

ENGINEERING SERVICES FOR
**COMPREHENSIVE UTILITY
STRATEGIC MASTER PLAN**

RFQ # 246-11426

Submitted to

City of Fort Lauderdale, Florida



Submitted by

CH2MHILL®

June 16, 2014

In Association with

HAZEN AND SAWYER
Environmental Engineers & Scientists



WADE TRIM



GRAVEN-THOMPSON & ASSOCIATES, INC.





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2. Proposal Letter / Letter of Interest / Proposal Signature Form



CH2M HILL
550 W. Cypress Creek Road
Suite 400
Fort Lauderdale, FL 33309
Tel 954.351.9256
Fax 954.772.2621

June 16, 2014

James Hemphill, Sr. Procurement Specialist
Fort Lauderdale City Hall
100 N. Andrews Avenue, 6th Floor
Fort Lauderdale, Florida 33301

Subject: Engineering Services for Comprehensive Utility Strategic Master Plan, RFQ # 246-11426

Dear Mr. Hemphill and Selection Committee Members:

The City of Fort Lauderdale's (City) Public Works Department desires to create a Comprehensive Utility Strategic Master Plan (CUSMP) with the goal of improving the utility system's condition, capacity, performance, efficiency and quality of service, while planning for the future repair and/or replacement of utility system components.

To successfully achieve your project objectives, the City needs a project team that has:

- The geographic **REACH and RESOURCES** needed to ensure that the CUSMP development is expedited, cost-efficient, and technically defensible
- The **FLEXIBILITY** needed to work with the City to balance schedule, scope, and cost demands while ensuring development of the highest quality CUSMP
- Extensive master planning experience, including comprehensive, multi-disciplined plans, backed by a team of professionals with a strong resume in water, wastewater, reuse, SCADA, and asset management, to help the City foster **CREDIBILITY** and **CONFIDENCE** in the planning process and ensure ultimate approval of the CUSMP.

CH2M HILL has joined with **Hazen & Sawyer; Wade Trim, Inc.; Chen Moore & Associates, Inc.; and Craven Thompson & Associates, Inc.** to form a team that offers all of these qualities and that is committed to working with the City to bring its Fast Forward vision to reality. Our "Planning Team" includes leaders in strategic, integrated master planning combined with a depth of local support resources to facilitate the delivery of the CUSMP in the most technically superior, timely, and cost effective manner possible. Our team members are active in the community and have participated in the forums used to develop the 6-Pillars and Fast Forward Fort Lauderdale planning/visioning processes.

CH2M HILL Point of Contact

CH2M HILL Engineers, Inc. is the legal entity who will service the City's contract. Our primary point of contact with the City will be our Project Manager, **Luis Rioseco**. His information is below:

Phone: (954) 214-9980

Fax: (954) 772-2621

Email: Luis.Rioseco@ch2m.com

Why the CH2M HILL Team?

REACH and RESOURCES ... Our predominately Florida-based team will be managed from CH2M HILL's Fort Lauderdale office, with a management team and Task Leads that bring recent local experience working with the City on infrastructure projects; this institutional knowledge will be invaluable in reducing start up time and virtually eliminate learning curves. Of equal importance is our ability to access in-house industry experts in specialized areas, such as Asset Management and SCADA, from our regional and nationwide pool of resources. The CH2M HILL team brings an unmatched depth and breadth of resources in **ALL** required facets of this CUSMP project, resulting in a plan that will be both comprehensive and successfully integrated.

FLEXIBILITY ... Our organization, approach, and Planning Team members bring the City the flexibility needed to balance schedule, scope, and cost demands while ensuring the development of the highest quality CUSMP. Our Team's organization is designed to leverage local resources to the greatest extent, while making it possible to tap into CH2M HILL's vast network of technical resources for any type of specialized expertise that might be required.

Our Planning Team is also organized to work together efficiently, drawing upon established and successful working relationships among our Team member firms as well as with local agencies and contractors. Many of the Team members from our combined firms have a long and proven history of working together, some as far back as 25 years. These established relationships mean we know each other's strengths and can build a cohesive Team that can be effective for the City on Day One.

CREDIBILITY ... Our Planning Team's proven master planning decision analysis, stakeholder support, and database management experience will promote acceptance of the CUSMP process and increase the likelihood of public approval. Scientific defensibility is a cornerstone of our projects. CH2M HILL is a leader in the application of one-of-a-kind decision analysis tools that expedite the planning process. Recently, a team of independent scientists from MIT confirmed the defensibility of the Decision Support System (DSS) trade-off analysis tool that CH2M HILL developed for Tampa Bay Water's regional water supply plan in Florida. This wide range of experience, combined with our Team's nearly 20 offices statewide, provides the depth of experience and availability of staff to provide the "right resources" whenever they might be needed in the City.

The CH2M HILL Team is excited about the opportunity to continue to work with the City in pursuing its Fast Forward vision and look forward to expanding on our detailed approach to accomplishing the City's goals in an oral presentation. We are confident that we have brought together the optimal mix of qualified, experienced, and available staff to provide the City with the best value team for this CUSMP project. If you require any additional information, please contact Luis Rioseco, our Project Manager, at (954) 214-9980 or via email at Luis.Rioseco@ch2m.com.

Sincerely,

CH2M HILL Engineers, Inc.

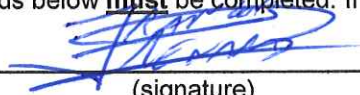
Francois D. Menard
Vice President

BID/PROPOSAL SIGNATURE PAGE

How to submit bids/proposals: Proposals must be submitted by hard copy only. It will be the sole responsibility of the Bidder to ensure that the bid reaches the City of Fort Lauderdale, City Hall, Procurement Services Division, Suite 619, 100 N. Andrews Avenue, Fort Lauderdale, FL 33301, prior to the bid opening date and time listed. Bids/proposals submitted by fax or email will NOT be accepted.

The below signed hereby agrees to furnish the following article(s) or services at the price(s) and terms stated subject to all instructions, conditions, specifications addenda, legal advertisement, and conditions contained in the bid. I have read all attachments including the specifications and fully understand what is required. By submitting this signed proposal I will accept a contract if approved by the CITY and such acceptance covers all terms, conditions, and specifications of this bid/proposal.

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

Submitted by:  June 13, 2014
(signature) (date)

Name (printed) Francois Menard Title: Vice President

Company: (Legal Registration): CH2M HILL Engineers, Inc.

CONTRACTOR, IF FOREIGN CORPORATION, MAY BE REQUIRED TO OBTAIN A CERTIFICATE OF AUTHORITY FROM THE DEPARTMENT OF STATE, IN ACCORDANCE WITH FLORIDA STATUTE §607.1501 (visit <http://www.dos.state.fl.us/>).

Address: 550 W. Cypress Creek Road, Suite 400

City: Fort Lauderdale State: Florida Zip: 33309

Telephone No. (954) 351-9256 FAX No. (954) 772-2621 Email: Didier.Menard@ch2m.com

Delivery: Calendar days after receipt of Purchase Order (section 1.02 of General Conditions): N/A

Payment Terms (section 1.04): N/A Total Bid Discount (section 1.05): N/A

Does your firm qualify for MBE or WBE status (section 1.09): N/A MBE N/A WBE N/A

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

<u>Addendum No.</u>	<u>Date Issued</u>
Addendum #1	5/22/2014
Addendum #2	6/10/2014
Addendum #3	6/10/2014

P-CARDS: Will your firm accept the City's Credit Card as payment for goods/services?
YES _____ NO X

VARIANCES: State any variations to specifications, terms and conditions in the space provided below or reference in the space provided below all variances contained on other pages of bid, attachments or bid pages. No variations or exceptions by the Proposer will be deemed to be part of the bid submitted unless such variation or exception is listed and contained within the bid documents and referenced in the space provided below. If no statement is contained in the below space, it is hereby implied that your bid/proposal complies with the full scope of this solicitation. **HAVE YOU STATED ANY VARIANCES OR EXCEPTIONS BELOW? BIDDER MUST CLICK THE EXCEPTION LINK IF ANY VARIATION OR EXCEPTION IS TAKEN TO THE SPECIFICATIONS, TERMS AND CONDITIONS.** If this section does not apply to your bid, simply mark N/A in the section below.
Variances:

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3. Qualifications of Firm

Per the request of the RFQ, details of CH2M HILL’s ability to meet the City’s minimum requirements is included in the completed SF330 form at the end of this submittal. Additional details of our firm’s qualifications to serve as the City’s consultant for the Comprehensive Utility Strategic Master Plan are included in this section.

