sustainability analysis of the airport fund ensures it meets ongoing obligations such as budgeted operating expenses, capital improvements, existing debt service, and minimum reserve targets. The analysis incorporated contractual limitations of non-aviation revenues and the dynamics of FAA and FDOT grant funding for aviation improvement projects.

Water, Sewer, and Reclaimed Water Consulting Services | JEA | Jacksonville, Florida | Project Manager

Andy has led a wide range of financial advisory and consulting services. These have included developing an understanding of the business organization forms being applied to the sewer business and industry practices for converting septic tanks to central sewer service; identifying the costs associated with treating landfill leachate from the City of Jacksonville; supporting evaluation and negotiation of the terms of service for new development on a wholesale basis; evaluating repair and rehabilitation funding levels, unit costing, and development of capacity charges; and conducting a comprehensive cost of service and rate design study using detailed data and granular approaches.

Sustainable Rate Structure Analysis | NYC DEP | New York, New York | Project Director

Provided guidance and direction to the team in regards to i) an in-depth comparative analysis of rate structures in other cities, ii) modeling of DEP's water, sewer, and stormwater revenue requirements over a 20-year period, iii) development and evaluation of sustainable rate structure options for DEP, iv) creation of potential implementation plans, and v) demonstration of customer impact analysis and affordability. Some of the rate structure options included the addition of a fixed charge for water and sewer service, the addition of a stormwater fee based on impervious service to fund DEP's cost of stormwater management, the addition of system development fees, and evaluation of low-income rate structures to address customer affordability.

Report: Innovative Model for Water Pricing Equity | US Water Alliance | Senior Advisor

Andy served as the Senior Advisor on a report authored with the US Water Alliance and our partners in Cincinnati and Milwaukee, that outlined a cost-based approach to pricing water by moving costs from usage-based rates to charges based on a customer's property characteristics. We determined that property value was the most effective in achieving more equitable outcomes than the current utility pricing model. These methods could have the added benefit of increasing the proportion of fixed revenue while simultaneously addressing affordability concerns, potentially meeting multiple utility objectives.

Water and Wastewater Cost of Service Study | City of Cleveland | Cleveland, Ohio | Project Director

Andy oversaw all work completed during this comprehensive cost of service and rate study for the City's water and wastewater utilities. He provided guidance relative to developing alternative 10-year financial management plans, reserve policies, and capital funding strategies. Andy also directed the completion of benchmarking activities relative to infrastructure spending for underground assets.

Education:

BA of Business Administration, Lake Superior State University, Sault Ste. Marie, MI, 2000

Overview:

As Vice President and Leader of Management and Technology Consulting at Stantec, Andy brings extensive experience conducting and overseeing cost of service allocations, financial planning analyses, and feasibility studies. His expertise includes rate studies, capital funding optimization, economic impact analysis, affordability analysis, business case evaluation, life-cycle and replacement cost analysis, benchmarking, as well as technology planning and implementation. In the past five years alone, Andy has been involved with more than 500 studies for more than 150 local governments and supported clients in the issuance of more than \$4 billion of debt financing for projects. Andy is actively involved in multiple industry groups and recently served as a contributing author in the latest edition of AWWA Manual M1 – Principles of Water Rates, Fees and Charges.

23
Years of Experience

Andrew Burnham

Memberships:

Rates and Charges Committee, American Water Works Association

Financial Accounting & Management Controls Committee, American Water Works Association

Member, Florida Section, Government Finance Officers Association

Member, Utility Resource Management Committee, The National Association of Clean Water Agencies

Management Committee, Water Environment Federation

Trustee of the Management & Leadership Division, American Water Works Association

Publications & Whitepapers:

Balancing Storm Water Management Costs with Citizen Engagement. *Storm Water Solutions*, 2020.

Water Reuse Cost Allocations and Pricing Survey. *American Water Works Association*, 2019.

Refining Stormwater Rates and Improving Community Support. American Water Works Association Annual Conference & Exposition. *Las Vegas, NV*, 2018.

Happy Stakeholders, Equity, and Conservation Rates. American Water Works Association Annual Conference & Exposition. *Las Vegas, NV*, 2018.

Paying for Stormwater - Engaging the Community. American Public Works Association Annual Conference (PWX), *Orlando, FL*, 2017.

Comprehensive Stormwater Evaluation | City of Sacramento | Sacramento, California | Project Director

Andy served as project manager conducting a review of DOU's Storm Drainage Fund to provide an objective and independent evaluation of the fund's financial and operational sustainability. Stantec's scope of work includes an in-depth review of fiscal policies and procedures, financial benchmarking, valuation of the existing stormwater infrastructure, operational and financial gap analyses, and development of a long-term fiscal forecast of the Storm Drainage Fund. Additionally, Stantec developed a comprehensive set of potential funding options in addition to rate/fee increases to provide a comprehensive set of possible solutions to bridge the current funding gap. Through the financial benchmarking, and capital and operations review processes we were able to expand the City's current understanding of the existing funding needs and financial gaps. This process has yielded comprehensive findings encompassing additional operational and capital needs, level of service enhancements, projected expenditure efficiencies in budget execution rates, and defensible combined sewer system allocation approaches. Pairing these cost-based findings with the financial benchmarking analysis and long-term fiscal forecast has helped the City frame potential mitigation strategies to meet their true long-term funding needs in the most efficient manner possible.

Comprehensive Water, Sewer and Solid Waste Cost of Service and Rate Studies | City of Tempe | Tempe, Arizona | Project Manager

Andy managed ongoing Water and Sewer Rate Studies for the City. The studies include developing several alternative multi-year financial plans and corresponding annual rate adjustments. Also included was a detailed cost of service allocation analysis and rate design study, which resulted in adjustments recommendations to enhance specific linkages to cost of service and consider reasonable irrigation for larger lots sizes while continuing to provide affordability and conservation pricing for excessive use. Finally, the team participated in multiple special-purpose stakeholder meetings to educate the community regarding processes and new rate structures.

Strategic Rate Advisory Services | Department of Watershed Management | Atlanta, Georgia | Project Director

Provided guidance and direction regarding options that would diversify revenue streams, optimize funding sources, enhance customer equity, improve affordability, and provide for a long-term financially sustainable future after the expiration of a municipal optional sales tax. Guidance provided included identification of peers for an in-depth comparative analysis of rate structures, identification of strategic modifications to existing fees based on industry experience, a sequencing or phase-in plan for each of the modifications, and technical guidance for various rate calculations. Some of the options identified included increasing fixed charges applicable to larger meters, the addition of a stormwater fee based on impervious service to fund DWM's cost of stormwater management, the addition of capital cost recovery fees, creation of an additional tier for water pricing, rate indexing provisions, and evaluation customer assistance program enhancements.

Comprehensive Water & Sewer Rate Study | Rockville Maryland | Rockville, Maryland | Project Director

Andy directed a comprehensive water and sewer rate study for the City of Rockville, MD. Given the current utility service structure, the City faces the challenges of managing and communicating within a service area where next door neighbors pay different water bills based on the service provider. The study incorporated a full revenue sufficiency analysis which included the development of a multi-year plan of water and sewer rate revenue increases that would satisfy the annual operating, debt service, and capital costs of the utility, as well as the establishment and maintenance of adequate reserves. He helped develop recommended rate structures to conform the City's water and sewer rates to accepted industry practice and reflect a fair and equitable distribution of system costs while ensuring adequate fixed cost recovery, preserving affordability for low volume and average users, and providing a price incentive for water conservation from higher volume users.



James Hale, GISP

Project Manager | Jacksonville, Florida

Relevant Experience

City of Tamarac Enterprise Asset Management | City of Tamarac | Tamarac, FL | Project Manager

Served as the project lead to initiate improvements to the City's GIS. With the assistance of Stantec, rather than just implement a Computer Maintenance Management System (CMMS) for asset and work order management, the City took a holistic approach to first "true-up" their data, then to upgrade the GIS Enterprise, and then to implement a CMMS system. Before a robust system can be built, the first step was to ensure that the foundation was solid. The foundation of any system is the data that the system consumes and analyzes. Before the implementation of any CMMS, Tamarac made the sound decision to standardize their GIS data. With Stantec's coordination and leadership, Stantec was able to take the data that Tamarac was currently using as their authoritative source or record (multiple different file geodatabases, disparate spreadsheets and shapefiles, and first-hand knowledge), to perform an extensive Extract, Transform, and Load process to combine all sources of data, merge in an industry standard schema, and load. The final output was then evaluated with the client through a series of workshops to "fine-tune" each individual asset type, so that they included the industry standard schema, but also included any information specific to Tamarac's organization. Once the GIS data could be considered a single, authoritative source. Stantec then shifted to designing and implementing a state-of-the-art GIS Enterprise System.

City of Surprise Cityworks Implementation | City of Surprise | Surprise, AZ | Project Manager

Serving as the Project Manager and Cityworks Implementation Lead, James is leading efforts to develop the client's GIS to serve as the system of record for the asset inventory. The project will involve the full implementation of Cityworks for Streets and Traffic Assets. Integration with other platforms will include Stantec's RoadMatrix and Arizona BlueStake 811 Utility Locate service.

Wastewater Collection System Asset Management | Pinellas County Utilities | Clearwater, FL | Project Manager

James serves as the Project Manager for the development of an Asset Management Plan for the Wastewater Collection System. This Plan will include developing a Level of Service in which Business Risk Exposure will be measured against. Risk is being defined as Consequence of Failure x Likelihood of Failure. Services include refining the asset inventory in GIS while utilizing Cityworks and Cityworks Operational Insights to calculate risk.

Cityworks Asset Management System Implementation | Atlanta, GA | Technical Lead

James serves as the technical lead for the Cityworks implementation project. As part of the City of Atlanta's Department of Watershed Management (DWM) Strategic Plan 2022 initiatives, and to support its ongoing Smart Utility goals, the existing deployment of Infor (Hansen) asset management system was identified for system replacement. Hansen has been used for over 20 years for tracking and managing asset maintenance and repair activities for DWM's water and wastewater linear infrastructure. The DWM linear infrastructure is managed by the DWM Office of Linear Infrastructure Operations (OLIO). To better leverage their advanced GIS data and tools, DWM selected Cityworks as the new asset management system for OLIO. After implementation is complete, Cityworks will be the system of records for 100% of linear assets managed and maintained by OLIO and support DWM's goals for enterprise asset management. Stantec is working closely with OLIO and DWM's IT Department to implement Cityworks and its Storeroom solution. We are implementing Cityworks via the following major tasks: Perform GIS and data assessment, recommendations, and updates; review Hansen data assessment and data migration recommendations; and develop OLIO sewer collection and water distribution asset management process improvements with Cityworks.

Education:

BS, Geography, Appalachian State University, Boone, NC, US, 1999

Overview:

James has more than two decades experience in consulting on GIS system development and enterprise asset management deployment. Having developed complex GIS programs supporting both Computerized Maintenance Management System (CMMS) and GIS utility billing integrations, he has extensive knowledge in asset management principles, mobile GIS, workflow automation, and enterprise GIS. James is familiar a wide range of GIS technology projects ranging from asset management to impervious surface mapping to land use analysis to mobile data collection. Additionally, he has specialized experience leading GIS services for civil and environmental projects.

23
Years of Experience

James Hale

Registrations:

Certified Geographic Information Systems Professional (GISP) #28430, GIS Certification Institute, 2012/06/7

Memberships:

Member, American Water Works Association

Presentations:

Lorain's Cityworks Asset Management Journey.

Northeast Section of the Ohio Water Environment Association: Operations Seminar, 2024.

Knowing Your Assets by Leveraging Data. Association of Regional Water Associations: 2024 Summit, 2024.

Designing, Building, and Operating a Collaborative System for a Multi-Entity Team. Cityworks Innovate User Conference '24, 2024.

Embracing Asset Management for Improved Operations. Ohio Cityworks Regional User Conference 2024, 2024.

Connecting the Full Circle of Asset Life-cycle. Stantec Water Webinar, 2024.

Utilizing GIS to Enhance O&M within an Asset Management Program. Michigan Water Environment Association: Asset Management Seminar, 2022.

Cityworks Asset Management System Implementation | Lorain Department of Public Utilities | Lorain, OH | Project Manager

James served as the project manager and a technical lead during the asset management and Cityworks implementation for Lorain's Water, Sewer and Stormwater assets. This implementation included an asset risk assessment calculating the Business Risk Exposure of all assets within the inventory. Stantec migrated Lorain's GIS into the Utility Network asset package prior to the Cityworks implementation, setting the stage for the full Utility Network Implementation following the Cityworks implementation.

GIS Conversion of Record Drawings | City of Sarasota, FL | GIS Manager

James served as the GIS manager providing technology guidance and oversight of project strategy and execution. The City of Sarasota Utilities Department requires all contractors for utility construction projects to submit electronic AutoCAD files detailing the depth, location, and nature of the work performed. The City has historically archived this record drawing (aka as-built) information for utility pipeline system improvements, but has not had a means to convert this data into its existing GIS. The City retained Stantec to provide consulting services to gather and review the City's available backlog of record drawings and convert them to GIS. Stantec is also tasked to provide a template structure for future record drawing submittals to the City that will better allow for a seamless integration into GIS.

GIS Services for Utility Billing and Customer Service | Collier County | Collier County, FL | GIS Manager

Led a team providing the design and development of an ESRI geodatabase to house the GIS utility billing features. The geodatabase will be utilized by the County Utilities Department to maintain a single repository of data and support the future implementation of an enterprise asset management system. A web mapping application was developed to enable utility billing and customer service assistance with detailed account information. Stantec also provided training and technical assistance to the County.

Tiered Stormwater Utility and Impervious Layer Creation | City of St. Petersburg | St. Petersburg, FL | Project Manager/GIS Lead

James oversaw the implementation of a tiered stormwater utility system. His team employed supervised and unsupervised image classifiers to generate an impervious surface layer within the designated area of interest. Extracted classes such as grass, trees, parking lots, and bare earth were segmented, which served as training samples for creating the base impervious layer. The resulting data informed financial models for determining a fair and new tiered billing structure by grouping fees for most single-family homes based on square foot ranges. Additionally, the team developed an ArcGIS Online web application.