About CH2M HILL

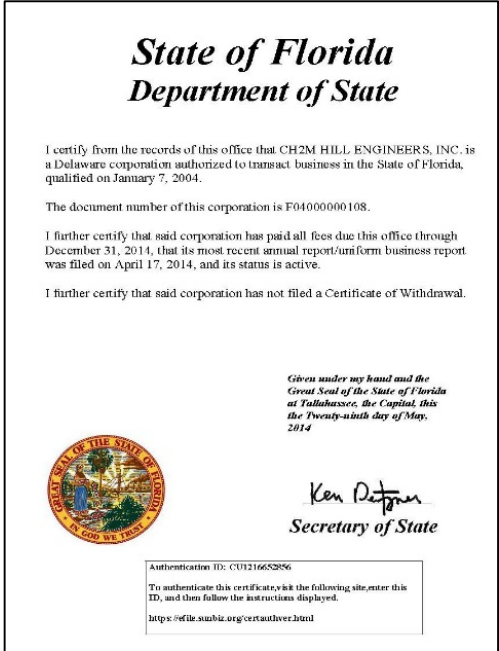
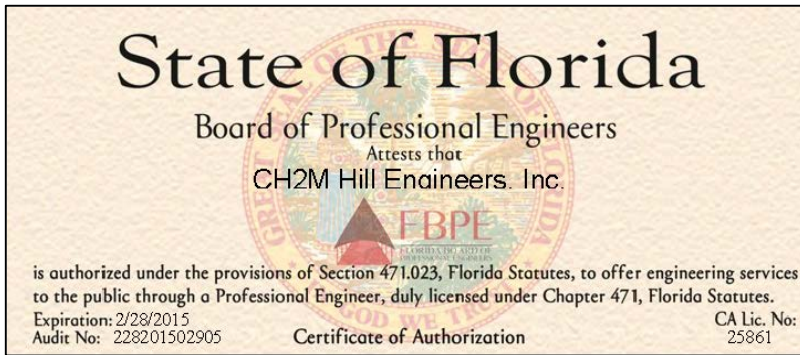
A full-service firm, CH2M HILL was founded in 1946 and is employee-owned with more than 26,000 employees worldwide. The firm has been ranked consistently by Engineering News-Record as one of the top U.S. design and construction companies and one of the highest ranked, award-winning, water firms in the world. During its 68 years in business, CH2M HILL has served municipal, state, federal, and private-sector clients in water, environmental, transportation, industrial, military, power, and telecommunications. Today, CH2M HILL provides a full range of utility planning, design, and operations and management consulting services.

CH2M HILL has served public utility clients on projects in more than 50 countries. The firm has built its 68-year reputation as a water/wastewater industry leader by meeting client needs, working through complex issues, and exceeding the expectations of our clients. Unique to our industry, CH2M HILL provides both the operational and engineering expertise combined into one firm.

Corporate Information

YEARS OF RELEVANT EXPERIENCE	FIRM ADDRESS
68 years	550 W. Cypress Creek Road, Suite 400 Fort Lauderdale, Florida 33309
BUSINESS STRUCTURE	CONTACT PERSON
Corporation FL Dept. of State Document # F04000000108	Luis Rioseco
MINORITY/WOMEN OWNED	PHONE
Does not apply	(954) 351-9256
SIZE OF FIRM	FAX
26,175 - more than 700 in FL	(954) 772-2621
WEBSITE	EMAIL
www.ch2m.com	Luis.Rioseco@CH2M.com
PERTINENT LICENSING INFORMATION	

CH2M HILL holds an active license in Engineering in the state of Florida. In addition, we are an active corporation with the Florida Department of State (document # F04000000108, dated May 29, 2014). Copies are exhibited on the following page.

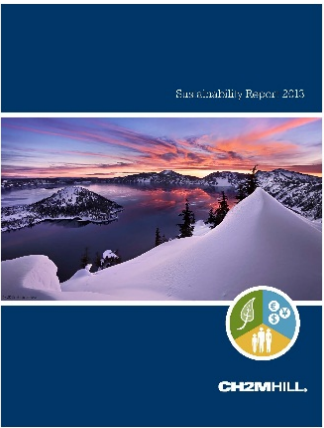


Sustainable Engineering Leadership

CH2M HILL was one of the first in the engineering industry to establish an internal environmental management system (EMS) which follows ISO 14001 guidelines. We support the United Nations Global Compact principles and measure and report our performance annually. CH2M HILL has been recognized as a leader in sustainable consulting (2013), environmental services (2012), sustainable engineering (2010)

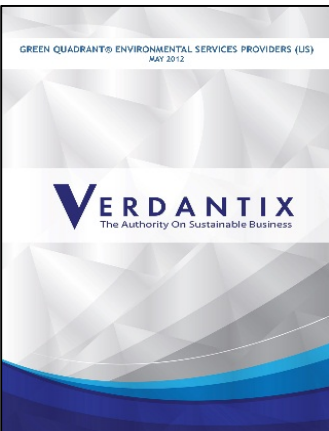


and climate change consulting (2009) by Verdantix, an independent analyst firm, and as one of the World's 100 Most Ethical Companies by the Ethisphere™ Institute.



As an industry leader in sustainability and project and program management, CH2M HILL delivers high-quality work using integrated, collaborative approaches. During 2012, the firm won over 75 awards for design innovation, health and safety, diversity and small business support and other accomplishments.

Sustainability is woven into CH2M HILL's fiber. For the eighth year, we improved and expanded our EMS. Our 2013 Sustainability Report includes several accomplishments: (1) decreasing Scope 1 and Scope 2 emissions by 3 percent from 2011, (2) expanding e-waste recycling to all offices, (3) continuing to increase teleworkers and reduce air travel and (4) continuing our efforts to green our supply chain. Our operations management sustainability program is operating in all 104 of our clients' facilities in the United States, and our EMS programs have expanded considerably in Europe.



Although our total paper consumption in North America increased by 3 tons in 2012, this equates to a decrease of 9 percent compared to revenue. Most of our offices recycle, and 100 percent have materials reuse programs. We increased spending with major suppliers which have sustainability criteria in place by US\$16.9 million (38 percent over 2011).

We help create a cleaner, safer, more prosperous world, and we continually look for ways to protect and enhance economic and societal vitality and preserve environmental resources for future generations.

To view CH2M HILL's full 2013 Sustainability Report, visit www.ch2mhill.com/sr.



4. Qualifications of the Project Team

The CH2M HILL project team combines strong team leadership, unparalleled technical expertise, first hand familiarity with the City and its service area, and a keen understanding of the City’s vision, goals, and challenges. We stand ready to begin work immediately and to continue our high-performance partnership with the City staff to leverage the strengths and efficiencies of our combined expertise. Our proposed staff includes experts who have successfully delivered similar master planning services for clients in South Florida and the U.S. All of our professionals offer the City a solid reputation for delivering quality service, and their personal commitment to being available to the City throughout this contract.

As requested in the RFQ, CH2M HILL has included in the SF330 form in this submittal a list of project team members, the personnel who will be used on this project, and a brief resume of their qualifications (Sections D&E). Due to page limits, we have highlighted only our project management team and Task Leads in our SF330. In addition to these highly experienced and qualified experts in their fields, the CH2M HILL team has an unmatched depth of resources with a broad range of skills who will be made available to the City to provide support services to our Task Leads. Resumes of qualifications for any of these individuals can be made available to the City upon request.

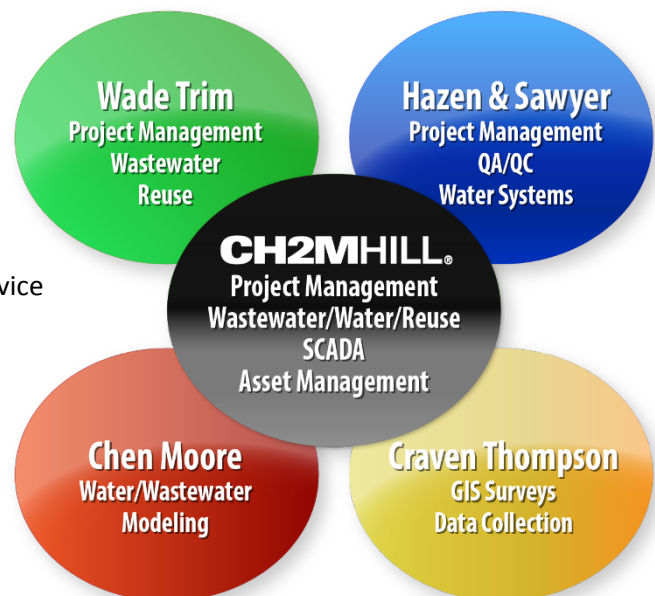
Subconsultant qualifications and background can be found in Section 11, Subconsultants, in this submittal.

As illustrated throughout this section, our team organization provides the City with the following benefits:

- An absolute commitment to the City and this contract—ensuring exceptional client service, full accountability for our performance, and our best resources to help you achieve your future goals
- A high-performance management team with a successful history of working together, as well as with the City and area clients—ensuring a highly cohesive, integrated team with proven experience delivering projects of similar scope, on time and within budget
- A best-in-class team of water, wastewater, reuse, SCADA, and asset management experts, bringing to the City a national perspective for partnership with the City’s engineering, construction, and operations staff
- Core delivery resources and support staff with the comprehensive skills required to deliver this project—providing immediate access to our local and recognized experts and highly responsive service throughout this contract

The CH2M HILL Team Brings Together the Expertise and Knowledge of Local and National Leaders in Master Planning

The CH2M HILL team is comprised of five firms with complementary skills and unmatched qualifications to successfully develop and implement the City’s



CUSMP. CH2M HILL, as the prime firm, will have ultimate responsibility for coordinating and managing this project. The team member firms and their roles on this project are depicted in the exhibit on the previous page. A detailed organization chart, including names and qualifications of the individual team members, can be found in Sections D& E of the SF330 form found at the end of this submittal.

Team Synergy Facilitated by a Strong History of Working Together on Projects

In assembling the team for the City's CUSMP, CH2M HILL chose to bring together firms with compatible skillsets and top level, relevant project experience to ensure that the City receives the most comprehensive and technically superior service available in the industry. In addition to skills and experience, we recognize the unique challenges inherent in bringing together a range of disciplines to form a single comprehensive, coordinated master plan. To bring to the City a cohesive, unified approach, we selected firms that we know, and that CH2M HILL, or our team members, have a history of working with across the U.S.



Hazen and Sawyer and CH2M HILL have previously collaborated on multiple projects and programs. Our most relevant joint assignment was the completion of the City's Water and Waster Master Plan in 2000. Our roles on that assignment included CH2M HILL providing wastewater planning and Hazen and Sawyer providing water planning, as we propose to do on this project.



The two firms also worked on the City's Waterworks 2011 program over a nine-year period ending in 2011, with CH2M HILL serving as the Program Manager and Hazen and Sawyer serving as a designer. Other joint assignments include the ongoing Rocky Hill WPCF Plant Upgrade in Connecticut, and a recently completed research project on Nutrient Recovery as a Sustainable Nutrient Management Tool.

Hazen and Sawyer worked closely with Wade Trim on the Village of Islamorada Wastewater Master Plan to implement design and construction activities for all collection and transmission facilities within a 17-mile long service area.

Wade Trim and CH2MHILL have worked together on multiple projects nationally for more than 15 years in the assessment of regional utilities and developing a program that meets their needs for the present and future. Wade Trim's largest venture working side-by-side with CH2MHILL is for the Northeast Ohio Regional Sewer District (NEORS) for the City of Cleveland, Ohio, with their Capital Improvement Project Program Management and Combined Sewer Overflow Advance Facility Plan & Support Services. Other projects where CH2M HILL and Wade Trim have worked together include: Southerly Combined Sewer Overflow Phase 2 Long term Control Plan (both firms as subs); Capital Improvement Project Program Management, Northeast Ohio Regional Sewer District, Cleveland, OH (CH2MHILL as prime) Easterly Combined Sewer Overflow Advanced Facility Plan, Northeast Ohio Regional Sewer District, Cleveland, OH (both firms as subs); Omaha DPW Combined Sewer Overflow Program, Omaha Department of Public Works, NE (CH2MHILL as prime); Combined Sewer Overflow Advance Facility Plan & Support Services, Northeast Ohio Regional Sewer District, Cleveland, OH (Wade Trim as prime).



Chen Moore & Associates (CMA) has a long relationship with CH2M HILL dating back over 20 years. Currently, CMA is interacting with CH2M HILL for the City of Key West (CMA is prime consultant with CH2M HILL as a subconsultant), the Florida Keys Aqueduct Authority (CMA is prime consultant, CH2M HILL is Owner's Representative) and the Seminole Tribe of Florida (CMA is prime consultant, CH2M HILL is Owner's Representative). This long familiarity with CH2M HILL makes CMA a seamless team member, allowing for expertise to be communicated with minimal coordination.





5. Project Manager’s Experience

Luis Rioseco, Jr. will serve as the Project Manager for the CUSMP project, bringing to the City over 13 years of exceptional facilities, construction and engineering management, and project and program organizational leadership experience. He will be the primary point of contact for the City and will be tasked with coordinating all the various tasks of our team member firms.

Luis has hands-on experience in managing and integrating large operations, construction, and design teams during program delivery in both the public and government sectors. His management experience includes directing the selection, award, and administration of contracts with A/E firms and consultants; coordinating and managing the development of construction drawings and bid documents; soliciting, awarding, and administering construction contracts; and monitoring construction schedules, inspecting work, and serving as the liaison between contractors and clients.

Luis brings relevant local major program delivery experience in South Florida, having served as the Program Manager for the City of Ft. Lauderdale \$690 million Water Works 2011 program, which involved upgrading 40 percent of the City’s septic system to sewers and upgrades to the wastewater treatment system over 10 years. Under Luis’s program management leadership, Ft. Lauderdale’s program was delivered 10 months ahead of schedule and saved the City’s rate-payers more than \$90 million. In addition, he led the City of Fort Lauderdale’s \$26 million Peele Dixie nanofiltration membrane Water Treatment Plant (WTP) project, which won a national award from the Construction Manager’s Association of America for program management, and a regional award from Southeast Construction Magazine for Best Civil Project.

Luis is serving as the Program Manager for the Seminole Tribe of Florida Program Support in Ft. Lauderdale. For this program, he is managing the \$150 million, 5-year Capital Improvement Program (CIP), comprised of numerous projects to update, modernize, and expand potable water, sanitary sewer, and reclaimed water infrastructure.

He has also gained project management expertise in his role as Project Manager for the South District Repair and Replacement (R&R) Program for Miami Dade Water and Sewer Department. This R&R program involved a number of projects for the South District Plant, such as the condition assessment of the South District plant for the EPA consent decree. Another project included the development of design-build criteria for improvements at the SDWWTP Cogeneration Facility.



LUIS RIOSECO JR. BRINGS TO THE CITY A WEALTH OF RECENT, RELEVANT PROJECT MANAGEMENT EXPERIENCE THROUGH HIS WORK AS:

Program Manager for the City of Ft. Lauderdale’s \$690 million WaterWorks 2011 program

Program Manager for the \$150 million, 5-year Capital Improvement Program for the Seminole Tribe of Florida Program Support contract in Ft. Lauderdale

Project Manager for the South District Repair and Replacement Program for Miami Dade Water and Sewer Department, which involved a number of projects for the South District Plant

Deputy Operations Officer for the Naval Facilities, Engineering Field Activity Northeast, responsible for all construction (over \$360 million annually), real estate transactions, and facility support contracts at all Navy and Marine Corps activities in the Northeastern United States

As part of this effort, he assisted with the preparation of a Request for Proposal (RFP) package for the design, permitting, acquisition and installation of up to four cogeneration units, including the necessary gas cleaning and conditioning, using a design-build delivery method. Based on the design criteria documents for this design-build project, the team developed a permitting strategy to update the plant's Title V Air Operational permit. Another project in this program included the replacement and screening improvements to Plants 1 and 2 involving final design and services during construction. He actively participated in the basis of design phase and managed the final design to install four new fine plate screens at the SDWWTP headworks facility.

Luis' project management expertise was evident in his role as Deputy Operations Officer for the Naval Facilities, Engineering Field Activity, Northeast. In this position, he was responsible for all construction (over \$360 million annually), real estate transactions, and facility support contracts at all Navy and Marine Corps activities in the Northeastern United States, and was responsible for conducting economic feasibility assessments, project development, proposal development, and client coordination for Navy and Marine Corps family housing privatization initiatives nationwide.

He has more than 7 years of hands-on experience in managing construction and design teams. Luis directed the selection, award, and administration of contracts with architect-engineering firms and consultants. He coordinated and managed the development of construction drawings and bid documents and solicited, awarded, and administered construction contracts. Luis monitored schedules, inspected work, and served as the liaison between the contractors and clients.





6. Approach to Scope of Work

Understanding of City's Needs, Goals, and Objectives

The City of Fort Lauderdale's (City) Public Works Department is requesting statements of qualifications from qualified professional engineering teams to create a Comprehensive Utility Strategic Master Plan (CUSMP). The purpose of the CUSMP will be to evaluate the entire utility system and to recommend actions, policies, or code changes necessary to maintain and improve the system's condition, capacity, performance, efficiency and quality of service, while planning for the future repair and replacement of utility system components.

More than a decade has passed since the City completed its last comprehensive water and wastewater master plan (*Water and Wastewater Master Plan, December 2000; CH2M HILL/Hazen and Sawyer*). The 2000 *Water and Wastewater Master Plan* was updated in 2007. Many of the improvements and strategies recommended in the 2000 Plan were successfully implemented through the large capital program known as WaterWorks 2011, an award winning endeavor (while some of the improvements identified in the 2007 update have not been implemented). Since 2000, however, the utility industry in southeast Florida has seen many changes. In Fort Lauderdale, these changes include the historic Great Recession of 2008, continuing retirement of aged utility assets, regulatory agency rule/policy modifications, recognition of adaptations necessary to effectively address climate change, and changes to the City's own goals for the utility, as defined through a broad based community visioning process. As such, the City has now begun a project to analyze current and future conditions, utilizing the information gathered since the last Plan, with a goal of creating a resilient, sustainable, cutting edge utility of the future.