Los Alamos GIS System and Asset Management Upgrade | Santa Fe, New Mexico | Project Manager

Stantec assembled a team of GIS Analysts to provide Los Alamos County with the data updates and organization it desired before the implementation of Munis. Initially, the existing utility data was in disparate locations and formats. Stantec scrubbed the data and with the assistance of subject matter experts at the utility, created a GIS representation of the most current and accurate data. This data was then loaded into a schema that Stantec helped design with financial subject matter experts to create an integration between operations and financial accounting. Stantec then created linkages to CCTV sewer video data, customer billing data in legacy systems, and Tyler Munis. Stantec helped develop a methodology to apply capital install costs and useful life costs to help operations maintain and consistent asset valuation method with GASB 34 standards. Stantec developed user manuals, automated cost and asset condition reporting.

Utility Network Migration | Western Virginia Water Authority | Roanoke, VA | Technical Lead

Served as the Technical Lead in support of the migration of water and wastewater GIS geometric networks into the ArcGIS Utility Network. This effort was in support of a Central Square EAM implementation. James led workshops and helped design and implement the Utility Network Asset Package that would serve as the asset inventory for the new CMMS implementation.



Laith Alfaqih, PhD, PE, CRL, MIAM, SDRM

Senior Technical Advisor / AM Training & Education | Cincinnati, Ohio

Relevant Experience

Asset Management Improvement Program | Palm Beach County Water Utilities Department (PBCWUD) | West Palm Beach, FL | Principal

Led the documentation revision and mock auditing of Palm Beach County Water Utilities Department's (PBCWUD's) asset management improvement program, culminating in PBCWUD becoming the first water utility in North America to achieve ISO 55001 certification. Worked closely with PBCWUD staff to implement corrective actions and ensure that the organization was ready for ISO 55001 certification. Provided ongoing support and guidance throughout and after the certification process.

Fairfax County Asset Management Training and Journey Development | Fairfax, VA | Asset Management Lead

Develop and facilitate IAM Certificate Asset Management Training and facilitate an Institute of Asset Management (IAM) Certificate. Determine the level of asset management maturity, develop a roadmap to advance asset management capabilities, and secure quick wins in the development of the asset management policy, objectives, and communications plan. Develop MSMD's risk management framework for the asset portfolios, including developing levels of service (LOS), and develop a risk management visualization which will assist staff in understanding the geographical locations of the risks identified in the asset-risk analysis. In 2025, MSMD won OPA Award for Advancing Asset Management in Stormwater Infrastructure.

Utilities Kingston Asset Management Plan | Kingston, Canada | Asset Management Specialist

Led the comprehensive review and revision of the updated core Asset Management Plan (AMP) for Water and Wastewater and its non-core AMP for Natural Gas to comply with Ontario Regulation 588/17. This AMP update was crucial for ensuring the City's utilities operate effectively, efficiently, safely, and reliably. It enabled the City to meet service levels, manage life-cycle costs, and enhance asset performance and reliability over the long term.

Pinellas County Public Works, Stormwater AM | Pinellas County, FL | Asset Management Technical Lead

Reviewed the asset management plan, and conducted gap analysis based on the ISO 55000 IAM maturity assessment to evaluate and determine program gaps and needs. Developed a plan to address the needs.

Risk and Resilience Assessment and Emergency Response Plan (AWIA) | Asheville, NC | Asset Management Consultant

Worked with the City of Asheville's Water Resources Department to perform and certify a Risk and Resilience Assessment. The AWIA legislation provided an opportunity for Asheville to investigate vulnerabilities and implement solutions to better protect water security. This project included gathering the information needed to prioritize and rank the risks to complete the RRA and to provide an overall summary of system vulnerability. Used risk and resilience management to make defensible, business case-based decisions about how to better manage risk and become a more resilient, and therefore sustainable utility. The results guided County staff on how to mitigate, manage, and respond to vulnerabilities identified in the RRA. Additionally, the City's Water System Management Plan was updated to reflect current system information and the plans and policies developed during the project.

Jackson Water Asset Management | Jackson, MS | Asset Management Technical Lead

Assisted Jackson Water as part of a federal effort to address the ongoing water crisis that has plagued the city for years. Jackson has one of the oldest water systems in the nation, which has led to an unreliable water supply. Boil-water notices have become a common occurrence and residents regularly report low water pressure. Worked with the team in developing and implementing asset data collection, condition assessment, development of standard operating procedures, and implementation of computerized maintenance management system (CMMS)

Education:

PhD, Civil Engineering, University of Alabama, Tuscaloosa, AL, 2008

MS, Operations Management, Enterprise Integration, University of Alabama, Tuscaloosa, AL, 2008

MS, Environmental Engineering, University of Alabama, Tuscaloosa, AL, 2004

BS, Civil Engineering, University of Jordan, Amman, Jordan, 1999

Overview:

A results-oriented professional engineer with over 23 years of experience, Laith serves as the North America Asset Management Lead at Stantec. His expertise in asset management includes facilities, water, wastewater, transportation, aviation, and energy. With a strategic mindset, Laith continuously seeks process improvements and better outcomes for his clients. He champions inter-professional collaboration to achieve common goals and has a proven track record of implementing asset management principles and practices that align with the culture, maturity, and growth strategies of his clients. He has guided organizations at all stages of their asset management journey, from inception to refinement.

23
Years of
Experience

Laith Alfaqih

Registrations:

Professional Engineer #76732,
State of Ohio, 2012

Certifications:

Certified Reliability Leader (CRL)
#150570, Association of Asset
Management Professionals, Ft.
Meyers, Florida, United States,
2016

Institute of Asset Management
Certificate, Asset Management
Academy, New York, NY, United
States, 2020

Strategic Decision and Risk
Management, Stanford University,
Stanford, California, United States,
2010

@RISK, Risk Analysis, Palisade,
Ithaca, NY, United States, 2015

Publications & Presentations:

Transforming Asset Management
– Lorain’s Utilities Dept’s Journey
to Improved Reliability and
Performance, 2025, New England
Water Environment Association,
Boston, MA.

Incorporating Asset Management
Reliability Elements in Water
Resource Recovery Facility
Design, 2024, Water Environment
Federation Technical Conference,
New Orleans, LA

Beyond Project Completion:
Fostering Organizational
Operational Readiness Palm
Beach County Water Utilities
Dept’s Approach, 2024,
International Maintenance
Conference, Marco Island, FL

Asset Management Plan, 2023,
IAM South Florida Chapter, Palm
Beach, FL

Identifying and Measuring
Success in Achieving Sustainable
Development through Asset
Management, 2022, Institute
of Asset Management North
America Conference, Denver, CO

City of Fullerton, Asset Management & Water Master Plan | Fullerton, CA | Asset Management Technical Lead

Led the development, evaluation,
and prioritization of Fullerton’s water
infrastructure. Assessed the condition of
both aboveground and underground assets.
Stantec developed a prioritization plan for
asset rehabilitation and replacement based
on business risk exposure. Strengthened
the City’s structured decision support
process, by improving the robustness and
defensibility of the City’s future Pipeline R&R
Rate Analysis, evaluated the data provided by
the city for use in the pipeline replacement
prioritization based on risk analysis.

ISO55001 Implementation | Al-Ain Distribution | United Arab Emirates | Senior Asset Management Consultant

Developed asset management initiatives
for utility to be in compliant with ISO 55000
standards. Identified areas of improvement
in asset management practices to become
best in class. Conducted training and
professional development for AADC staff
in Risk Management, Value Optimization,
Reliability Centered Maintenance, and
Optimized Decision Making. Client became
ISO55001 certified.

City & County of Honolulu Stormwater Asset Management Peer Review & Leading Practices | Honolulu, Hawaii | Asset Management Lead

Conducted workshops and discussion
with leadership and front-line personnel
to understand how the existing asset data
can be leveraged to inform and optimize
stormwater inspection prioritization,
make improvements to field inspection
technologies and practices, and incorporate
best practices and consider alternatives in
asset rehabilitation to utilize resources most
effectively, and develop an actionable Capital
Improvements Plan (CIP).

Utilities Kingston | Kingston, Canada| Asset Management Specialist

Assisted the team in providing asset
management leading practices and QA/
QC of approaches to Utilities Kingston to
evaluate the asset management approaches,
practices and processes used by Utilities
Kingston; used this information to establish
short, medium, and long-term goals to
advance asset management capabilities
in alignment with industry standards; and,
collaborate with staff to determine asset
management objectives for each utility and
business program.

Palm Beach County Water Utilities Dept Asset Management Analysis and Dashboards | Palm Beach, FL | Asset Management Lead

Developed and implemented data analytics
and visualization for operations and
maintenance as part of the Strategic Asset
Management Improvement Program
designed to enhance PBCWUD’s existing
Asset Management journey. Data gaps were
identified for both linear and vertical assets.
A data collection and improvements plan
was developed. Key Performance Indicators
(KPIs) were identified and developed. The
analytics and visualization were conducted
using ArcGIS and PowerBI.

DC Water Asset Management EAM/CMMS Implementation | Washington DC | Asset Management Lead

Led the transition of DC Water from Maximo
computerized maintenance management
system (CMMS) to Trimble Unity Maintain. It
is a GIS-centric system. The implementation
was for linear and vertical assets for Water
Distribution, Stormwater, and Wastewater
Systems. It included the integration of all
systems with the new CMMS.

Utilities Infrastructure Condition Assessment & Prioritization | Massachusetts Port Authority | Boston, MA | Asset Management Lead

Identified and documented data
requirements of the Massport Infrastructure
Condition Assessment (MICA) platform
to ensure compatibility of the UCA data.
Developed data collection process
that aligned with the building condition
assessment (BCA) to fulfill MICA data
requirements. Implemented methodology to
identify and categorize components of utility
infrastructure.

Lorain Utilities Department, Asset Management Implementation | Lorain, OH| Asset Management Technical Lead

Developed and implemented asset
management strategy, framework, program,
and tool for the organization. The first
phase started with water utility distribution
system. Wastewater collection system and
facilities will follow. The implementation of
asset management allowed the organization
to streamline operations and enhance
maintenance processes.



Craig Omundsen, MIAM

Asset Conditions Assessment | Winnipeg, Manitoba

Relevant Experience

Asset Management Maturity Assessment and Asset Management Training | City of Moorhead | Moorhead, MN | Asset Management Specialist

Craig was brought onto the project due to his previous experience. He is working with the team to roll out the City's asset management maturity assessment and leverage the results from the assessment to develop and implement the City's bespoke asset management training.

Asset-Risk Management Framework | Fairfax County MSMD | Fairfax County, VA | Asset Management Specialist

Stantec is collaborating with Fairfax County MSMD staff to develop an asset-risk management framework for their facilities and the assets within their conveyance system. The team is working with MSMD staff to develop all aspects of the asset-risk management framework, including confirming their risk appetite, the likelihood of failure (LOF) parameters, the consequence of failure (COF) parameters, and the approach to mitigating the risks identified through the asset-risk management framework assessment.

Asset Management Program - Phase One | Fairfax County MSMD | Fairfax County, VA | Asset Management Specialist

Stantec worked with Fairfax County MSMD staff to develop a roadmap to advance their asset management capabilities. To do this the Stantec led workshops with MSMD staff to determine the level of asset management maturity using the international asset management standard ISO 55001. The detailed questions and guidance from the Institute of Asset Management (IAM) informed the asset management roadmap. Stantec's asset management specialists also led the development and delivery of the asset management communications plan, policy, and objectives. The development of these guidance documents begin the creation of the Strategic Asset Management Plan (SAMP) for Fairfax County MSMD. Phase One of the Asset Management Program will include the development of these guidance documents, which secured quick wins for the County.

Asset Management Improvement Project | Pinellas County Utilities | St. Petersburg, FL | Asset Management Specialist

Craig and the team are working with staff from Pinellas County Utilities (PCU) to develop and deliver specifics for their Asset Management System business processes, using the fundamentals of ISO 55000 and guidance from ISO 55002. This includes development of: Technical Levels of Service for multiple asset-types, alongside aligned Customer Levels of Service; Asset Criticality evaluation criteria and assessment process based on the assets' Consequence of Failure; Asset Condition assessment criteria for multiple asset-types; with each asset type having their own criteria based on the asset type's dominant failure mode; Likelihood of Failure evaluation criteria based on PCUs existing Cityworks O&M and Engineering asset data, and; Asset-Risk Management framework and business process, integrating Condition, Criticality and Levels of Service.

Asset Condition Assessment Framework - Improvements for Asset-Risk Management, Maintenance Programs, and Capital Planning | City of Lorain | Lorain, OH | Asset Management Specialist

Craig and the team are working with Engineering and O&M staff from the City of Lorain to develop and deliver a Asset Condition Assessment Framework. The framework will provide improvements for Asset-Risk Management, Maintenance Programs, and Capital Planning for their water and wastewater conveyance systems, using the fundamentals of ISO 55000 and guidance from ISO 55002. The project is a true incorporation of modern digital technology through the use of Cityworks. The project includes: utilizing existing Cityworks Engineering and O&M data for asset condition assessment; leveraging Cityworks for data storage; aligning the Asset Condition Assessment Framework with the Asset-Risk Management Framework, and; providing a repeatable, practical and data-driven Asset Condition Assessment process.

Education:

Bachelor of Engineering (B.E.), Resource Engineering, University of Auckland, Auckland, New Zealand, 2000

Overview:

Craig has an exceptional international track record of successfully leading asset management programs and projects using the fundamentals of ISO 55000 and guidance from ISO 55002. The programs and projects that Craig has led and worked on have included: aligning asset management objectives to a community's levels of service and their financial affordability; condition and criticality assessment process improvements; Maintenance and Reliability advisory services; providing solutions for digital transformation; developing asset life-cycle strategies; facilitating structured decision-making and infrastructure prioritization processes; and performing risk-based infrastructure renewal and investment planning to support resilient and affordable infrastructure.

21
Years of Experience

Craig Omundsen

Certifications:

Diploma in Asset Management, The Institute of Asset Management (IAM), Bristol, England, United Kingdom, 2016

Certificate in Asset Management, The Institute of Asset Management (IAM), Bristol, England, United Kingdom, 2016

Memberships:

Member, The Institute of Asset Management, 2012-2024

Member, Canadian Network of Asset Managers, 2021-2024

Member, Asset Management Committee, American Water Works Association, 2017-2024

Member, Society for Maintenance & Reliability Professionals, 2017-2024

Presentations:

Operations & Maintenance Decision Making. Technical Seminar, Institute of Asset Management, South Florida Branch, 2023.