The time has come to update the 2000 Water and Sewer Master Plan, Fast Forwarding to the Year 2035.



Customarily, Master Plans focus only on development, growth, utility condition, and future capital needs of the utility. Our team's approach takes the customary master plan approach and expands it to include components to ensure the utility is guided for long term efficiency and sustainability. Our evaluation of the City's utility system, from raw water supply to wastewater, will consider efficiency, compliance, and sustainability improvements.

Some of the evaluation criteria to be considered during our CUSMP efforts are shown in **Figure 6.1**

FIGURE 6.1






CUSMP Evaluation Criteria

- ✓ Energy and operational efficiency improvements
- ✓ Current and future regulatory compliance issues
- ✓ Quality and reliability of utility service
- ✓ Ability to resist sea level rise and climate change impacts
- ✓ Sustainable practices in materials, systems, and approaches
- ✓ Water conservation strategies
- ✓ Disposal of solids resulting from treatment efforts
- ✓ Maximizing wastewater reuse implementations

OUR Team Vision, Ideas, and Methodology

The Planning Team brings considerable institutional knowledge to this project. Such knowledge can serve as an efficient platform on which to build new analyses, thereby ensuring the most efficient use of scarce funding resources. Additionally, the Planning Team has been integrally involved in many of the most forward thinking utility planning projects in SE Florida (and nationally), ensuring that all feasible investment alternatives are properly vetted. ***It is noted that infrastructure was the top-voted category for discussion at the Neighbor Summit in the City's Fast Forward visioning process.*** Moreover, our citizens voiced concern that only smart investments be made; investments that pay dividends now and for future generations. The Planning Team has the institutional knowledge and cutting edge utility infrastructure expertise to ensure that this goal is met.

The Planning Team is familiar with the myriad changes which have occurred since the 2000 Master Plan update. Additionally, team members have participated in the City's subsequent planning and visioning process. As such, we believe that we have a good understanding of the City's overarching goals and objectives for the **2035 Plan**, as shown in the table on the following page.

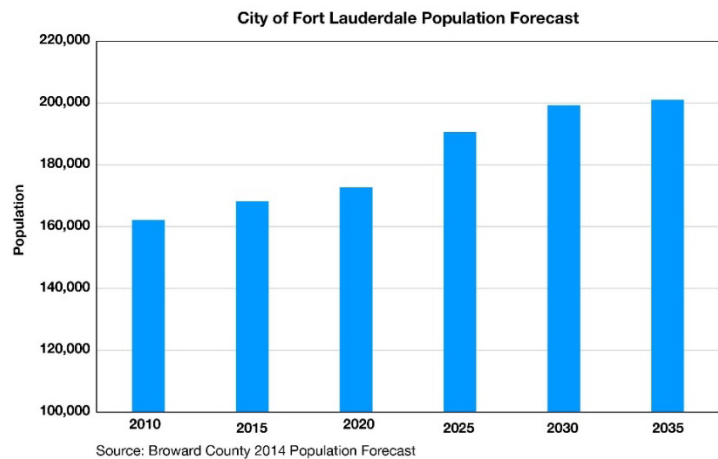
Goals	Key Challenges	Benefits of our Team
 <p>Expand current knowledge base - avoid reinventing the wheel</p>	<ul style="list-style-type: none"> • Extensive maintenance backlog • Aging infrastructure • Plan for long term water supply diversification • Account for dynamic future regulation 	<ul style="list-style-type: none"> • Our Team has in-depth knowledge of City's infrastructure. • We have long relationships with key staff - we will reach decisions with policy makers quickly. • The City can trust our Team to deliver.
 <p>Plan a sustainable, resilient utility of the future</p>	<ul style="list-style-type: none"> • Population growth • Aging infrastructure • Sea level rise • Extreme weather • Budget constraints 	<ul style="list-style-type: none"> • We've assisted with your "Six Pillars" and "Fast Forward Fort Lauderdale" • Local experience • We are National leaders in demand management. • We bring national and local experts in identifying the most effective adaptation strategies • The master plan will ensure the City's infrastructure is ready to meet the future.
 <p>Create a utility meeting the best of measurable performance indicators</p>	<ul style="list-style-type: none"> • Total water management model • Adapt to the future 	<ul style="list-style-type: none"> • Our team's Operations Consulting Group has unique and relevant experience in the 15 precepts of Effective Utility Management.
 <p>Deliver tangible benefits to the local community</p>	<ul style="list-style-type: none"> • Shrinking resources and increasing demand • Current system requires modifications for increased reliability and resiliency • Development of a right-sized implementation schedule that recognizes current economic climate 	<ul style="list-style-type: none"> • Our team includes staff with decades of experience. • We have a reputation for cost effective and innovative solutions. • We will develop a comprehensive, cost effective and prioritized Community Investment Program (CIP). • We will maximize value of existing infrastructure.
 <p>Reduce water demand 20% by 2020</p>	<ul style="list-style-type: none"> • Reduce City's per capita water usage rate from 189 gpd (per the Sustainability Action Plan Update 2011) to 170 gpd • Water scarcity 	<ul style="list-style-type: none"> • We are national leaders in conservation program development. • Our team has planned and implemented award-winning, nationally-recognized water conservation programs.

Population Forecasting

Figure 6.2 illustrates the population forecast for the City of Fort Lauderdale through the year 2035. *In the Year 2035, an additional 33,000 people will reside in Fort Lauderdale.*

Population forecasting in Fort Lauderdale is unique due to the part-time population that enters the City for business/commercial activity (e.g., Port Everglades) on a daily basis along with tourist populations and seasonal residents. These population variations throughout the year can have a significant effect on utility system sizing and performance. This is unique in terms of such impacts as well as the per capita consumption of water and generation of wastewater. The impact of this variation will be assessed from available customer water meter data.

FIGURE 6-2



For the purpose of evaluating the population projections for the City's service area, the team envision utilizing the methodology pioneered by our team for the 2000 Water and Wastewater Master Plan. Geographic Information System (GIS) tools that combine population forecast data based on traffic analysis zones (TAZ) that intersect with the City's service area boundaries will be deployed. These zones will then be spatially allocated to pipes and lift stations with the water and wastewater hydraulic models. The hydraulic models will serve as one of many tools for identifying infrastructure improvements.

The spatial allocation of population forecasts within the water and wastewater hydraulic models will enable the Planning Team to evaluate the effect of likely growth and redevelopment scenarios against the City's existing infrastructure. As your planning partner, we will carefully utilize all the available data and work with City staff to establish a plan for matching reliable water and sewer capacity with population projections.

Guiding Principles and Project Efficiency Approach

The Guiding Principles regarding successful execution of the City's CUSMP is based on our understanding of the drivers, and resultant key elements. These key elements include:

- Technical evaluations
- Financial evaluations, primarily in the form of business case evaluations
- Collaborative and structured strategic decision making

Technical evaluations are essential to the planning for a utility, as these evaluations provide the firm foundation for the necessary infrastructure to achieve total customer satisfaction by providing quality public services. An important aspect of this type of effort is also the Triple Bottom Line – human, environmental, and financial – and is reflected in the sustainability division's charge to promote, encourage, facilitate and implement environmental, economic, and socially responsible practices such as conservation, efficiency, preservation, preparedness, and systemic thinking within City operations and in the larger community.

Our Planning Team will facilitate the delivery of a consensus-based project utilizing proven approaches based on knowledge and experience.

Overall this guiding philosophy will be divided into two sections:

- **Management Philosophy** – Our management philosophy defines the critical criteria to execute a CUSMP.
- **Project Execution** – Specific tasks to successfully deliver this project for the City.

Management Philosophy

Our management philosophy involves integrating multiple components to provide an optimal unified recommendation for the future of the City. These components include 1) the evaluation of the current operational condition, or simply, the development of a “baseline scenario”, 2) the establishment of operational performance criteria under which the City and its stakeholders would like to see the City operate into the future, 3) determination of the gaps between the baseline scenario and the performance criteria over a potential ranges of uncertainties, and 4) development and application of a strategic decision framework by which objective future alternatives are selected and, ultimately a preferred alternative is decided upon for each service area of interest.

Our philosophy offers the City the following benefits:

- Collaborative Approach
- Objective Assessment
- Sound and Timely Communication
- Integration of Previous Planning Efforts (Project Efficiency)

Collaborative Approach

Our basic approach will be to use monthly workshops as the primary method to achieve collaboration with City staff and our Planning Team. At each monthly workshop, we will provide an update of project status and discuss progress on the development of the plan. The meeting will be used as a forum to present information and receive comments and direction from City staff.