Innovative Use of ISO55001 to Drive Risk Management for Facilities Management. Institute of Asset Management North American Conference, 2020.

Let's Connect the Dots: Linking Management Practices to Respond to Complex New Challenges. Transportation Research Board Annual Meeting, National Academy of Sciences, 2020.

Current and Future Trends in Asset Management. Technical Seminar, American Water Works Association, Florida Branch, 2019.

Strategic Asset Management Plan and Roads Asset Management Plan | Lac La Biche County | Lac La Biche, Alberta, Canada | Asset Management Specialist

Craig collaborated with Lac la Biche County senior management to develop and document their Strategic Asset Management Plan (SAMP) and Roads Asset Management Plan (AMP), using the fundamentals of ISO 55000 and guidance from ISO 55002. Activities throughout the development of the County's SAMP included (among others) requirements to develop the County's asset management framework, decision-support framework, asset-risk management framework, levels of service, asset management governance, and key asset management improvement initiatives. Activities throughout the development of the County's Road AMP included (among others) requirements to document the County's state of local infrastructure, technical levels of service, their assets' life-cycle strategies, and provide a financial review of their infrastructure deficit.

Storm Asset Risk Evaluation Study | City of Chilliwack | Chilliwack, BC, Canada | Asset Management Lead

Craig led a team of asset management specialists to collaborate with the City to complete an asset evaluation study to address aging infrastructure demands, determine capital planning and maintenance activities and to forecast the capital investment plan to renew pipes and manholes for a selection the City's stormwater network. The analysis approach focused on a selection of storm pipes and manholes with adequate data availability and assessed the risk of failure for these assets to the City and the communities they serve. The approach included the incorporation of stormwater modeling results data into the storm pipe risk assessment for determining each pipes likelihood of failure (LOF), and the incorporation of the approach used by the National Association of Sewer Service Companies (NASSCO) to determine the consequence of failure (COF). The LOF and COF were used to determine the risk associated with the failure of stormwater pipes and manholes, and risk was used to determine the maintenance frequencies and to forecast the capital investment plan.

City of Manassas Water Treatment Plant (WTP) Asset Register Development, Asset Criticality Assessment and Condition Assessment | Manassas, VA | Asset Management Specialist

Craig and the team at Stantec collaborated with the City of Manassas to develop their asset register for their Water Treatment Plant (WTP), determine the critical processes and critical assets within their WTP, and conduct a condition assessment for phase one of their master plan. The work completed included the review of existing asset data within the city's financial register, CAD drawings, and process and instrumentation diagrams to create the asset register. A site visit was conducted to confirm the assets identified and include additional assets not included in the City's documents. Once the asset register was completed criticality workshops were conducted to identify and record the critical processes and critical assets at the WTP. Condition assessments were conducted on the critical assets within the critical processes before moving to phase two of the master plan.

Water and Wastewater Asset Management Plan Updates | Utilities Kingston | Utilities Kingston | Kingston, ON, Canada | Asset Management Lead

Craig led asset management specialists to update Utilities Kingston's core Asset Management Plan (AMP) for Water and Wastewater to comply with Ontario Regulation 588/17. This AMP update was crucial for ensuring the City's utilities operate effectively, efficiently, safely, and reliably. It will enable the City to meet service levels, manage life-cycle costs, and enhance asset performance and reliability over the long term. Utilities Kingston serves over 39,000 customers with a net replacement value of approximately \$1.36 billion for water and wastewater alone. By extending asset lifespans, optimizing life-cycle costs, meeting service levels, and enhancing performance, we aim to ensure the City's infrastructure remains resilient for future generations. The project included conducting an asset data gap analysis, determining state of local infrastructure and asset inventory updates, conducting a Levels of service (LOS) revision and LOS scenario analysis, updating asset life-cycle strategies, including risk assessments, establishing life-cycle costs for updated asset life-cycle strategies, conducting a financial analysis, and documenting the information into the final AMP.



Education:

BS, Agricultural Engineering,
University of Missouri - Columbia,
Columbia, MO, 1985

Overview:

With more than 35 years of strategy, technology, and organizational management experience, Scott is part of Stantec's Water Business Team, serving in the role of the Director of Operational Systems and Technologies. His primary focus is in helping organizations navigate the challenges of a data driven world and making the most effective use of their technology investments. This includes digital transformation, automation, and the integration of systems - tackling issues such as simplistic technology design, cybersecurity readiness, and system adaptability. Scott's goal is to help people use data to make informed decisions in support of advanced asset management, system reliability, and improved asset performance management.

Scott Bash

Asset Criticality & Risk Management | Bellevue, Washington

Relevant Experience

Seattle Public Utilities Asset Management Program* | Seattle Public Utilities (SPU) | Seattle, WA | Managing Principal

Project to develop an Asset Knowledge Strategic Plan that allowed alignment of SPU's asset knowledge systems with best practices of high performing asset management utilities. The contract includes implementation of initiatives identified in the strategic plan as well as some new initiatives such as a roadmap for next steps in SPU's Asset Knowledge program, assistance in the refinement of SPU's asset hierarchy, advice and support for development of new chart fields for the financial system that align with principles of asset management and to help support the redevelopment of SPU's asset onboarding business process

Asset Management Program for District of Columbia Water* | DC Water | Washington D.C. | Project Manager

Evaluated the business processes associated with the management of linear assets and the use of information systems including, GIS, Maximo and mobile data collection. Project goal was to improve the workflow and data flow of the asset life-cycle for the sewer, stormwater and water distribution systems. Business process analysis of the commissioning process and the uses of GIS and Maximo data became the main focus for improvement. Work included coordination between, the Engineering, IT, Design, Construction, GIS, Field Services and Customer Services Departments and developing a standard process for all.

Asset Management Plan* | City of Redmond | Redmond, WA | Project Manager

Led the development of an asset management plan and configuration of Lucity software to support the program. The project included an asset management strategy, business process analysis and the creation of a configuration management document. The enterprise program manages asset data for the public works department that includes facilities water, sewer, stormwater, park and natural resources, and transportation business lines.

Gwinnett County Department of Watershed Management Asset Management* | Gwinnett County | Atlanta, GA | Project Manager

Performed workflow modeling and business process analysis of the Water Distribution service request and maintenance management activities. The workflow models focused on how data is gathered, how work activities are performed, and how information and data are transferred and stored using the Department's Asset management system. The final product was a documented data configuration management plan.

Sound Transit Enterprise Asset Management Transformation Project* | Sound Transit | Seattle WA | Project Manager

Designed and implemented an asset management (AM) framework as part of the Agency's Strategic Priorities. The scope for the project included the reconfiguration of Sound Transit's enterprise asset management system (EAMS) in alignment with the AM framework and the optimization of business processes for managing and maintaining assets owned by Sound Transit and under its control. The overall goal of this optimization effort was to help Sound Transit manage assets at the lowest sustainable life-cycle cost, improve system reliability, and maintain regulatory compliance.

Utilities Asset Management* | Fresno DPU | Fresno, CA | Project Manager

Performed an asset management program evaluation, analyzed business processes and helped Public Utilities develop an RFP for a new asset management system for the water and sewer assets. The project also included development of an asset management plan and new processes to improve condition assessment.

**Denotes projects completed with other firms*

36
Years of Experience

Scott Bash

Memberships:

ISO 55000 Technical Advisory
Group TC251, ASTM International

Registrations:

Grade 4 Wastewater Collection
System Operator, New England
Water Environment Association

Asset Management Implementation Plan* | City of Vancouver | Vancouver, WA | Task Manager

Designed an asset management plan that addressed organizational changes, operation efficiency, and prioritization of the Vancouver Public Works capital programs. The goal of this effort was to provide better service and value to the City's residents and maintain the long-term viability of the City's infrastructure. The Project Team provided advice and guidance for The Capital Planning, Finance and Asset Management Department to implement its planning and execution. The Project Team helped the City address the challenges of continuing the outreach and education process to achieve buy-in across all levels of the City organization. The Project Team prioritized the City's work plan for asset management implementation-specific departments and assets. Implementing best practices for effective business and investment decisions for the City's assets included defining level-of-service and approach to understand asset condition and criticality. The Project Team optimized the benefits of technology tools for all City departments and developed policies and plans to formally adopt the asset management programs.

Fulton County Billing and Asset Management Project* | Fulton County, GA | Fulton County, GA | Project Manager

Led the strategic business review, software and system selection, and implementation of an integrated CIS Infinity customer information system, Cityworks computerized maintenance management system with an inventory management system module and a Teleworks Interactive Voice Response Systems. The project consisted of business process modeling organizational analysis, request for proposal preparation, vendor selections, and system implementation.

City of Shoreline Surface Water Master Plan* | Shoreline, WA | Task Manager

As part of the Surface Water Master Plan, Scott led a level of service analysis, an update to the asset management program, an evaluation of the utility billing process and a surface water rate analysis. The project was an update to an existing master plan and an asset management program that Scott started four years prior.

City of Olympia Asset Management Evaluation* | City of Olympia | City of Olympia, WA | Task Manager

Evaluated of the City's current asset management efforts with City staff and developed updates to the current work plans with recommendations on data management and process improvements. The process used a gap analysis approach consisting of 90 different business elements organized within 16 categories of effective utility management. Each category is broken down into specific elements to show where the City currently stands with respect to best practices and opportunities for improvement. The Team defined service levels with specific targets and worked with staff to establish procedures for monitoring and updating them with an emphasis on monitoring key performance data. This involved review of the use of information systems, asset knowledge and knowledge sharing. Several business processes were evaluated including asset reliability, condition assessment and condition rating, replacement planning, and maintenance strategies. A report on recommended improvements was prepared and included as part of a system business plan to improve asset performance and reduce the life-cycle cost of water system assets.

Seattle Public Utilities Strategic Plan and Workplace Efficiency Project* | SPU | Seattle, WA | Project Manager

As part of Seattle Public Utilities (SPU) Strategic Business Plan, Scott led the development of a prioritized performance plan to increase cost efficiencies in service level delivery to SPU's 440,000 customers. The project team evaluated SPU's organization across all four lines of business and branches to identify areas for business improvement that led to reductions in operating budgets and an improved rate structure. The evaluation focused on improving the business strategy, business processes and the use of information technology. Over 150 SPU staff were involved in the effort representing operations from watershed management and protection, to IT support systems, solid waste management, and enterprise asset management. The evaluation was supported by benchmarking comparisons with 8 other utilities and an industry best practices analysis that looked at 142 different business elements.

**Denotes projects completed with other firms*



Tanya Camacho, GISP

Cityworks | Clearwater, Florida

Relevant Experience

DWM Cityworks Implementation | City of Atlanta, GA | Atlanta, GA | Project Manager

Project Manager providing implementation services to the Department of Watershed Management for its Cityworks software implementation project. Responsibilities include project management, AMS implementation, business process and workflow development, workshop and training documentation, software configuration support, GIS guidance, and training support. Utilities include water, sewer, and stormwater.

Cityworks Implementation | City of Surprise | Surprise, AZ | Deputy Project Manager

Deputy Project Manager and CMMS Implementation Specialist providing support services to the City of Surprise for its Cityworks software implementation project. Responsibilities include project management, CMMS implementation, workshop and training documentation, software configuration support, GIS support, system integration support and training support. The project includes full implementation of Cityworks for Streets and Traffic Assets. Integration with other platforms will include Stantec's RoadMatrix and Arizona BlueStake 811 Utility Locate service.

City of Carrollton EAM Implementation | Carrollton, TX | Project Manager

Project Manager and CMMS Implementation Specialist providing support services to the City of Carrollton for its Enterprise Asset Management software implementation project. Responsibilities include project management, CMMS implementation, business and gap analysis, business process and workflow development, workshop and training documentation, software configuration support, GIS interface and integration support, data conversion and migration support, system integration support and training support.

Cityworks Implementation | City of Surprise | Surprise, AZ | Deputy Project Manager

Deputy Project Manager and CMMS Implementation Specialist providing support services to the City of Surprise for its Cityworks software implementation project. Responsibilities include project management, CMMS implementation, workshop and training documentation, software configuration support, GIS support, system integration support and training support. The project includes full implementation of Cityworks for Streets and Traffic Assets. Integration with other platforms will include Stantec's RoadMatrix and Arizona BlueStake 811 Utility Locate service.

Enterprise Asset Management Implementation | Passaic Valley Water Commission | Clifton, New Jersey | Project Manager & CMMS Specialist

Project Manager and CMMS Implementation Specialist providing support services to the Passaic Valley Water Commission Enterprise Asset Management software implementation project. Responsibilities include project management, CMMS implementation, workshop and training documentation, software configuration support, GIS interface and integration support, data conversion and migration support, system integration support and training support.

Lucity Asset Management Implementation | Manatee County | Sarasota, FL | CMMS Implementation Specialist

CMMS Implementation Specialist providing support services for Manatee County's Lucity Asset Management software implementation project. Responsible for software implementation, geodatabase compliance, data collection, and data categorization. Responsible for GIS tools and methodologies implementing GIS processes, and integrating existing and new data in GIS projects.

Education:

Bachelors of Business Administration, Lake Superior State University, Sault Ste. Marie, MI, 2000

Overview:

Tanya is a Project Manager and Chief GIS/EAM Analyst for Stantec's Asset Management and Geospatial Services. She is responsible for GIS and Enterprise Asset Management (EAM) services. She has extensive experience with water resources GIS applications. Tanya's experience includes asset management, transportation, environmental, outdoor advertising, with special emphasis on asset management. In addition, she has been deployed for emergency response services/remediation.

16
Years of Experience

Tanya Camacho

Registrations:

Certified Geographic Information Systems Professional (GISP)
#28430, GIS Certification Institute, 2012/06/7

Lucity Asset Management Implementation | City of Clermont's Environmental Services Department | Clermont, FL | CMMS Implementation Specialist

CMMS Implementation Specialist providing support services to the City of Clermont's Environmental Services Department's Lucity Asset Management software implementation project. Cardno's and Lucity's implementation team worked with the City's Core Team to establish a project partnership to successfully achieve an orderly and timely transition to the City's Asset Management system. Responsibilities included workshop and training documentation, software configuration support, GIS interface and integration support, data conversion and migration support, system integration support and training support.