Objective Assessment

Our Planning Team offers the City an objective evaluation of the current operational and financial status of the City’s water and wastewater infrastructure and will provide recommendations on how to optimize future operations. The final result will be an objective assessment of the City’s water supply, treatment facilities, collection and distribution systems, and future water resource management alternatives (including conservation, reuse and policies) to provide a holistic, unified plan to best address the needs of the citizens served by the City.

Risk and Reliability. Our approach to comprehensive and integrated utility planning is founded on the principles of risk and reliability. The international standard for risk (ISO 31000) and the new international standard for asset management (ISO 55000) define risk as “undesirable effects on expectations.” In other words, minimizing risk means reducing potential variability. Reliability is defined by the American Society for Quality (ASQ) and in other industry standards as “the probability that an item can meet its desired levels of performance under specified conditions.” Our approach to comprehensive utility management includes the analysis and understanding of risk and reliability, the use of experts and leading industry guidance documents, and the inclusion of these key concepts in decision making and dealing with uncertainty.

Uncertainty and Strategic Decision Making. All efforts related to forecasting involve issues related to dealing with uncertainty. We use structured approaches, as well as industry leading tools, based on probabilistic analysis and models to better inform decision makers of where and to what degree uncertainty exists. These tools are applied on both the supply and demand forecasting aspects as well as in the renewal and replacement (R&R) forecasting.

Decision support processes are primarily applied to strategic decision making. Formal processes are not always needed to address the hundreds of tactical or operations decisions that we make each day. However, structured processes are needed and are best practice when addressing strategic decisions, which can commonly be defined as potentially impacting at least 10 to 20 percent of utility value (either in financial or total value terms). We use a standard six-step process that has proven successful on a range of similar projects.

Sound and Timely Communication

Our delivery approach places a strong emphasis on teamwork and communication with the City. Our experience is that maintaining strong communications throughout all phases of the project will be critical to the ultimate success of the City's unification initiative. We propose the following strategies to facilitate communications:

- Developing a cooperative working relationship built on trust, beginning with team chartering
- Communicating with City staff easily and continuously using chartering sessions, workshops, formal meetings, and informal gatherings
- Listening to the City staff and maintaining open lines of communication to ensure support
- Remaining flexible to both technical and non-technical changing project needs

Cooperative working relationships are based on frequent communication and mutual professional respect.

Integration of Previous Planning Efforts (Project Efficiency)

The first step in creating the 2035 Plan is recognizing the specific internal and external influences that directly affect development of project goals. Such influences come in the form of new regulation, community desires, natural phenomena, economic phenomena and more. Many of these influences have been documented through various processes, as illustrated in the timeline on the following page.

With a thorough understanding of past planning, existing water and wastewater utility infrastructure, and internal/external influences, the Planning Team can invest much of the resources available for this project identifying innovative ways to serve future populations. We will begin by determining the scale of future population increases.

The integration of this existing information, combined with future water resources recommendations, will provide the City with a unified plan that lays out the future path for the long-term sustainability of the City.

The 2035 Master Plan will address a drastically changed world, as shown on the following page.

Financial Analysis and Business Case Evaluations

Similar to risk and reliability, understanding financial drivers and financial considerations is important to understanding the current and desired future operating states of the utility. We typically evaluate infrastructure decisions through the use of business case evaluations that include scenarios for capital intensive, O&M intensive, and several blended combinations. Such business cases seek to balance desired lifecycle performance with most affordable capital costs, financial versus non-financial consideration, and optimal system performance grounded in risk and reliability. One example in facilities is the balance between labor and chemical/energy or in the balance of labor and the investment in new technologies.

Water, Wastewater, and Reuse Methodology

Existing Systems at a Glance

Figures 6-3 and 6-3 on the following pages represents the Planning Team's experience on existing City facilities.

Water Demand Forecast

Based upon the April 1, 2013 Bureau of Economic and Business Research (BEBR) population estimate, the City provides water to approximately 229,000 people across several governmental jurisdictions in central Broward County. In some areas, the City owns and maintains the water distribution system. In certain areas, the City sells bulk water for redistribution by other agencies (such as Port Everglades, Wilton Manors, Oakland Park, etc). Approximately, 75 to 80 percent of the people within the service area reside within the City of Fort Lauderdale jurisdictional boundary. **Figure 6-4** depicts the City's water service area, the location of wellfields, and the treatment plant locations.

Figure 6-5 depicts the Biscayne aquifer raw water demand forecast for the City's water service area on an annual average day flow (AADF) basis. The City will provide water to about 265,000 in the year 2035.



MAJOR INTERNAL/EXTERNAL PLANNING DEVELOPMENTS AFFECTING THE CITY OF FORT LAUDERDALE



- 1 **2000 Water and Wastewater Master Plan** CH2M HILL and Hazen and Sawyer joint effort • Basis for WaterWorks 2011
- 2 **2005 UIC Rule Change** Requires high level disinfection of new injection wells
- 3 **2005-2006 LEC Plan Update** Projects FW demand • Biscayne Aquifer allotment of 47.81 mgd • Included Floridan Aquifer RO at Peele-Dixie and Fiveash (YR 2015)
- 4 **2007 Regional Water Availability Rule** Limits raw water withdrawal to 52.55 mgd
- 5 **2007 Water Master Plan Update** Prepared by Hazen and Sawyer • Updated water model and piping improvements
- 6 **2008 Great Recession** Impacts future population growth and consumptive use
- 7 **2008 Ocean Outfall Rule** Opportunity for cost sharing for "virtual reuse" credits
- 8 **2008 Reclaimed Water Study** Identifies wastewater reuse alternatives
- 9 **2009 Greenhouse Gas Inventory** Establishes Greenhouse gas baseline and reduction goals
- 10 **2009 Water Supply Facilities Work Plan** Plans for 6 mgd RO at Dixie in 2015 • Additional water needed in 2022 (from L-8 Reservoir)
- 11 **2009 LEC Water Supply Solution** Prepared by Hazen and Sawyer • Evaluates C51 reservoir as alternative water supply
- 12 **2010 LEC Water Supply Solution Additional Investigations** Prepared by Hazen and Sawyer • Updates 2030 Biscayne Aquifer projections for Fort Lauderdale
- 13 **2010 Census** Updates water service area population
- 14 **2011 Sustainability Action Plan Update** Directly engages large water users in long term planning • Implements/continues conservation efforts • Sustainability goals
- 15 **2013 BEBR Forecast** Updates water and wastewater service area population
- 16 **2035 Vision Plan** Establishes 2035 infrastructure sustainability goals
- 17 **2013 Floridan Aquifer Systems in Broward** USGS better delineates the Floridan Aquifer
- 18 **2013 LEC Water Supply Plan Update** Updates demand projections and alternative supply projects
- 19 **2014 Floridan Aquifer Model Update** FAS Quantity and quality model
- 20 **2014 Water Supply Facilities Work Plan Update** Defines capital improvements to meet future demands

We understand **all related planning efforts** ensuring appropriate use in your **MASTER PLAN UPDATE**

21 **2014 CUSMP** Leverage institutional knowledge and innovation for best plan

WATER FACILITIES AT A GLANCE

RAW WATER SUPPLY



Key Features

- Dixie and Prospect Wellfields
- Permit Limit: 52.55 mgd (annual avg)
- City's wellfields are permitted under Water Use Permit No. 06-00123-W.
- No. of Wells:
 - Dixie Wellfield: 8 wells
 - Prospect Wellfield: 29 wells
 - Saltwater Monitoring: 10 wells

Planning Team's History

- Master planned City's water supply improvements in 2000 and 2007.
- Planning developed hydraulic model of the wellfields pumping and conveyance systems.
- Assisted City plan improvements to enhance the storm resistance of facilities after hurricane Wilma.
- Designed Dixie Wellfield
- Designed 5 new wells at Prospect and 2,800 feet of raw water main.

FIVEASH WTP



Key Features

- Conventional lime softening
- Constructed in the 1950s
- Permitting capacity: 70 mgd
- Likely capacity: 60 mgd (reported hydraulic restriction)
- Equipment is aged and reaching the end of its useful life over the next 20 years

Planning Team's History

- Assisted City identify critical infrastructure sustainability concerns.
- Designed Fiveash WTP Upgrades Phase 1 (constructed in 2008).
- Assisted City plan improvements to enhance the storm resistance of facilities after hurricane Wilma.
- Designed and permitted Fiveash WTP Upgrades Phases 2 & 3.
- Disinfection System Replacement projects (City is planning bidding in near future).