Comprehensive Asset Management System | Hillsborough County Public Utilities Department | Tampa, FL | GIS Technician

GIS Technician for the Hillsborough County Public Utilities Department's Oracle Work and Asset Management (WAM) Implementation project. Stantec joined forces with Oracle to implement the Hillsborough County Public Utilities Department's Computerized Asset Management System (CAMS). Project tasks included application implementation, business process evaluation, interface and integration development, data migration, management report development, system testing, software training and system roll-out support.

Work Order and Asset Management Implementation | City of Phoenix Water Services Department | Phoenix, AZ | Senior GIS Technician

Senior GIS Technician for the City of Phoenix Water Services Department's Oracle Work Order and Asset Management (WOAM) Implementation project. Stantec's staff joined forces with the City's core team to establish a project partnership to successfully achieve an orderly and timely transition to the City's updated work order and asset management system. Responsibilities included support for planning and coordination, software installation, software configuration, GIS interface and integration, data conversion and migration, system integration and training.

Infrastructure Inventory and Condition Assessment | Hillsborough County Public Utilities Department | Tampa, FL | GIS Technician

The Hillsborough County Public Utilities Department selected Stantec as the Program Manager for its countywide infrastructure to over 150,000 inventory and condition assessment project. The Department is responsible for providing sanitary sewer, potable water and reclaimed water service accounts in the unincorporated area of Hillsborough County. The Department selected Stantec to perform the followings services: participate in the vendor selection process, including review of written proposals, presentations and equipment demos; coordinate inventory and assessment contractor activities; review and approve up front submittals, pilot test and on-going quality control information; collect data from contractors and verify format/structure for loading into GIS and CAMS applications; verify schedule progress monthly and review/approve invoices; attend monthly status meetings; complete field visits to ensure work conformed to specifications; review county documents and models to assign asset criticality; review zoom cam/pipeline condition data, staff recommendations and criticality to prioritize/authorize areas to continue with full TV video; verify that TV data conformed to specs and loaded into CAMS system; correct the spatial location of all assets in ESRI geodatabase; migrate appropriate asset attributes to GIS or CAMS database; develop automated director's reporting dashboard; develop application to prioritize asset rehabilitation & replacement based on risk, criticality, consequence of failure and condition score.

Infrastructure Inventory and Condition Assessment Services | Florida | GIS Analyst

GIS Analyst to perform services including coordinate inventory and assessment contractor activities, review and approve up front submittals and on-going QA/QC, verify schedule progress monthly and review/approve invoices, field visits to ensure work conformed to specifications, assign asset criticality, reviewed zoom cam/pipeline condition data, staff recommendations and criticality for upload into CAMS system, and built ArcGIS Viewer integration with CAMS.



Education:

MS/MSc, Environmental and Water Resources Engineering (EWRE), Vanderbilt University, Nashville, Tennessee, 1981

BE/BEng, Water/Wastewater Engineering, Vanderbilt University, Nashville, Tennessee, 1980

Overview:

Hal has more than 40 years of experience in the planning, permitting, design, construction management, and start-up of over \$3.5B worth of wastewater capital improvement projects. His primary focus has been in the areas of advanced and high-level biological nutrient removal, membranes, and reclaimed water reclamation, biosolids management, and resource recovery. His broad wastewater experience includes permitting, evaluation, and detailed design of collection and treatment systems (biological nutrient removal, membranes, etc.), water reclamation, and biosolids management (thickening, dewatering, stabilization and resource recovery).

Harold Schmidt, Jr., PE, BCEE

CMOM & Capacity Analysis | Tampa, Florida

Relevant Experience

Operation Assessment and Optimization Plan | City of New Smyrna Beach Utilities Commission | New Smyrna Beach, FL | Technical Advisor

Hal served as the Technical Advisor for development of an Optimization Plan for UCNSB's water, wastewater, and reclaimed water systems. The UCNSB system consists of one advanced water reclamation facility, one lime softening water treatment plant, 23 raw water production wells, six potable water tanks/booster pump stations, over 103 lift stations, and nearly 500 miles of pipe that provides utility service to a 70-square mile area. The goal of the plan was to update existing flows, provide growth and flow projections through 2040, document utility systems operational characteristics and recommended improvements.

The facilities were inspected to assess technology utilization and condition of the equipment and process facilities, to assist with programming their R&R program and data for incorporation into their Asset Management system. Other work included an evaluation of their existing Capital Improvement Plan and recommended phasing and rework, a review of their existing administration components (i.e., policies and procedures, developer and interlocal agreements, utility standards, etc.) and service area expansion options.

Utilities Master Plan | City of Haines | Haines, FL | Program Manager

Hal oversaw the development of the Utilities Master Plan for the City's water, wastewater and reclaimed water systems. The Plan included an evaluation of the City's water supply sources, interconnections with adjoining utility systems (City and County systems) to regionalize the water and wastewater facilities, water quality impacts of supplies and treatment technologies. Additionally, the plan included modeling of the water transmission/distribution systems and an evaluation of storage requirements associated with the demand requirements for 20 years. The information documented the condition of the utility system and develop a 5 and 10-year capital improvements plan.

Central District Wastewater Treatment Plant Reclaimed Water Master Plan | Miami-Dade Water and Sewer Department (WASD) | Miami-Dade, FL | Technical Advisor

Hal is the technical advisory leader for projects associated with the Miami-Dade Water and Sewer Authority at their 143-MGD Central District wastewater treatment plant (WWTP). This project was mandated by Miami-Dade's Consumptive Use Permit with the South Florida Water Management District. The first module of the Master Plan was the development and identification of potential users of public access quality reclaimed water. A number of uses were identified that included: urban uses such as golf courses, greenspace areas, and residential lawns; cooling water at multi-family and commercial buildings; and on-site process water at the Central District WWTP. Since the reuse facilities is surrounded by the Biscayne Bay water quality is of the utmost importance. Therefore, treatment measures were identified to meet the varying water quality requirements. The effluent from the Central District WWTP is high in ammonia, chlorides, and TDS that can impact landscape vegetation and ecosystem of Biscayne Bay. Based on the treatment requirements associated with the water quality requirements for the public access reclaimed water, the proposed facility will primarily consist of membrane technology (microfiltration and reverse osmosis) and high level disinfection to meet the water quality requirements necessary. The project also recommended the instrumentation and controls, on-site storage, high service pumping and the necessary transmission and distribution piping to deliver the public access reclaimed water to the reuse customers.

43
Years of Experience

Harold Schmidt

Registrations:

Professional Engineer #29130,
North Carolina Board of
Examiners for Engineers and
Surveyors

Professional Engineer #39324,
Virginia Society of Professional
Engineers

Professional Engineer #18218,
Georgia State Board of
Registration for Professional
Engineers and Land Surveyors

Professional Engineer #38819,
Florida Board of Professional
Engineers

Memberships:

Member, American Water Works
Association, 1987-Present

Member, Water Environment
Federation, 1982-Present

Member, Florida Engineering
Society, 1985-Present

Member, Florida Water
Environment Association,
1982-Present

Publications & Whitepapers:

Schmidt Jr., H. **Cutting Calories,
Cutting Costs – How the Western
Diet Affects Your Facility's
Operating Costs – And What to
Do About It.** Water Environment &
Technology, 2015.

Schmidt Jr., H. **No Sweetener in
Your Stormwater, But What About
Your Reclaimed Water?**, 2013.

Schmidt Jr., H. **Design of
Municipal Wastewater Treatment
Plants – MOP-8.** WEF, 2017.

Miami-Dade Water and Sewer Department Renewal and Replacement Program | Miami-Dade Water and Sewer Authority | Miami, FL | Technical Director

Hal was the technical advisory leader for the Renewal and Replacement (R&R) project for the Miami-Dade Water and Sewer Authority at their 143 MGD Central District Wastewater Treatment Plant (CDWWTP). This project involved comprehensive engineering services to inspect, assess, rehabilitate, and upgrade the infrastructure at the CDWWTP. Many of the assets were at or near the end of their useful life due to age, corrosive environments, and inadequate resources and funding. The field inspections and assessments were performed in a manner to provide a consistent means of prioritizing asset renewal and replacement. Hal and his team performed a planning level criticality analysis to identify critical assets and support development of alternatives for larger-scale process changes and upgrades. In the analysis, the team considered public health and safety, permit compliance, and important operating and performance characteristics. The analysis provided the basis for development of a five-year implementation plan for R&R and upgrades.

Miami-Dade Water and Sewer Department Raw Influent Wastewater Characterization Study | Miami-Dade Water and Sewer Department | Miami, FL | Technical Advisor

Hal provided technical oversight associated with the raw influent wastewater characterization study. The objectives were to characterize wastewater streams at Pump Station 1 and 2 and at the discharge point of the three major force mains serving the CDWWTP (102-inch, 72-inch, and 54-inch). A hydraulic evaluation of two major force mains was performed along with water quality sampling to assess potential of solids settling in those lines and corresponding impact on the influent wastewater characteristics prior to the headworks. The level of fermentation occurring in the major force mains due to potential settling of solids at low velocities was assessed. The study identified the potential causes of the spikes in influent wastewater strength at the CDWWTP and proposed recommendations to mitigate those spikes from an operational standpoint with respect to pump stations and headworks. In addition, this study provided a recommendation for addressing fats, oil and grease and other tanker truck wastes disposed of at the SDWWTP septage receiving station.

Wastewater Treatment Facility | City of Zephyrhills | Zephyrhills, FL | Project Director

Stantec provided complete design and construction management services for the City of Zephyrhills Wastewater Treatment Facility (WWTF) expansion from 2.25 to 4.5 millions of gallons per day. This \$16 million expansion provides additional reuse water for irrigation of the City's golf course as well as several parks and recreational areas. Different process modifications were evaluated to determine the most cost effective process to reduce the TN in the public access reclaimed water from the City's WWTF. In addition, the work for this project included FDEP permitting to expand/upgrade the City's WWTF. All of the necessary FDEP permits and supporting documentation (Capacity Analysis, O&M Performance and Preliminary Engineering Reports) were prepared and submitted for approval. We also provided complete services to obtain State Revolving Loan funding. At project completion, the total project costs were approximately \$1.9M under total loan amount. The expansion included a new headworks structure with fine screening and grit removal facilities, an MLE process that included two oxidation ditches with pre-anoxic tanks, two 85-foot-diameter clarifiers, sand filters, electrical building and emergency power system, sodium hypochlorite building with chemical feed system, and sludge holding and storage modifications. The successful design and construction of the WWTF resulted in follow-on work for the expansion of the City's rapid infiltration system (RIB) to dispose of the effluent that is not reused within the City's public access reclaimed water system.

Van Dyke Aeration Improvements | Hillsborough County | Tampa, FL | Project Director

Hal was the project director for a project tasked with upgrading the liquid treatment process at the County's Van Dyke wastewater treatment facility. The upgrade included replacing the mechanical aerators in two oxidation ditch systems and two clarifiers to replace existing older equipment. The project coordinated with the County to assist in consolidating the aeration and clarifier projects to provide cost effective construction, which included equipment manufacturers to ensure that the proper aeration and clarifier equipment was selected for design and construction.



Education:

Master's in Finance, The Arab Academy, Amman, Jordan, 2000

Bachelor's in Accounting, Alahliyya Amman University, Amman, Jordan, 1997

Overview:

Hani Alkhouli brings 28 years of experience, including 19 years supporting the water/wastewater public utilities in asset management programs, strategic planning, and organizational performance. His background leading value optimization strategy development and implementation through transforming processes, technology, and people directly supports the implementation of Effective Utility Management (EUM) principles, particularly the critical Knowledge Management Key to Management Success. Hani excels at applying process management methodologies, a core activity in establishing Knowledge Flow Process Framework (KFPF) that provides a structured lifecycle for managing knowledge, from its creation to its ultimate use essential for effective Knowledge Management.

28
Years of Experience

Hani Alkhouli

Change Management | Tampa, Florida

Relevant Experience

Utilities Staffing and Level of Service Assessment | City of Cape Coral, FL | Project Manager

Hani successfully led a comprehensive project to evaluate the staffing needs and service levels of the Cape Coral Utilities Department. Conducted in-depth analysis of current operations, workload projections, and industry benchmarks to inform future staffing strategies. Collaborated closely with key stakeholders to ensure project objectives were met and recommendations were aligned with departmental goals. Effectively utilized data collection techniques, including document review, interviews, observation, and data analysis, to provide a robust assessment of the department's staffing requirements.

Five-Year Roadmap for Financial Management Transformation | Public Works Authority | Doha, Qatar | Task Leader

Hani designed two five-year roadmaps to provide a clear direction for the financial management transformation process and ensure that all stakeholders are aligned with the goals and objectives of the transformation. This included a detailed plan for each year of the transformation process, outlining specific goals, objectives, and milestones that need to be achieved, identifying areas for improvement, developing strategies to address these areas, and providing support throughout the implementation process. Worked closely with the organization's leadership team to ensure that the transformation process is aligned with the organization's overall strategy and goals. Also worked with other stakeholders, such as employees and customers, to ensure that their needs were considered during the transformation process. Provided ongoing support and guidance to the organization to ensure that it stays on track and achieves its goals. This included regular check-ins with key stakeholders, monitoring progress against milestones, and adjusting the roadmap as needed. Project outcomes: present maturity level of value-adding from the financial management function, and established alignment between operational, financial, and technical teams.

Benchmarking Study for Utility Operations | City of Pinellas Park | St. Petersburg, FL | Continuous Improvement Specialist

Carried out benchmarking study to measure the various operating and financial performance metrics of the City of Pinellas Park's Water & Sewer Enterprise Fund compared to local utilities to find examples of strong performance and identify opportunities for improvement. Presented insights to the client for improvement opportunities related to system reinvestments and financial health.

Procurement Department Staffing and LOS Assessment | Toho Water Authority | Kissimmee, FL | Project Manager

As project manager for the Procurement Department Staffing and Level of Service Assessment, Hani led a thorough review of staffing, roles, and service delivery. He defined the project scope, designed a multi-pronged assessment approach (staff & leadership interviews, stakeholder feedback, workload analysis), and oversaw data collection. Hani then analyzed findings to identify departmental strengths, weaknesses, opportunities, and threats (SWOT analysis). Leveraging this analysis, he formulated actionable recommendations to improve staffing, optimize roles, and enhance service delivery. These recommendations were prioritized and accompanied by a realistic implementation timeline. The final report provided a comprehensive assessment of the department, along with actionable steps for improvement.