PEELE-DIXIE WTP



Key Features

- Nanofiltration (membrane softening)
- Constructed in 2008
- Permitted capacity: 12 mgd
- Membrane facility was pre-planned to allow expansion with Reverse Osmosis
- 1920s era lime softening facilities on-site were retired in 2008

Planning Team's History

- Designed Peele-Dixie 12 mgd membrane plant (constructed in 2008).
- Developed planning documents that allow the City to rapidly proceed to design of Floridan Aquifer alternative water supply if warranted by forecasted water demand.
- Awards
 - 2008 CCMA Project Achievement Award
 - "Best of 2008" Southeast Construction Magazine

WATER DISTRIBUTION / STORAGE



Key Features

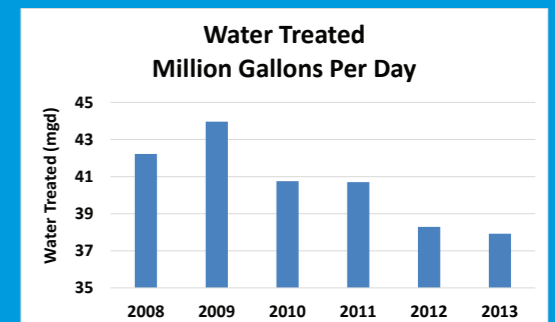
- ≈ 770 miles of water mains (assets are aged)
- Superchlorination twice per year to manage customer water quality
- Poinciana Water Tank and Pump Station (constructed in 2008)
- 2nd Avenue Pump Station (refurbished in 2012 with new pump and automation)
- 2nd Avenue Water Tank (1950s era elevated steel tank)

Planning Team's History

- Master planned City's distribution system improvements in 2000 and 2007.
- Designed Poinciana Park Water Tank and Pump Station.
- Designed 2nd Avenue pump station refurbishment.
- Designed 2nd Avenue water tank refurbishment.
- Planning team developed the City's existing water transmission system hydraulic model.

≈ **\$900 Million**
Worth of Water Assets

The City of Fort Lauderdale owns the largest amount of water infrastructure in Broward County. This exhibit provides a short summary of the main features of the City's water assets. Specific knowledge of the City's assets will enhance the delivery of a master plan that is adaptable to meeting the future.



➤➤ The Planning Team offers unmatched, detailed institutional knowledge of the City's water infrastructure and the complex issues related to water supply planning. Selecting our team ensures that the City will obtain a Comprehensive Utility Strategic Master Plan that identifies smart investments that pay dividends now and for future generations. ⏪⏪

WASTEWATER FACILITIES AT A GLANCE

COLLECTION AND PUMPING SYSTEM



Key Features

- Over 140 lift stations (vary in design and construction)
- Gravity collection system (assets are aged) source of potential I/I
- Force main network ranges from 4 – 54 inches in diameter (major force mains over 30 years old)

Planning Team's History

- Rehabilitated some of the lift stations as part of the WaterWorks 2011 Program
- Assisted with the implementation of I/I projects as part of Waterworks 2011 Program
- This work was key in being able to re-rate the GTL WWTP

GT LOHMEYER WASTEWATER TREATMENT PLANT



Key Features

- Initially constructed in the 1960s
- Effluent disposed via DIW
- Utilizes pure oxygen secondary treatment process
- Oxygen generated by use of cryogenic unit (an aged asset)
- Sludge dewatering

Planning Team's History

- Our team was involved in the original design of the plant and multiple modifications/expansions since its construction
- Re-rated the plant using only an analysis of historical flows

EFFLUENT INJECTION WELLS



Key Features

- DIW
- Associated monitoring wells
- Pump station

Planning Team's History

- Assistance with Mechanical Integrity Testing
- Design and oversight of DIW and monitoring wells
- Program Management of All improvements between 2003 and 2009

~ \$900 million Worth of Wastewater Assets

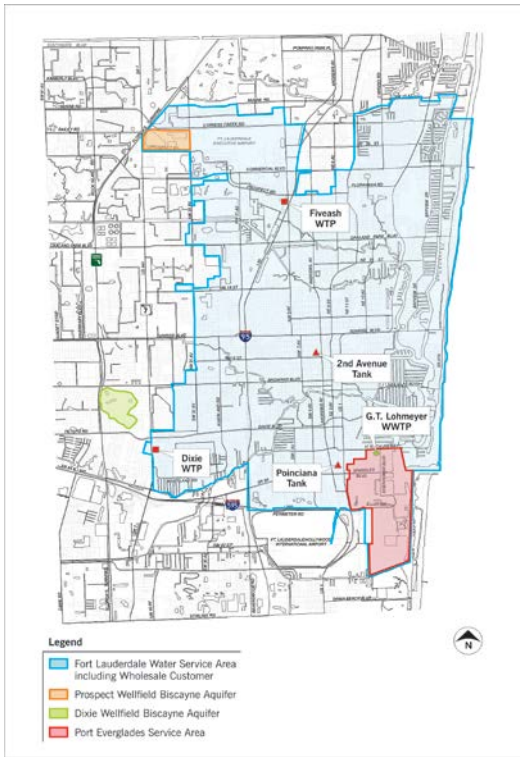


The wastewater collection and treatment assets are estimated to have a replacement cost of more than \$900 million with a 35-65% split between collection and treatment, respectively.



The Planning Team offers unmatched, detailed institutional knowledge of the City's wastewater infrastructure from our recent work as Program Manager for the City's WaterWorks 2011 contract. Selecting our team ensures that the City will obtain a Comprehensive Utility Strategic Master Plan that identifies smart investments that pay dividends now and for future generations.

FIGURE 6-4
City's Water Service Area



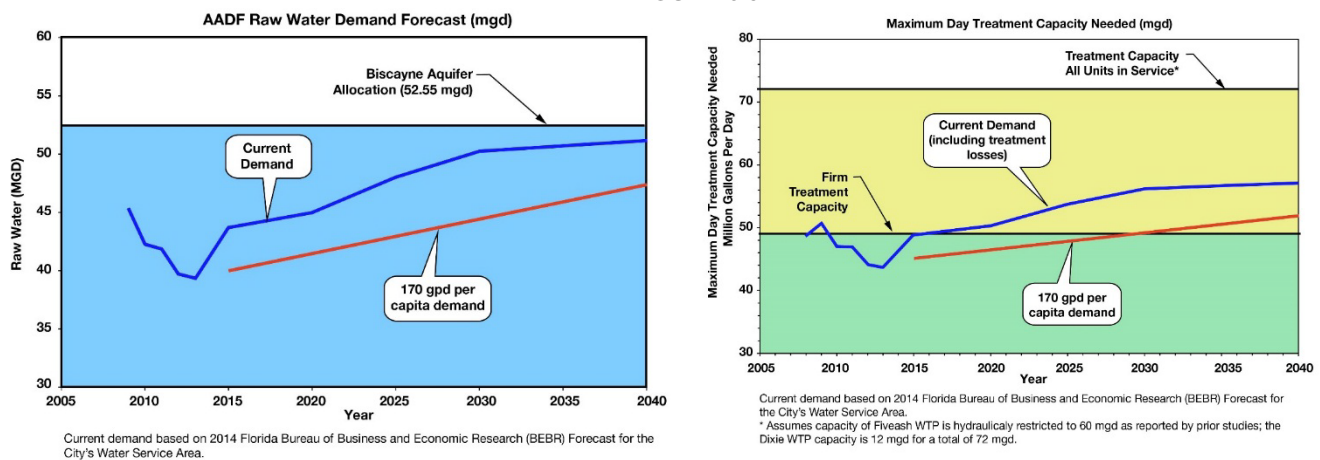
The demand forecast is based upon the 2014 water service area population forecast developed by the City's Department of Sustainable Development (utilizing the Florida Bureau of Business and Economic Research [BEER] data). The demand forecast also assumes utilization of current treatment technologies.

The raw water demand forecast indicates that the City's current Biscayne Aquifer water use allocation of 52.55 mgd is sufficient to meet the needs of the City for the foreseeable future if population trends match those predicted. Hence, additional near-term alternative water supply planning is likely not required if the assumptions in the demand forecast prove accurate. Water conservation is a key goal of the City of Fort Lauderdale. The graphic below (left) illustrates an estimated demand curve based upon 170 gallon per day per person consumption rate (a goal in the City's Sustainability Plan). Achieving this goal will maximize the use of the City's existing infrastructure and delay the need for investing in alternative water supplies.

The graphic below (right) illustrate the water treatment capacity needed to meet demand on a maximum day basis. The graphic indicates that firm treatment capacity (i.e., assuming one

treatment unit is out of service for maintenance) is about 49 million gallons per day. Assuming all treatment units are in service, treatment capacity is estimated at 72 million gallons per day. The firm treatment capacity with all units in service is adequate for the foreseeable future. Based on these data, the City may want to focus its master planning efforts on enhancing the reliability of the existing treatment assets and possibly expanding firm treatment capacity.