Restructure Asset Affairs' Finance Team | Public Works Authority | Doha, Qatar | Task Leader

Hani restructured Asset Affairs finance function to be a business partner in achieving the strategic and operational objectives. This included preparing job descriptions, skills assessment, coaching, and training. Project outcomes: increased nationalization, enhance focus on achieving business commitments, improved team productivity, and achieved a 30% cost reduction.

Hani Alkhouli

Certifications:

Change Management Certificate, PROSCI, Dubai, UAE, 2016

Asset Management Certificate, IAM, Tampa, Florida, United States, 2023

Process Manager Certificate, APQC, Houston, TX, 2025

Atlantic and Neptune Beaches Feasibility Analysis & Acquisition Support | JEA | Jacksonville, FL | Project Manager

Hani led a comprehensive evaluation of the Atlantic and Neptune Beaches Water and Sewer System to assess its acquisition feasibility. Developed detailed financial models to predict long-term financial implications, ensuring transparency and equitable transition. Coordinated asset evaluations, identified necessary improvements, and quantified system value. Fostered community engagement through stakeholder meetings and public outreach initiatives. Ensured compliance with Florida Statutes governing utility acquisitions, mitigating risks and streamlining the approval process.

Regionalization Analysis and Support Services | Town of Wrightsville Beach, NC | Project Manager

As Project Manager for the Regionalization Analysis and Support Services project, Hani successfully directed the Data-Driven Analysis, Financial Forecasting, and Rate Analysis. He ensured the client's interests were fully protected by coordinating an independent evaluation of the regionalization proposal, critically assessing its financial modeling, governance, customer service, and other key components. His transparent communication facilitated effective engagement with all relevant stakeholders.

Fixed Assets Register for Roads and Drainage Infrastructure | Public Works Authority | Doha, Qatar | Task Leader

Hani implemented a fixed assets register for infrastructure assets by creating a policy and procedure, integrating EAMS with the financial tool, and completing assets components valuation. Project outcomes: improved long-term financial planning, enhanced asset sustainability measures, and compliance with international accounting standards.

Asset Cost Life Cycle Data Collection | Public Works Authority | Doha, Qatar | Task Leader

Expanded the recording dimensions to classify expenditure by asset type, Opex, Capex, network, zone, maintenance type, and cost behavior. Project outcomes: enhanced Asset Management data and information for lifecycle analysis and decision-making, and improved capital investment analysis accuracy.

Utility Valuation, Acquisition, and Transition Program Support Services | Pinellas County | Clearwater, FL | Project Manager

Hani successfully led a comprehensive project to coordinate wastewater collection system engineering, inspections, capital needs, and technical documentation for Town of North Redington Beach. Provided an independent valuation, ensuring informed decision-making for the County's acquisition. Identified and mitigated potential risks, conducted detailed financial and rate impact analyses, and assisted with compliance under Chapter 125 Florida Statutes to safeguard public interests.

Laboratory Staffing and Outsourcing Assessment | Toho Water Authority | Kissimmee, FL | Project Manager

Hani successfully gathered data through interviews and analysis, and evaluated potential outsourcing/in-house options. This data fueled a cost-benefit analysis comparing in-house staffing with outsourcing options. Delivered recommendations and an implementation plan, all while keeping stakeholders informed. The project equipped the client to optimize lab operations for efficiency and cost-effectiveness.

Digital Water Project Management Office | NEOM | Neom, Tabuk Province, Saudi Arabia | Knowledge Manager

This project involved establishing best practices for program and core project management support. Stantec established a digital project delivery capability, cultural and working procedures, and a framework of PMO processes and tools to optimize critical water delivery. As change management practitioner, Hani's role was to understand how changes affect different departments (engineering, IT, etc.) through workshops and surveys. Hani created a strategy to address resistance and promote adoption of new processes/technologies. This included developing communication channels, training programs, and support systems. He kept all stakeholders informed with clear communication (newsletters, town halls) and worked with training teams to equip employees for the new environment. Hani also promoted a culture embracing change through recognition programs and collaboration. By tracking progress and employee satisfaction, Hani ensured a successful transition for the water utility. By managing these areas, Hani minimized disruption, gained employee buy-in, and contributed to a successful launch.



Erin McLachlan Sanchez, MIAM

AMS Development | Portland, Oregon

Relevant Experience

Hydroelectric Powerhouses Strategic Asset Management Planning* | San Francisco Public Utilities Commission, Hetchy Water and Power Division | San Francisco, CA | Asset Management Lead

Phase I and Phase II: Data Collection and verification. Development of asset hierarchy with asset registry. Review of current asset management procedures to development and recommend improvements to asset life-cycle planning, draft development of asset management plan structured to address practical application of asset management strategies. The draft AMP includes roles, responsibilities, maintenance schedules, testing and inspection procedures, and instructions for comprehensive condition assessments. Phase III will include development and application of a risk model to recognize failure modes and provide comprehensive life-cycle planning and renewal techniques along with a final version of the AMP.

Asset Management System Policy and Procedures Development* | San Francisco Public Utilities Commission | San Francisco, CA | Technical Project Manager, Asset Management Lead

Working with division management and staff, completed development of the asset management system policy and procedures that set forth the guidelines for asset management, establishing the use of CMMS and specifying the workflow of maintenance planning. The guidelines are designed to ensure consistent handling of corrective, preventive and emergency work, condition assessment and failure analysis, and provide asset attribute information to inform risk, value, and replacement strategies. Subsequently, Erin performed an ISO 55001 gap analysis and benchmarking evaluation (based on AWWA's annual benchmarking survey) to determine the asset management maturity baseline of the division. Using this information, with concurrent efforts by the organization, the division is developing and integrating achievable improvements to their asset management system.

System Reliability Study* | Sewer Authority Mid-Coastside | Half Moon Bay, CA | Asset Management Specialist, Technical Project Manager

The System Reliability Study addressed prioritized capital improvement projects based on vulnerability and risk tolerance consistent with resource requirements and budget constraints. Using the system expected performance, limitations, and operational challenges, identification of service levels and estimated useful life were made to provide a basis of assessment. Vulnerability was determined by pairing assets with perceived threats, the likelihood of occurrence and the consequence of failure. Risk and resilience were then established using a risk model that accounts for capacity, redundancy and maintenance practices to estimate replacement schedule and budget requirements

Regional Water System Pumping Facilities Asset Management Program* | San Francisco Public Utilities Commission, Water Supply and Treatment Division | San Francisco, CA | Asset Management Specialist, Project Manager

Phase I Development of Asset Management Implementation Plan for the Regional Water System Pumping Facilities. Asset, process and location data collection and verification. Constructed asset hierarchy with registry, and recommended maintenance schedules. Performed condition assessments of critical and functional equipment. Developed risk model with 20-year replacement planning cycle. Phase II Pumping Facilities Maintenance Guides planning, scoping, and approvals were completed in February 2025.

System Security, Risk and Resilience Assessment* | Sewer Authority Midcoastside (SAM) | Half Moon Bay, CA | Risk Assessment Lead

To address potential threats, including physical and cyberattacks, malevolent acts and natural hazards, performed site assessments of all SAM's facilities, review of project history, asset registries, current and future initiatives and staff interviews to develop the initial design basis threat.

**Denotes projects completed with other firms*

Education:

BA, Business Management, Business Management, Golden Gate University, San Francisco, CA, 2012

Overview:

Motivated and results driven technical project manager focused on strategic infrastructure asset management planning. Over the past 23 years Erin has worked in both the public and private sectors to design workflow systems that meet organizational objectives to reach levels of service goals. Erin uses her strong analytical capabilities to provide a collaborative, whole-system approach to asset life-cycle management, recognizing and utilizing risk to balance achievable goals.

23
Years of Experience

Erin McLachlan Sanchez

Certifications:

Member, The Institute of Asset Management, The Institute of Asset Management, Bristol, Bristol, England, United Kingdom, 2024

Utility Risk and Resilience Certificate Program (AWIA Compliance), American Water Works Association, Denver, Colorado, USA, 2020

Memberships:

Levels of Service Subcommittee Chair, National Chapter, American Water Works Association, 2019-Present

Utility Management Committee, Pacific Northwest Chapter, American Water Works Association, 2022-Present

Asset Management Committee, ECD Asset Management Advisory, National Chapter, American Water Works Association, 2022-Present

MIAM, The Institute of Asset Management, 2018-Present

Publications:

Buchanan B., Roth F., McLachlan Sanchez, E.. **Establishing Levels of Service as the Foundation of Utility Asset Management** - Journal AWWA, 2023, pp. 12-25.

Communication System Asset Management Plan* | Hetch Hetchy Water and Power (HHWP), San Francisco Public Utilities Commission | Moccasin, CA | Asset Management Lead

As a subconsultant to Stantec, performed background review, condition assessment and recommendations that supported the development of the asset management plan and implementation guide for the HHWP's Communication System. The Communication System includes microwave, mobile and handheld radio assemblies essential to communications within the boundaries of the HHWP regional water system. Performed site visits, developed the asset registry with preventive maintenance tasks, Maximo inventory and gap analysis of asset data, used the results of the condition assessments, background review, staff interviews and standard asset management objectives to develop the Asset Management Plan and the Implementation Guide to be used to apply and continually improve upon risk-based asset management practices.

Groundwater Storage and Recovery Program* | San Francisco Public Utilities Commission | San Francisco, CA | Technical Project Manager/Asset Management Lead

Using the construction documents from recently completed groundwater well and treatment facilities, qualified critical assets for implementation into the agencies' computerized maintenance management system (CMMS), performed document review, site assessment, physical and digital inventory, gap analysis and agency coordination to develop asset registries for the well sites, facilitated coordination (meetings and compliance documentation) between member agencies for management of well sites.

Catch Basin Maintenance Prioritization Program* | Wastewater Enterprise, San Francisco Public Utilities Commission | San Francisco, CA | Technical Project Manager

To address increasing catch basin maintenance requirements for stormwater management, provided extensive condition and performance analysis to determine both high priority and regular cycle preventive maintenance schedules. Data validation, comparison of previous analyses, and determination of dynamic data availability were performed to ensure reliability. Using geospatial analysis, risk assessment metrics, and historical performance, the team presented prioritized location-based schedules consistent with field work management over annual and five-year maintenance cycles.

Collection System Asset Management Program* | Wastewater Enterprise, San Francisco Public Utilities Commission | San Francisco, CA | Technical Project Manager/Data Analysis/Model Design

Multi-phased, ground-up development of the asset management program for SFPUC's Collection System. Working with the Client and the Project Team, developed Levels of Service statements, identified consequences of failure, likelihood of failure, capacity/redundancy and system risk criteria for <36" sewer mains. Incorporated use of PACP standards for pipeline assessments, inventoried attributes into proprietary Oracle schema and prepared design for integration of data from adjacent sources include sewer cleaning modules, GIS, and CMMS (Maximo) for dynamic flow of information. Developed algorithm-based risk model for capital planning and repair scheduling. Designed user interface for near-real-time risk analysis of collection system assets.

Algorithm Modifications - Likelihood of Failure, Estimated Useful Life* | San Francisco Public Utilities Commission | San Francisco, CA | Technical Project Manager

In support of the agency's asset management program, developed alternative calculations to determine the likelihood of failure and estimated useful life using an algorithmic based process for the gravity sewer collection system. Incorporating condition assessment data, asset efficiency, situational conditions and lifecycle adjustment factors, provided analysis of the existing algorithm and presented model refinements to enhance the decision-making process for rehabilitation/replacement and capital improvements programs.

Computerized Maintenance Management System (CMMS) Implementation * | Public Works Department, City of San Mateo | San Mateo, CA | Maintenance Planning Manager

Implemented the CMMS for the City's Wastewater Treatment Plant; including asset classification, levels of service and key performance indicators and total life-cycle determination. Tasks included the design and integration of a new asset hierarchy, asset tracking, preventative and corrective work order management, training plans and vendor relationship management. Maintenance planning also included the support of the Immediate Action Plan development for facility rehabilitation: budget and schedule projections, resource allocation, and program management support.

**Denotes projects completed with other firms*



Brandon Rolo

Data Management | New York, New York

Relevant Experience

Wastewater Collection GIS Development and Asset Risk Management | Pinellas County Utilities | Clearwater, FL | GIS Analyst

As GIS Analyst, Brandon performed gap analysis, provided database schema change recommendations, and gathered data for risk analysis. Brandon integrated historical failure data, SSO data, maintenance data into GIS and performed spatial analysis for likelihood of failure, consequence of failure, and business risk exposure scoring.

Asset-Risk Management Data Gap Analysis and Improvement Plan | JXN Water Utility Network | Jackson, Mississippi | GIS Analyst

As GIS Analyst, Brandon assisted in data digitization for the Utility Network, designed and published a web-efficient mapping application for use in Enterprise environment, integrated Utility Network into Cartegraph Asset Management software and created standard operation procedure documentation for standard workflows within Cartegraph.

Cityworks Implementation | City of Atlanta Department of Watershed Management | Atlanta, GA | Asset Management Specialist

As Asset Management Specialist, Brandon performed statistical and spatial analysis of water, wastewater, and stormwater systems in GIS to identify data gaps and assess data quality. These gap assessments resulted in targeted recommendations to improve the quality of existing data and alter the database schema to align with asset management best practices and lower the barrier of entry into Esri's Utility Network. Met with stakeholders from the various divisions within DWM to understand the work they performed, their workflows, and how these will translate into Cityworks. Configured Cityworks with custom work order and inspection templates. Leveraged Action Manager to automatically trigger downstream events to drive efficiency where possible. Guided data migration for historical work activity data into Cityworks. Developed reporting templates for divisions, including compliance reports that are delivered to the EPA and DEP.

Asset Management Improvement Project | Lorain, OH | GIS Analyst

As GIS Analyst, Brandon performed gap analysis to assess the strength and weaknesses in the existing data and database structure. Implemented recommendations to modify geodatabase schema to better align with asset management goals and support downstream migration into ESRI's Utility Network. Brandon also mined data from authoritative sources for use in likelihood of failure, consequence of failure, and business risk exposure analyses. He participated in workshops with key stakeholders to identify relevant criteria needed in the LOF, COF, and BRE analyses to ensure results incorporate the priorities of the organization and the unique issues they face. Brandon was also responsible for configuring work activities to support O&M activities for water, wastewater, and stormwater groups and configuring Cityworks Mobile to enable streamlined workflows and a simplified interface for staff in the field. He created custom reports in Cityworks using ActiveReports to dramatically decrease the amount of manual entry required to submit these compliance reports.

Water Distribution System Master Plan & Hydraulic Modeling | City of Miramar | Miramar, FL | GIS Analyst

As GIS Analyst, Brandon performed statistical analysis on existing water distribution system, evaluating the system based on pipe material, diameter, and age. He also located and digitized future developments in GIS using parcel information, future land development maps from the City of Miramar, and other local data. Brandon created accessible maps of proposed CIP projects, highlighting existing infrastructure and planned improvements. He also created visually appealing figures displaying the existing water distribution system and future developments with their associated water demand within the City.

Education:

BS, Geophysics, University of Kansas, Lawrence, KS, 2017

Overview:

Brandon is a resourceful, results-oriented professional with a background in geoscience and experience leveraging geospatial data to improve performance and align data collection efforts with organizational goals. In his role as GIS Analyst at Stantec, he leverages the full suite of ESRI Software to assist clients with all aspects of geospatial data collection, management, and analysis. He uses his experience in utilities to assist clients in starting asset management programs or expanding existing ones. He draws on his experience using computerized maintenance management systems to help inform clients on best practices through design and implementation. He utilizes python and SQL to automate repetitive tasks and analysis, perform quality control, and report on existing GIS data.

8
Years of Experience

Brandon Rolo

Resilience Improvement Plan | City of Hartford | Hartford, CT | GIS Analyst

As GIS Analyst, Brandon led the development of geodatabase standards and structure, formatting data inputs, and automating spatial analysis to assess the exposure of state assets to extreme temperatures, heavy precipitation and flooding, and sea level rise/storm surge. He coordinated with sub-consultants and multidisciplinary teams to guide data collection efforts and ensure consistent documentation standards. He also automated the creation of database rules using Arcade to calculate weighted averages for exposure, sensitivity, adaptive capacity, and overall vulnerability. Brandon delivered asset-level vulnerability scores for roadways, trails, culverts, bridges, and transit facilities.

Parkways Climate Change Vulnerability Assessment | Boston Department of Conservation and Recreation | Boston, MA | GIS Analyst

As GIS Analyst, Brandon led the spatial analysis of DCR transportation infrastructure across Boston and surrounding areas. He worked closely with stakeholders and climate experts to gather geospatial climate projections used to assess potential impacts on transportation assets. Brandon integrated various datasets—including traffic counts, bus ridership, and estimated replacement costs—to evaluate the system from social, economic, and resiliency perspectives. He helped develop an interactive web platform using ArcGIS Experience Builder, allowing the client to explore results and identify areas of concern for planning purposes. Brandon also created a custom Python tool in ArcGIS Pro to automate spatial analysis and score parkway segments based on their alignment with different climate models.

Department of Public Works and Environment | Fairfax County | Fairfax, VA | GIS Data Gathering and Geodatabase Administration

As GIS Analyst, Brandon created and deployed custom mobile asset inspection forms using Survey123 for pump station inspections in Fairfax County, Virginia. The forms supported inspections across multiple disciplines, including architectural, civil, electrical, and mechanical systems. He assisted with mobile application training and managed inspection data to support asset scoring. Brandon also delivered asset-specific photographs and data exports to corroborate findings and support analysis.

FLL Biennial Engineers Report | City of Fort Lauderdale | Fort Lauderdale, FL | GIS Analyst

As GIS Analyst, Brandon evaluated GIS data received from the client to ensure completeness and relevance to ongoing improvement projects. He interfaced with the client to understand the current status of infrastructure data and how it aligned with planned upgrades. He analyzed Water and Wastewater infrastructure in GIS, focusing on both raw and potable water systems as well as gravity and pressurized wastewater systems. He created clear, informative figures to communicate the age and spatial layout of system assets to a technical audience. He also performed desktop and statistical analysis, generating summary tables for water mains, gravity mains, and force mains that reported total pipe lengths by diameter and age range.

R+Stormwater Control Structure | Collier County | Naples, FL | GIS Data Gathering and Reporting

As GIS Analyst, Brandon created and deployed a custom mobile asset inspection form using Survey123 for stormwater structure inspections in Collier County, Florida. He developed custom reports to summarize inspection findings and delivered them to the client. Brandon also built an internal dashboard to allow stakeholders to view and update surveys after collection, along with a client-facing dashboard to display inspection locations and results in real time. He managed the inspection database in ArcGIS Online to ensure data accuracy and accessibility.



Kyle Stevens

Financial Strategy | Tampa, Florida

Relevant Experience

Financial Modeling & Sustainability Analysis | City of Fort Lauderdale | Ft. Lauderdale, FL | Consultant

Kyle has served as the Project Consultant for a long-term financial modeling and sustainability analysis for the City in which he developed a common financial forecasting modeling platform that could be used for real-time evaluation and understanding for its key services, including its General Fund and seven separate major funds (Water/Sewer, Regional Wastewater, Stormwater, Sanitation, Airport, Parking, and Building funds). He customized individual models for each fund, and linked each model together to evaluate and understand a variety of decision alternatives and their current and future consequences to each fund. As part of the City's annual budget process, we perform simultaneous updates to all the models.

Sewer & Water Cost of Service Study | JEA | Jacksonville, FL | Principal Consultant

Kyle served as the principal consultant for JEA's cost of service study. The study calculated the cost of service for JEA's water and sewer customers, utilizing JEA's extensive automated meter infrastructure. Kyle formed a deep understanding of customer behavior to be attained and used in the study. The results of which notably allowed for the pricing of inclining block tiers based purely on the cost of service and system development fees to full price the level of service being provided to irrigation customers. JEA subscribes to a One Water philosophy, which was reflected in the cost of service by combining reclaimed service with potable water cost through a detailed mapping of functions. In this way the ultimate fees reflect the total cost cycle to deliver water in JEAs area.

Utilities Financial Assessment | City of Olathe | Olathe, KS | Lead Consultant

Kyle served as the lead consultant for a utility management and financial assessment of the City's utilities (water, sewer, solid waste and stormwater). As part of the assessment, Kyle completed a study to evaluate the feasibility of moving to a full stormwater utility based on impervious area.

Multi-Fund Financial Sustainability Analysis | City of Lake Worth | Lake Worth, FL | Consultant

Kyle is serving as the Project Consultant for a multi-fund financial sustainability analysis, during which we are individually modeling several major funds of the city, including electric, water, local sewer, regional sewer, stormwater, and sanitation, in addition to the City's General Fund. Through this process, we will be able to analyze the interconnectivity of all the funds within the City and develop a long-term sustainability plan for the future financial health of the City.

Comprehensive Financial Services | City of Naples | Naples, FL | Lead Consultant

Kyle has worked for the past five years in assisting the City with rate revenue projections, cost of service, impact fees and utility rate design analysis. Of note is his working in helping the City quantify the fiscal impacts of expanding reclaimed service. This effort consisted of predicting which customers would elect to connect to the system and how much revenue would be lost from converting pricier potable irrigation water to reclaimed water. The results helped illuminate the areas ripe for expansion and help define the rate of expansion that the utilities revenues could support.

Stormwater Rate Study | Athens Clark County | Athens, GA | Lead Consultant

Kyle served as the lead consultant for a recent stormwater rate study for the Athens Clark County, which included a review of the revenue needs for the system, cost allocation and the fee structure. The community has a unique three part fee structure that charges each parcel a base, quantity, and quality components. Kyle performed a cost of service analysis in order to modernize the allocation of cost for the three part rate structure. Additionally, the impervious area measurements changed dramatically since the last rate study with necessitated the calculation of updated tier break points and illuminated potential equity concerns.

Education:

Masters of Applied Economics, Florida State University, Tallahassee, FL, 2010

Bachelors in Economics, Florida State University, Tallahassee, FL, 2010

Overview:

Kyle has extensive experience in populating and customizing long-term financial planning, cost allocation, rate design, impact fee, and miscellaneous service fee models. He has superior financial, business and analytical skills and has provided our clients with exemplary financial analysis based on application of sound financial and economic concepts. Kyle has strong Excel modeling skills and has experience working with large data sets and financial models, including our interactive model and specific user charge and assessment modules. Kyle has a high level of proficiency within our modeling system, and he has been very involved in recent engagements requiring substantial model customization and in providing ongoing support services to our clients using our financial forecasting module.

14
Years of Experience

Kyle Stevens

Presentations:

Utility Cost of Service, Rate, and Financial Consulting Services. Mantioba Water and Wastewater Association Conference, 2019.

Best Practices: Financial Planning, Utility Rate Setting, and Equity Considerations. Stantec Winnipeg, Manitoba, 2019.

The Perks of seeing the Peaks. AWWA Annual Conference , 2018.

Stormwater Management. AWWA Annual Conference , 2018.

AMI Data and Rate Studies – Seizing Opportunities . . . Carefully. Utility Management Conference , 2018.

Revenue Sufficiency Analysis & Modeling | James City County Service Authority (JCSA) | James City County, VA | Lead Consultant

Kyle has served as the lead consultant for the James City Service Authority for the last four years. In each year he works to update the Authorities revenue sufficiency model in order to generate an updated forward guidance in regards to the trajectory of rate revenue adjustments. Most notably it is expected that the Authority will have to which from ground water supply to surface source in the coming decade, resulting in significant funding challenges. Kyle's ongoing modeling effort have helped to address this issue by estimating the debt service, operational and cash flow needs of this technological change. The resulting rate plan has allowed the utility to prepare for the transition and have the revenue in place to support the change in operations, while minimizing customer impacts.

Rate Study | City of Bismarck | Bismarck, ND | Technical Advisor

Kyle served a technical advisor on the Bismarck rate study. Specifically, he assisted in the sizing and pricing of residential tiers using multiple novel data sources. Notably GIS data was created as part of the study to estimate the amount of irrigation area on an average residential parcel. This data was then used in order to size tiers for single family residential customer such that they estimated the amount need for efficient irrigation. In addition, AMI data was available and analyzed as part of the study resulting in service area specific peaking factors by customer class that were used in the cost of service analysis.

Water, Sewer and Stormwater Cost-of-Service Studies | City of Ann Arbor | Ann Arbor, MI | Lead Consultant

Kyle served as the lead consultant for this Study. He worked with the client and stakeholder group to identify the revenue requirement of the stormwater utility. Additionally this project utilized significant scenario management in order to demonstrate the fiscal impacts of multiple programmatic enhancements that were contemplated during the study. As such staff and stakeholders were able to review the revenue implications of there collective choices in real-time. The study additionally included cost of serve and rate design aspects to round the analysis.

Water & Sewer Rate Study | City of Tempe | Tempe, AZ | Consultant

Kyle has served as the Project Consultant for the City for a water and sewer rate study. Using our financial model, he developed several alternative multi-year financial management plans and corresponding water and sewer rate revenue adjustment plans which we reviewed in interactive work sessions with City staff. He also completed a detailed cost of service allocations analysis where we reviewed test year revenue requirements, assessed billing determinants, allocated revenue requirements to functional categories, and identified customer class responsibilities for the costs of each category based upon the appropriate characteristics of each class.

Comprehensive Financial Services | Town of Gilbert | Gilbert, AZ | Consultant

Kyle has served as the Project Consultant for all work for the Town, which includes revenue sufficiency analysis, detailed cost of service allocation, and rate structure analysis for the Water, Sewer, Reclaimed Water, Environmental Services and Stormwater Funds. Kyle was responsible for developing separate multi-year financial models for each fund, and also developed several modifications to the Town's existing rate structures, notably including a new inclining block water rate structure.

Stormwater Funding & Rate Structure Analysis | City of Carson City | Carson City, MI | Consultant

Kyle is serving as the Project Consultant for a Stormwater Funding and Rate Structure Analysis for the City. We are working as a sub-consultant to an engineering firm who is evaluating the asset management plan of the stormwater utility system. Kyle is developing multi-year financial forecast of the stormwater utility (currently funded out of the general fund) in order to identify existing funding sources and current cost requirements. He will then incorporate the results of the asset management plan of the system to determine the final impacts to the general fund at varying levels of implementation.



Emily Snyder

Funding Strategy | Asheville, North Carolina

Relevant Experience

Public Works Administration Grants Process Program Management | City of St. Petersburg | St. Petersburg, FL | Project Manager and Funding Specialist

Stantec is serving as the overall grants program manager for the City of St. Petersburg Public Works Administration division. Emily is project manager and funding specialist, tracking the various grants that PWA is pursuing or implementing. She has developed organizational process workflows and template documents to help establish internal controls and guide staff managing projects through all stages of a grant lifecycle, including grant evaluation, application, agreement, and implementation/compliance phases. Emily has also assisted with funding strategies and compliance on individual projects.

Utilities CIP Funding Strategy | City of Lake Worth Beach | Lake Worth Beach, FL | Project Manager

The City of Lake Worth Beach sits within Palm Beach County and manages drinking, sewer, and stormwater distribution systems. Stantec was hired to review their utilities capital improvement program and design a funding strategy to maximize grant opportunities. Emily served as project manager to develop a tool that could match projects with possible funding sources. She also provided consulting services on what grants may stack together to fully support a project or how multiple projects could be packaged together within one grant application.

Bicycle and Pedestrian Plan | City of Sunrise | Sunrise, FL | Implementation Specialist

Emily supported development of the funding and implementation chapter of the update to the City's bicycle and pedestrian plan. Responding to the City's desire to move quickly from "plan" into "implementation," Emily provided recommended organizational and delivery strategies on where to start and eventually program the pedestrian and bicycle program. It focused on low-cost, quick win improvements to larger, complex projects; and the timing, partnership, and funding considerations to get into construction.