FIGURE 6.5



Water Conservation and Demand Management

Water conservation measures are a key goal of the City from both a long range water sustainability perspective along with reducing the amount of wastewater generated to reduce energy consumption and greenhouse gas emissions. As described in the City's Water Use Permit, the City's intent is to implement a demand management strategy to reduce its current per capita water usage rate of 189 gallons per day to 170 gallons per day. Our water demand management experts, Dr. Jack C. Kiefer and Dr. Grace Johns are nationally

**FORT LAUDERDALE
POSSIBLE WATER CONSERVATION MEASURES**

Potential Conservation Measure	Image	City Currently Implementing	Save Water	Save Energy / Costs	Reduce Greenhouse Gases
Reuse nanofiltration concentrate from Peelle-Dixie WTP as irrigation water			✓		
Add third stage to existing nanofiltration to produce more potable water (zero liquid discharge)			✓		
Escalating fees for high users of potable water		✓	✓	✓	✓
Modified Phase II Water Restrictions (per SFWMD)		✓	✓	✓	✓
Directly engage large users in long term planning		✓	✓	✓	✓
Innovative projects, such as rainwater harvesting			✓	✓	✓
Install stormwater treatment systems in medians/public access			✓		
Increase water recovery at Fiveash WTP			✓		

recognized for the development of award winning conservation projects in Florida and national leaders in water demand management research. Both Jack C. Kiefer, PhD, and Grace Johns, PhD, participated in the development of the City’s prior Water Master Plans; retaining our team ensures development of specific, cost-effective conservation program improvement strategies to achieve the City’s goal. We have identified several conservation opportunities that the City may want investigated. Additionally, we will evaluate the City’s current conservation efforts holistically and identify improvements and associated costs that would increase conservation efficacy along with assisting in developing reasonable water conservation goals through the year 2035.

Water Supply

Water supply augmentation and diversification may be needed to augment conservation efforts to meet the City’s long term water demand if the population forecasts underestimate growth. Key members of our Planning Team have assisted the City in the development of a number of conceptual plans in the event that additional water supplies are needed,

including the following key plans: 1) C-51 Reservoir Public-Private Partnership; 2) plan for reverse osmosis via utilization of the Floridan Aquifer System; and 3) aquifer storage and recovery well blending at the Fiveash WTP.



Stormwater Harvesting (C-51 Reservoir Public-Private Partnership)

- Innovative multi-Jurisdictional stormwater capture reservoir to recharge the Biscayne Aquifer in southeast Florida
- Key Planning Team members conceptualized and evaluated this innovative reservoir project
- Award Winning Project:
 - 2014 FICE Engineering Excellence Award
 - 2014 ACEC Engineering Excellence Award
- Cost-effective and environmentally beneficial method to meet future growth in southeast Florida



Floridan Aquifer System

- George A. Brown, PE and Albert Muniz, PE designed two Floridan Aquifer test wells at the Dixie Wellfield
- Additionally, this team prepared the City’s conceptual planning documents to implement up to eight Floridan Aquifer wells at the Dixie Wellfield.



ASR Well Blending

- The existing Aquifer Storage and Recovery (ASR) Well at the Fiveash WTP was constructed in 1997.
- It may be most beneficial to the City may be to repurpose the ASR well to blend 1 to 2 million gallons per day from the ASR with raw water

Wastewater

The City operates and maintains a sewer collection system that serves the City of Fort Lauderdale, and transmission and treatment systems that serve the Cities of Oakland Park, Wilton Manors, Port Everglades, and portions of Tamarac, Davie and unincorporated Broward County (large users). The City provides wastewater treatment and disposal services to approximately 198,889 people in central Broward County. Approximately, 80 percent of the service population resides within the City, with the remainder located in adjacent governmental jurisdictions. All of the wastewater from the sewered portions of the service area is treated at the George T. Lohmeyer Wastewater Treatment Plant (GTL WWTP), which is owned and operated by the City. The City also owns and operates the regional wastewater transmission system, as well as the wastewater collection system within its boundaries and a small portion of unincorporated Broward County. This system consists of approximately 475 miles of gravity sewers and approximately 119 miles of force main. All other contributing wastewater collection and transmission systems located outside the City boundaries are owned and operated by the respective governmental entities.

Lift Stations

The existing force main system includes over 140 City-owned lift stations and a number of small privately owned lift stations. The stations vary in design and construction. The stations contain several different type of pumps, including dry-pit and wet-pit submersibles, horizontal-shaft, and vertical centrifugal, and compressed air/vacuum pumps. The City is in the process of converting its lift stations to wet-pit to provide a better standardization of pump types. As part of the preparation of the CUSMP, our Planning Team will revisit the condition of the lift stations and assist in their prioritization for upgrades or rehabilitation. Our team participated in the rehabilitation of the stations that were considered a high priority as part of the WaterWorks 2011 Program and is familiar with the City's plan to standardize the components of the lift station. The wastewater model updated will be used to evaluate how to optimize the use of the lift station and collection system to better serve the City with its existing infrastructure and recommend modifications to serve the City future needs.

Collection System

The City's collection system consists of a gravity system and force main network. The gravity collection was constructed prior to 1970s. Construction during this period used vitrified clay pipe with compression type joint gaskets, although cast iron pipe was also used under certain site conditions. Recent construction used polyvinyl chloride (PVC) pipe with rubber gasket joints. As part of the WaterWorks 2011 Program, Infiltration/Inflow (I/I) reduction projects were implemented to minimize I/I entering the collection system and therefore, create additional wastewater treatment capacity. Due to the I/I projects that were implemented, our Planning Team was able to document a reduction of 10 mdg in flows to the WWTP that allowed FDEP to approve the new sewer areas added to the collection system by the Waterworks 2011 Program without adding any additional plant capacity. The WaterWorks 2011 Program only covered a portion of the areas where the vitrified clay pipe is located. Areas that were not investigated during the Program will be assessed and prioritized as part of the development of the CUSMP. The GTL is approaching planning level flows and an aggressive I&I program could provide much needed plant capacity at lower capital cost than a plant expansion.

The City also has a force main network that is used in conjunction with the City's lift stations to convey the wastewater to the City's WWTP. The network ranges in size from 4 to 54 inches in diameter. The materials of

this collection system consists of the following materials: cast iron, ductile iron, high density polyethylene (HDPE) or C-900 PVC pipe. The City is requesting the evaluation of the viability of diverting approximately 1 million gallons per day of flow from Pump Station A-7 by reconfiguring the existing gravity sewer system located east of Federal Highway, and constructing a new pump station and force main to handle such flow and ultimate discharge into the existing 48-inch diameter transmission force main located nearby. The evaluation of this request will have to take into account the condition of the 48" force main and evaluate the risk of the use of this main without considering redundancy ways to bypass or divert the flow to different parts of the collection system in the event the 48" force main has to be taken out of service for maintenance or repairs.

DIW

Effluent Disposal: Deep Well Injection Option

The City has requested that the Consultant evaluate cost-effective alternatives for future expansion of the City's wastewater treatment capacity and corresponding expansion of the effluent disposal capacity. Deep well injection remains a safe, environmentally responsible and cost-effective technology for effluent management. Ultimately, implementation of a reuse system will reduce reliance on injection well disposal for significant periods of the year. Injection well disposal will remain integral to the City's effluent management plan, however, to accommodate flows during seasonal periods of low reuse demand.

Regulatory Requirements for New Injection Wells in Broward County

Class I municipal injection wells are classified solely for the disposal of treated domestic wastewater. In 2005, the Environmental Protection Agency (EPA) promulgated a rule change that requires new Class I municipal wells in 24 Florida counties, including Broward County, to treat domestic wastewater to High Level Disinfection (HLD) standards prior disposal. Effectively, this rule change allows systems that dispose of HLD treated water to continue operating in the event of fluid migration problems. The caveat to the regulatory protection provided by the new rule is that the City would incur significant capital and operational costs to upgrade current and expanded wastewater treatment facilities to include HLD. To date, the City has operated deep injection well systems without evidence of fluid migration problems.

Innovative Approach for a Cost-Effective Multi-Purpose Deep Injection Well System

With the rising trend in the use of economical membrane water treatment facilities, municipalities are increasingly relying on injection well systems to serve multiple waste streams. This is particularly understandable where water and wastewater facilities are co-located or in such proximity that the investment in an injection well system, including the pump station, can be shared. Non-hazardous waste streams, such as demineralization concentrate from membrane water treatment, are considered industrial and, in Florida, are allowed to be disposed of using Class I industrial injection well. These wells vary only slightly in design and cost from municipal injection wells, but are treated differently under the new rule for HLD.

The definition of a municipal injection well is strict. Only effluent that has passed through the headworks of a domestic wastewater treatment facility is considered municipal. The introduction of any other waste stream, which has not been treated in the wastewater facility, requires the injection well to be classified as industrial, and the well is therefore not subject to the costly HLD condition of the new rule.