Central District WWTP and Pump Station 2 Resilience Projects | Miami-Dade County Water and Sewer Department | Miami, FL | Funding Specialist

Stantec led the architectural planning study and conceptual design of a Storm Shelter and Primary Control Center (the Project) for WASD's Central District Wastewater Treatment Plant (CDWWTP), as well as design for a Storm Shelter at their Pump Station 2 facility. Emily served as a funding specialist evaluating potential federal and state funding in the areas of disaster mitigation, climate and coastal resilience, wastewater systems, and cybersecurity and energy infrastructure. She created a dynamic matrix that supports and responds to future decisions in the project development, as well as inform options for other WASD facilities.

USDOT Innovative Finance and Asset Concessionaire Grant | Colorado Department of Personnel and Administration (DPA) | Denver, CO | Grants Consultant and Project Manager

While serving as the grants consultant for DPA's P3 Office, Emily authored and led the effort to apply for a first-of-its-kind technical assistance grant from USDOT Build America Bureau. Emily was successful in helping DPA secure \$717,600 to perform a two-phase asset scan of underutilized real property for transformation into mixed-use, affordable transit-oriented development, including both affordable and workforce housing options. The first phase will include confirmation of TIFIA-eligibility; high-level feasibility review of the properties for mixed-use, affordable TOD; and prioritization of viability for use of asset concessions. The second phase includes a more detailed evaluation, such as market studies, zoning review, cost and revenue estimates, and governance models. The asset scan will assist DPA in accelerating deployment of their public-private partnership program by augmenting their organizational capacity to assess their available properties for joint development.

Education:

MS, Regional Planning, University of North Carolina, Chapel Hill, NC, 2006

BA, Urban and Environmental Planning, University of Virginia, Charlottesville, VA, 2004

Overview:

Emily is a capital planning and funding specialist focused on supporting capital improvement programs and complex projects. With over 18 years of experience in capital projects and government, she understands the financial challenges facing cities and utilities in maintaining and expanding their infrastructure to meet the needs of today and tomorrow. Emily assists clients with capital improvement program management, finance and funding strategies, and the grant management lifecycle including identification, application, and compliance. Her experience and success ranges from USDOT to EPA's WIFIA and SRF programs to DOE hydropower investments to many other grant programs across all types of infrastructure processes and requirements.

19
Years of Experience

Emily Snyder

Registrations:

Certified Planner, American Institute of Certified Planners, 2008 - 2018

Memberships:

Member, American Planning Association, 2004-2018

Member, Women in Transportation (WTS), 2006-2018

Member, National Association of City Transportation Officials, 2013-2018

Member, Association of Pedestrian and Bicycle Professionals, 2009-2015

American Falls Bridges Grant Applications | NY State Parks, Recreation and Historic Preservation | Niagara Falls, NY | Project Manager & Funding Specialist

The American Falls Bridges are two, 120-year-old historic bridge structures spanning the Niagara River from the US Mainland to Goat Island, which is the destination for visitors to Niagara Falls State Park to experience the American and iconic Horseshoe Falls. The bridges are in poor condition, currently closed to vehicular traffic and at risk of closure to over seven million pedestrians and bicyclists annually. Emily served as project manager and lead grant writer for three different grant applications for federal funding for a \$62.5 million replacement-in-kind. Funding programs included Rebuilding American Infrastructure with Sustainability and Equity (RAISE), Bridge Investment Program, and FY2025 Congressionally Directed Spending requests.

Franklin Riverfront Revitalization Project RAISE Grant | City of Franklin | Franklin, OH | Funding Specialist and QA/QC

Emily served as a senior resource on Rebuilding American Infrastructure with Sustainability and Equity (RAISE) application for the City of Franklin, providing QA/QC against grant requirements and assisting with final application development. The project included development of a multi-use trail, riverfront bank stabilization, and two roundabouts at key intersections for pedestrian and bicycle safety, and are equitable and consistent with the requirements of Prop 218.

Morrisville Tributary/Sawmill Creek Stream Restoration and Trail Project | Town of Morrisville | Morrisville, NC | Funding Specialist

Stantec supported the Town of Morrisville with design of \$1.5M stream restoration project for the Morrisville Tributary (aka Sawmill Creek, Project). The project includes channel realignment, bank stabilization, wetland creation, extension of the Indian Creek Greenway, and signage to encourage exploration and education of the natural environment. Emily served as funding specialist during the design phase, evaluating grant opportunities, primarily focused on state sources, and provided recommendations on a funding strategy to support the project moving into implementation. Emily also managed the development of two grant applications to the NC-AGR Streamflow Rehabilitation Assistance Program (StRAP) and to NCDEQ Water Resources Development State and Local Projects program.

Community Charging Program CFI Applications | City-Parish of Baton Rouge | Baton Rouge, LA | Funding Specialist

Stantec led the development of the Baton Rouge Electric Vehicle (EV) Strategic Plan and has been retained by the City-Parish to support the plans implementation. As part of these efforts, Stantec authored a Charging and Fueling Infrastructure (CFI) grant application to fast-track certain project components with a focus on equity. Emily served as a funding specialist responsible for the narrative aspects of the application, including addressing the merit criteria. She also managed formatting and packing all application elements and guiding the client through the submittal process.

Drinking Water State Revolving Fund Loan | City of Englewood | Englewood, CO | Funding Specialist

The City of Englewood is undertaking replacement of all lead service lines across their service area, an effort totaling \$40 million over the next 3-4 years. Emily was the project manager and funding specialist for loan application to the State of Colorado's Drinking Water State Revolving Fund. This effort included facilitation of a multi-disciplinary team for management and compliance with the SRF process, application development, and negotiations. The City of Englewood was successful in securing a low-interest loan, including \$10 million of principal forgiveness from Bipartisan Infrastructure Law funds, for the full project cost. Emily continues to support the City of Englewood on compliance efforts related to the loan.

SCV Water WIFIA | Santa Clarita Valley Water Authority | Santa Clarita, CA | Project Manager

Project Manager and funding specialist who assisted Santa Clarita Valley Water Agency through the Letter of Interest and Application process for a \$350M Water Infrastructure Finance and Innovation Act (WIFIA) loan on SCVWA has a \$1B capital improvement program to upgrade and expand their infrastructure to improve the reliability and resiliency of the drinking water supply. Emily supported SCVWA through development of their WIFIA capital program, including environmental review requirements and compliance support



Nitesh Goli, P.E. PMP
RADISE International, L.C.
Geotechnical Engineer



Mr. Nitesh Goli has over 8 years of experience in providing inspections, geotechnical engineering services for water resources, transportation and commercial building projects. He is skilled in providing soils borehole logging, pre and post construction surveys, vibration monitoring and visual classifications (ASTM D2488).

He is experienced in analyzing geotechnical data, performing the appropriate field site inspections and monitoring, calculations and preparing geotechnical and technical reports. He has also managed, supervised and met with contractors on site, and advised on civil engineering issues.

PROFESSIONAL REGISTRATION AND CERTIFICATIONS

Professional Engineer, FL (PE100769)
PMP Certified
FDOT/CTQP QC Manager
PCI Certified Level 1 and 2 Quality Control Inspector
FPCA & CMEC 450 Specification Certification
PTI Certified Level 1 and 2 Unbonded PT Field Installer/ Inspector
APNGA Portable Nuclear Gauge Safety & USDOT Hazmat Certification
Smart Pile Data Acquisition and Review- Level 1
ACI Concrete Field Testing

EDUCATION

- M.S. Civil Engineering, Florida Atlantic University- Florida
- M.S. Geotechnical Engineering, JNT University, Hyderabad, India
- Diploma in Project Management, HC University, Hyderabad, India
- B.S. Engineering, Osmania University, Hyderabad, India

CAPABILITIES

- Borehole Logging
- Project Management
- Geotechnical Engineering
- Foundation Engineering
- Slope Stability Analysis
- Seepage Analysis
- Field Observations & Inspections
- Roadway Soil Survey
- Testing
- Geotechnical Modeling

COMPUTER SKILLS

- GeoStudio (Slope/W, Seep/W and Sigma/W)
- FB-Deep
- FB-MultiPier
- LPILE
- SPW911
- gINT

REPRESENTATIVE EXPERIENCE

Floating Dock at Peanut Island Replacement, Palm Beach County, FL

Managed geotechnical engineering services including field investigations, laboratory testing and geotechnical engineering report. Provide engineering analyses and recommendations for the proposed improvements. FB-Deep software was used to evaluate the estimated axial pile capacity for an 18-inch Precast, Prestressed Concrete (PPC) pile and LPile software from Ensoft, Inc. was used to model the pile-soil-lateral load interaction.

S-332B and S-332C Pump Station Replacements, Miami-Dade County, FL

Managed geotechnical engineering services including field investigations, laboratory testing and geotechnical engineering data report. Provide subsurface necessary along the defined alignments of canals and embankments and at the location of the structures for the geotechnical analysis and design to support a project design.

Broward County Mast Arms, Broward Co., FL. Senior Geotechnical Engineer -- Field exploration/testing and laboratory testing for 20 planned intersections for mast arm traffic signal conversions and pavement improvements. Provided laboratory testing, asphalt core services and pavement evaluation.

I-75 Express Lanes – Segment E, Broward County, FL. Senior Geotechnical Engineer — Provided geotechnical engineering services for the improvements along the I-75 (SR9) corridor. The length of the project was about 12 miles from the Miami-Dade County/Broward County line to North of I-595 Interchange.

FPL Germantown-Boca Teeca 138kV Line (T30047), Palm Beach County, FL

Managed geotechnical engineering services including field investigations, laboratory testing and geotechnical engineering report. The purpose of this study was to perform an exploration of the subsurface conditions near the proposed replacement transmission structures in order to provide geotechnical engineering information for the design of the foundations for the proposed transmission structures.

STA 5-6 Connection to Lake Okeechobee, Pam Beach/ Hendry Counties, FL

Managed geotechnical engineering services including field investigations, laboratory testing and geotechnical engineering data report. Provided subsurface data along the defined alignments and structures of the project for use in the engineering analysis and design to support the Project design.

S-842 (Broward Boulevard) - Structure Investigation for Bridge Replacement, Broward County, FL. Senior Geotechnical Engineer — Oversight including field exploration/testing and laboratory testing. Construction of two replacement bridges, resurfacing, restoration and rehabilitation, and the replacement of the substandard barrier wall.

EAA Miami Canal & North New River, Pam Beach County, FL

Managed geotechnical engineering services including field investigations, laboratory testing, engineering analyses and geotechnical engineering data report. Provided subsurface data along the canals in order to develop preliminary design criteria for canal side slopes. This effort has been implemented in two (2) packages.

FPL Manatee Power Plant, Manatee County, FL

Managed geotechnical engineering services including field investigations, laboratory testing and geotechnical engineering analyses. Provided seepage analysis for the embankment cross-section to in the plant area to evaluate the effectiveness of the existing drain system and its ability to intercept, collect and dissipate seepage propagating through and beneath the dam.

FPL Martin County Power Plant, Martin County, FL

Managed geotechnical engineering services including field investigations, laboratory testing and geotechnical engineering analyses. Provided seepage analysis for the embankment cross-section to in the plant area to evaluate the effectiveness of the existing drainage blanket and drain system and its ability to intercept, collect and dissipate seepage propagating through and beneath the dam.



Areas of Expertise

- Land Surveying
- Boundary / Topo
- Control Surveys
- Utility Surveys
- 3D Radar Tomography
- GPS
- Platting
- Route Surveys
- Legal Descriptions
- Plat Reviews
- Laser Scanning
- Crew Supervision
- Technical Reviews
- Scheduling & Productivity

Education

- Associates of Art, Atlantic Community College
- CEU's – On going

Licensure

- Professional Surveyor & Mapper, Florida #LS4846

Affiliations

Florida Surveying and Mapping Society (FSMS)

Employment with CAS: 29yrs
Employment with other firms: 17 yrs

Robert D. Keener, P.S.M.

Vice President
Survey / Geomatics



Mr. Keener has over 45 years of experience in the survey, engineering and utility construction fields.

Mr. Keener has been employed with CAS since April of 1995. Mr. Keener began his career at CAS as a Project Surveyor, advancing to Senior Surveyor and Mapper In charge of surveying in a satellite office and advanced to Vice President in 2005. Mr. Keener will serve as Principal Surveyor for all surveys and will coordinate all survey activities with various disciplines as needed. All surveying pertaining to utility related services such as Radar Tomography, utility surface mapping, utility excavations, etc. will also be overseen and certified by Mr. Keener. He has previously performed plat reviews for municipal clients.

Mr. Keener holds a Florida Surveyors and Mappers License and is a member of the Florida Surveying and Mapping Society of Florida.

Selected Relative Experience:

Seacoast Utility Authority: Northlake Boulevard/US-1 Water & Sewer Force Main Replacement – Town of Jupiter, Florida. Mr. Keener Served as Principal Surveyor for Route survey along Northlake Boulevard and US-1 (approximately 2.8 miles), including identification of right-of-way, property lines, above ground improvements, utility easements, tree survey, cross sections and subsurface utility engineering (utility locates). Mr. Keener performed quality control and quality assurance for the project.

City of Dania Beach SE 2nd Avenue and SE 7th Street Water Main Replacement – City of Dania Beach, Florida. Mr. Keener Served as Principal Surveyor for the construction of the water main replacement project The scope for the project included computation base sheets which encompassed computing overall site geometry for purposes of providing surveying control and for determining final locations of water main improvements. Services also included staking alignment at 50 foot intervals where CAS provided nail and tin tab / hub and tack at a ten (10) foot offsets to the proposed water main at approximate 50-foot intervals; Staking and grading of hydrants where CAS provided lath at centerline and set two graded offset laths. Services also included staking locations of valves, tees and plugs and as-built record survey of water system where CAS provided drawings indicating measured data of the constructed water system. All fittings, conflicts, vertical deflections, etc. were shown based on CAS field measurements showing measure downs, pipe separations and pipe cover. Mr. Keener performed quality control and quality assurance for the project.

City of Ft. Lauderdale Water Distribution System Mapping Update– City of Ft. Lauderdale, Florida. Mr. Keener Served as Principal Surveyor and oversaw the surveying and subsurface utility engineering for the water utility system mapping updates delineated within the CA Smith Zone located within the City's northeast service area. The project area contained approximately



Craig A. Smith & Associates

Engineers • Surveyors • Subsurface Utility Engineering • 3D Subsurface Imaging • Utility Coordination

168,960 linear feet or 32 miles of existing 8" water pipelines. The scope of work included 2D ground penetrating radar of the existing water mains within the prescribed right-of-way corridor including identify/verifying location of existing isolation valves, air-release valves, fire hydrants, etc. and approximately 12,000 associated water meters. Survey physically located the utility surface marks for existing water mains provided by the CAS Utility Locates Department and above ground valves, fire hydrants, air release valves, etc. relative to the defined scope. Missing and/or unknown pipes based on the GIS data supplied by the client was mapped as applicable.

City of Lake Worth Beach, Lake Osborne Estates Water Main Replacement Project – Phase I, City of Lake Worth Beach, Florida.

Mr. Keener Served as Principal Surveyor for the engineering design of the Phase 1 improvements which included the installation of 16,400 linear feet of new 6" to 8" PVC water main serving 228 homes in the Lake Osborne Estate residential area. The new water main replaced existing asbestos cement pipe (ACP) and also improved fire protection and pressures to the neighborhood residences. Work also included the abandonment of existing ACP water mains and the relocation of meters and services from the rear of the residential lots to the front of the lots. Two (2) 40-foot 8-inch HDPE horizontal directional drills were performed under High Ridge Road, which was newly paved, to avoid pavement impacts during installation. A map of specific survey was prepared for engineering design which included physically locating all above ground visible improvements and buried utilities within the existing right-of-way. More than twenty (20) utility test holes were performed at pertinent locations to verify buried utilities and potential conflicts. Information from Test Hole reports was incorporated into the survey base maps. Rims, pipe inverts, size and material information were shown at all drainage structures. A baseline was established and cross sections taken at every 100 feet. All elevations were shown relative to the North American Vertical Datum of 1988. Trees 3" or greater in diameter within the corridor were located and shown by common name with caliper size at average breast height. In addition, all existing water meter locations were surveyed and shown

City of Ft. Lauderdale, Design-Build Force Main By-Pass Line Installation – City of Ft. Lauderdale, Florida.

Mr. Keener Served as Principal Surveyor and oversaw the surveying and subsurface utility engineering (SUE) within an approximate 3.2-mile corridor for the design-build installation of a force main bypass line. The corridor included SE 10th Ave. from SE 18th St. to SE 12th St.; SE 9th St. from SE 12th St. to SE 2nd Ct.; SE 2nd Ct. from SE 9th St to SE 10th St. and across the Himmarshee Canal; NE 11th Ave.; and NE 6th St. east to NE 15th St. and north to Sunrise Blvd. A specific purpose survey was conducted within the right-of-way identifying all above grade utilities and improvements of each corridor utilizing 2D ground penetrating radar, electromagnetic designating and vacuum soft digs to locate all existing buried utilities.

City of Boynton Beach, City-Wide Force Main Valve Installation Project, City of Boynton Beach, Florida.

Mr. Keener Served as Principal Surveyor and oversaw the surveying and subsurface utility engineering for this project. The scope of work included survey and utility locations in eight (8) areas along N. Congress Ave. and W. Ocean Drive for the design of valves on existing force main trunklines. Survey provided base maps for each area showing limited topographic features, utility locates, mark ups and soft dig information as required by the client.

Alec Bogdanoff, Ph.D.



PRINCIPAL & CO-FOUNDER



Dr. Alec Bogdanoff is a distinguished oceanographer, meteorologist, and co-founder of Brizaga, a pioneering firm at the forefront of climate resilience and adaptation. With over two decades of experience spanning policy, politics, and science, Alec is a visionary leader recognized for his unmatched expertise in resilient infrastructure policy. As Principal, he combines thought leadership with hands-on innovation, driving transformative solutions for the most pressing climate challenges of our time.

His thought leadership has established him as a go-to expert on resilience and adaptation, and his forward-thinking approach inspires others to think beyond traditional paradigms. With unparalleled insight into the world of resilient infrastructure and a passion for making a tangible difference, Alec continues to lead the charge in shaping a more adaptive and sustainable future for communities worldwide.

Education:

- Ph.D., Physical Oceanography, Massachusetts Institute of Technology (MIT)/ Woods Hole Oceanographic Institution (WHOI), 2016
- M.S., Meteorology, Florida State University, 2010
- B.S., Meteorology, Florida State University, 2008

Affiliations:

- Greater Fort Lauderdale Chamber of Commerce (Chair, Strategic Planning Committee and Bylaws Committee; Member, Board of Directors)
- American Meteorological Society
- American Geophysical Union
- American Society of Adaptation Prof.
- American Planning Association
- Urban Land Institute (Chair, District Resilience Committee; Member, District Management Committee)

Specializations:

- Climate Science
- Meteorology & Oceanography
- Resilience & Adaptation Planning & Strategy
- Public Policy
- Strategic Communications
- Public Outreach & Engagement

Select Project Experience

BROWARD COUNTY RISK ASSESSMENT AND RESILIENCE PLAN

Broward County, Florida | 2021 – Ongoing

As lead communication and engagement consultant, developed and implemented a countywide engagement strategy tailored to 31 municipalities and diverse stakeholders. Facilitated public meetings, interactive forums, and digital campaigns to increase awareness and participation in the County's future-focused resilience planning. Crafted accessible messaging that translated complex scientific data into actionable strategies. Supported the County in building consensus around mitigation efforts related to flooding, heat risk, and sea level rise. The engagement strategy elevated transparency and positioned Broward County as a model for inclusive, science-based resilience planning in large, urbanized communities.

SOUTHEAST PALM BEACH COUNTY V.A.

Southeast Palm Beach County, Florida | 2019 – 2020

Directed comprehensive public engagement across eight jurisdictions under the Coastal Resilience Partnership. Designed a flexible Outreach Plan and Menu for each municipality, incorporating charrettes, surveys, workshops, and social media to maintain long-term resident engagement. Facilitated interactive workshops, enabling community members to voice concerns and shape policy. Translated vulnerability findings into plain language to ensure accessibility. Delivered an interactive final workshop that

unified stakeholders around actionable resilience strategies. Resulted in a regionally coordinated framework that provided guidance for long-term adaptation, empowering municipalities to implement practical, community-supported measures.

HOLLYWOOD STORMWATER MASTER PLAN

City of Hollywood, Florida | 2020 – Ongoing

Directed community engagement and public education efforts for the City's Stormwater Master Plan. Designed a strategic communications plan with print and digital materials to simplify complex technical data for residents. Led outreach events, including hybrid workshops and roundtables with residents, business owners, and local officials. Supported the development of a Citizens' Guide to enhance public understanding of stormwater infrastructure and its role in resilience. Played a key role in securing \$1M+ in state resilience grants.

NORTH BAY VILLAGE STORMWATER PROGRAM MGMT.

North Bay Village, Florida | 2022 – Ongoing

Provided strategic and technical support to secure state and regional grants for critical stormwater improvements. Evaluated the existing master plan and identified areas where projects could align with grant priorities for resilience and water quality. Developed grant applications and managed communication with agencies to meet eligibility and compliance criteria. Coordinated closely with Village leadership to translate complex funding requirements into achievable infrastructure upgrades. This role involved both technical strategy and community support.

VILLAGE OF KEY BISCAYNE RESILIENCY STRATEGY

Village of Key Biscayne, Florida | 2022 – Ongoing

Spearheading the development of a forward-thinking Resilience Strategy for the Village of Key Biscayne and crafting a cohesive implementation and integration plan to address climate challenges across all Village projects. Serving as strategic lead for the Village’s Resiliency Strategy, coordinated policy development, public education, and outreach integration. Led a branding initiative for the program to build trust and visibility. Facilitated inclusive workshops and one-on-one stakeholder sessions to shape the plan’s priorities and ensure alignment with public needs. Developed custom educational materials for use in print, online, and at in-person events. Provided high-level coordination with elected officials and technical teams to connect engineering solutions with community values. Delivered a strategic roadmap for long-term sustainability and resilience in infrastructure, planning, and communications.

BUSINESS CASE FOR RESILIENCE IN SOUTHEAST FLORIDA

Urban Land Institute, in Broward, Miami-Dade, Palm Beach, and Monroe Counties, Florida | 2019 – 2020

Served as Local Project Manager for a first-of-its-kind economic analysis focused on the financial benefits of resilience investments in real estate and municipal infrastructure. Coordinated day-to-day implementation across a multidisciplinary team spanning four counties. Facilitated engagement among municipal leaders, urban planners, and developers to identify economic risks of climate inaction and opportunities for sustainable adaptation. Synthesized complex data and regional market research into policy-relevant findings. Developed the final report to serve as a tool for decision-makers and business leaders advocating for long-term resilience investment. Helped lay the groundwork for further policy innovation in the region.

BUSINESS CASE ANALYSIS OF THE STORMWATER RESILIENCY PROGRAM

City of Miami Beach, Florida | 2018 – 2021

Directed the individual adaptation planning component of a citywide stormwater program, conducting detailed cost-benefit analyses of property-scale and district-scale strategies. Created communication tools to help residents and business owners understand flood risk and the city’s investment priorities. Led stakeholder briefings and produced an accessible final report and summary sheet for public distribution. Coordinated outreach with city staff to ensure the program’s technical findings were understood by residents, elected officials, and media. Resulted in tangible

recommendations adopted by the City and used as the foundation for long-term adaptation planning.

BRINY BREEZES ADAPTATION PLAN

Briny Breezes Corporation, Briny Breezes, Florida | 2021 - 2022

Led the creation of a customized adaptation plan for this small coastal community, using Brizaga’s APEx tool to evaluate infrastructure vulnerabilities and prioritize projects. Conducted in-depth risk and resilience analysis to develop a strategy addressing sea level rise, storm surge, and chronic flooding. Facilitated community engagement sessions to guide local decision-making and ensure the plan was grounded in resident needs. Supported the successful application for a \$7 million Resilient Florida Implementation Grant. Led the creation of a groundbreaking, first-of-its-kind adaptation plan tailored to the unique challenges of small coastal communities. Focused on addressing flooding, sea level rise, and broader climate change risks, the plan serves as a replicable framework for similar communities nationwide, cementing the community’s path toward long-term resilience.

Additional Relevant Projects

MAKING THE ECONOMIC CASE FOR RESILIENCE IN TAMPA BAY

Tampa Bay Partnership, in Pinellas, Hillsborough, Manatee, Pasco, Hernando, and Citrus Counties, Florida | 2020 – 2022

HOLLYWOOD CLIMATE VULNERABILITY ASSESSMENT

Hollywood, Florida | March 2023 – September 2024

BROWARD COUNTY WATER CONSERVATION PROGRAM

Broward County, Florida | March 2023 – Ongoing

Additional Professional Experience

- John A. Knauss Sea Grant Fellow for U.S. Senator Edward J. Markey (MA), 2016 – 2017
- Florida Director, Senior Scientist, and now Senior Advisor, American Flood Coalition, 2018 - Present

Awards and Recognition

- Urban Land Institute, Southeast Florida District Council, Young Leader of the Year, 2022

CONTACT

- Mike Rothenberg
- Broward – Region
- (305) 481-7135 cell
- mikerothenberg@ewsg.com

SKILLS

- Leadership
- Project Management
- Communication
- Scheduling
- Account Management
- Strategic Planning

INDUSTRY EXPERIENCE

- 2 - Years with Envirowaste
- 34- Years in Storm & Sewer Rehab

CERTIFICATIONS

- Confined Space
- First Aid / CPR
- ATTTSA Certified for Design
- NASSCO, PACP, MACP
- OSHA 10/30 Hour

AFFILIATIONS

- NASSCO, FWEA, NUCA, APWA, AWWA, NAWT

PROFESSIONAL OVERVIEW

Responsible for overseeing the day-to-day operation activities for all crews dispatched out of the Broward regional office. Routinely meets with clients for coordination of construction activities. Mike brings to the table 34 years of experience managing contracts, schedules and customer expectations while balancing the crew's experience and production requirements. Our commitment to maintaining a safe work environment for both the employees and the public is always considered a top priority.

PROJECT & MATERIAL EXPERIENCE

- **Sanitary Sewer and Storm Sewer Clean & CCTV**
 - MACP inspections on over Manholes
 - PACP inspections on over LF
- **Excavated Repairs**
 - Performed single point repairs on Sanitary mains and laterals
 - Storm sewer point repairs, diameters 15-inch through 42-inch
 - Manhole replacements
 - Water main replacement work
- **Sectional Liner repairs, CIPP**
 - Over installations of diameters 8-inch through 24-inch.
 - Installation & Repairs of PVC/PE Lining
 - Installation & Repairs of CIPP Lining
- **Tank Cleaning**
 - Waste Water Treatment Plants
 - Reclaimed Water Plants
 - Lift Stations
- **Sanitary Sewer and Storm System Pumping, Hauling, and Disposal**
 - Installation & Monitoring By-Pass pumping all sizes
 - Flow monitoring at sanitary manholes and/or pump stations
- **SSES Surveys**
 - Smoke Testing

Project Specific Experience Mike Rothenberg - Sample Projects

- Broward County, FEMA Compliant - Sewer Cleaning & TV Service \$138,305
- City of Ft Lauderdale, Stormwater Infrastructure Cleaning and Maintenance Services \$150,000
- City of Hollywood, Stormwater Infrastructure Cleaning and Maintenance Services \$500,000
- City of Hollywood, Inflow/Infiltration (I/I) Manhole Repairs \$1,057,085
- Coral Springs, Emergency Storm Drain Cleaning Services \$50,000
- Palm Beach County, Sewer Pipeline and Manhole Cleaning and Inspection Services \$450,000
- Pompano Beach, Inspection & Cleaning of Storm Water Systems and Utilities Jet-Vac On-Call Service \$213,268
- Sanibel Public Works, Post Hurricane Ian Sanitary Sewer Cleaning and CCTV Inspection Phase 2 \$565,375
- Sanibel Public Works, Post Hurricane Ian Sanitary Sewer Cleaning and CCTV Inspection Phase 3 \$587,010
- City of Sunrise, Vacuum Truck Services \$100K
- City of Sunrise, Pump Station Material & Grease Removal and Disposal Services \$150,000
- City of Sunrise, Sewer Rehabilitation/Maintenance and Infiltration/Inflow Reduction Program \$776,130
- SWA of Palm Beach County, Cleaning Services for Grease Traps, Building and Storm Drain Lines, Lift Stations, and Wastewater Tanks, \$3,986
- Town of Davie, Stormwater Maintenance \$300K