Reuse

An evaluation of options for the implementation of wastewater reuse will be conducted as part of the plan preparation. This could consist of the installation of small treatment facility using MBR treatment technology to produce irrigation quality water that may be used by the Coral Ridge Golf Course (there is potential area in the middle of the golf course that could accommodate the new facility). The water treated and reused could be



The National Association of Counties (NACo) has granted Broward County a 2014 Achievement Award for its program titled "Broward County-wide Reuse Master Plan and Implementation Strategy" in the category of Environmental Protection and Energy for development of this innovative program.

explored to be used as CUP off-set credits or the reuse credits sold to those utilities requiring the elimination of their ocean outfall for their effluent disposal.

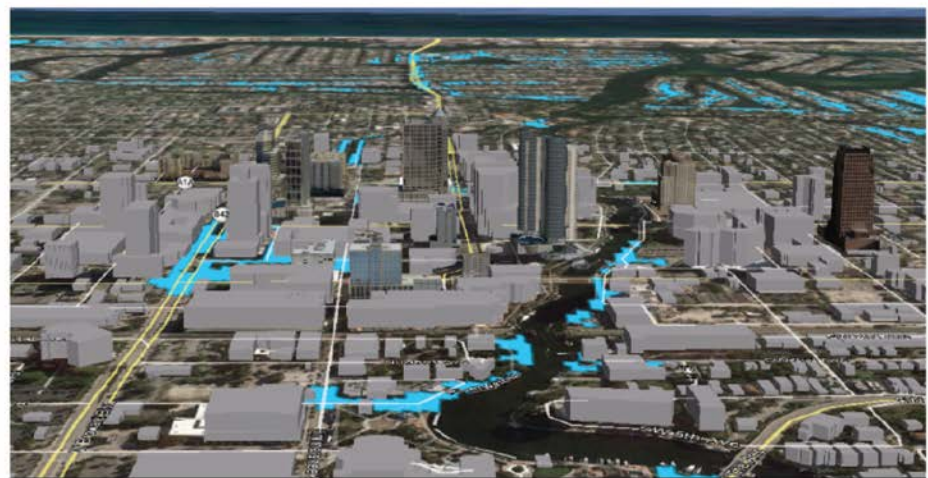
State-of-the-Art Master Planning

Selecting our Team will ensure a state-of-the-art approach to master planning, providing cost effective solutions.

We have developed a tool using a Google Earth Platform that allows for a user friendly interpretation of GIS information along with the mapping a geographical capabilities that Google Earth has to offer.

This tool can be used as a platform by the City to visualize GIS information, such as potential reuse opportunities and future sea level rise impacts.

Large User Reuse Opportunities in Fort Lauderdale



Downtown Fort Lauderdale - 2 ft Sea Level Rise

Energy Savings Evaluation

The GT Lohmeyer WWTP (GTL) utilizes a pure oxygen secondary treatment process. Pure oxygen is generated using a cryogenic system. Excess oxygen is stored as liquid oxygen (LOX) to accommodate biochemical oxygen demand fluctuations in the secondary treatment system.

The power for the oxygen generation typically averages between 35 and 50 % of a pure oxygen treatment plant total electrical requirements.

Other facilities in the US have demonstrated that significant power savings can be achieved by:

- Replacing the cryogenic unit (now over 30 years old) with a Vacuum pressure swing absorption (VPSA) unit custom sized to meet the requirements of the WWTP
- Purchasing LOX for all oxygen requirements at the plant and demolishing the cryogenic unit.

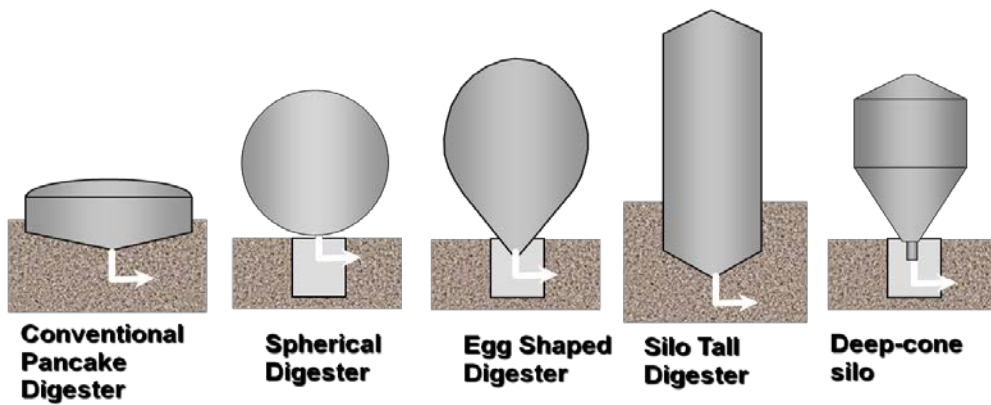


FIGURE 6-6

City of Ottawa silo shaped deep cone digester designed by CH2M HILL

Our Planning Team has great success in saving energy by use of the VPSA. An example would be the Rocky Mount, NC, 21 mgd WWTF. They replaced the cryogenics plant with a custom sized VPSA plant and reduced power costs by more than 50% for oxygen production. The power savings paid for the conversion to VPSA in less than ten years.

The VPSA has 0-100% operating turndown capability so the unit is operated to produce only the oxygen required on a daily basis. By comparison a cryogenic unit has little to no turndown and cannot be placed on idle. Therefore the excess oxygen produced has to be stored to absorb peak requirements and after the storage is full the oxygen is simply wasted to atmosphere. This is a very energy inefficient system.

The Rocky Mount facility also operated by purchasing all their oxygen needs as LOX. That resulted in a 15% reduction in Oxygen costs with little capital investment. As the LOX costs appeared to be rising, they decided to invest in a custom designed VPSA facility that quadrupled the savings to produce the required oxygen.

Sludge Treatment

The GTL plant currently dewateres raw sludge and disposes of same in a landfill site using a contracted hauler. This approach to sludge disposal has two drawbacks:

1. There is no attempt to reduce the amount of solids to be disposed
2. There is no attempt to recover the energy inherent in the biomass

An opportunity exists to anaerobically reduce the solids and simultaneously produce biogas that can be used to fuel a cogeneration unit that will provide the heat for digestion and electricity (green power) from a renewable resource. It is recognized that the GTL site has limited space to accommodate another unit process. However, recent design advancements in anaerobic digester design have led to tall narrow (silo) type digesters that significantly reduce land area needed for facility. There are two sludge holding tanks currently located at the GTL site. Utilization of the foot print of one of the two tanks may provide sufficient space for a silo type digester. There may also be sufficient space next the existing standby generator building to install a cogeneration unit to utilize the biogas.

Additional Biogas Opportunity

The tourism restaurant industry in the City generates significant amounts of FOG (Fats, Oil, and Grease) that are not being utilized to generate biogas. If anaerobic digestion is accommodated at GTL, there is another opportunity to increase power generation from Green Energy. Many wastewater treatment plants can be fitted with FOG receiving facilities for addition as feedstock to anaerobic digesters. A very high percentage of FOG can be converted to biogas. Broward County has recently upgraded their WWTP to include FOG treatment (designed by members of our Planning Team) and Miami Dade has built a FOG receiving facility at the South District WWTP

Possible Regional Approach

The City has indicated a desire to consider a multi-jurisdictional approach to biosolids management in the recent past. In fact, an interlocal agreement to conduct a regional study was developed with Broward County, the City of Plantation and several other utilities. The study failed to move forward due to certain bureaucratic legal issues raised by one of the study participants. It is conceivable that the original participants remain interested in partnering with the City of Fort Lauderdale to effect a multi-jurisdictional solution. Hazen and Sawyer, acting as Prime in association with another national firm, developed the concept for the regional approach. Our team is well positioned to assist the City of Fort Lauderdale should a multi-jurisdictional approach be desired. We can efficiently move such a concept forward as Hazen and Sawyer is currently updating the biosolids management plan for Broward County (Fort Lauderdale and Broward County were the two largest biosolids producers in the prior utility consortium).

CUSMP Methodology

Our Planning Team understands the City's goals and, based on our extensive resume of experience in developing and implementing master plans, have detailed an implementation plan designed to provide to the City a technically superior project, successfully completed within schedule.

Task 1 Project Future Water Demands

Projecting water demand for a utility is a critical step in developing plans to ensure treatment capacity is in place for existing and future customers. Results from these projections drive what capital projects will need to be completed from a capacity basis within the planning period. The purpose of this task is to develop finished water demand projections to determine the future water treatment capacity needs.

The following tasks outline the necessary steps to define future capacity needs through the planning period:

- **Define the Services Area.** First step in projecting future water demand is defining the spatial extent of the service area (see **Figure 6-4**).
- **Unit Consumption Analysis.** Establish the unit consumption for residential, commercial, and industrial users, historic water billing information will be reviewed.
- **Land Use and Population Analysis.** In order to ascertain the potential for future growth in the defined service area, our Planning Team will leverage local sources of information (population projections, projected growth rates, land use) to determine the residential and non-residential growth potential.
- **Projection of Future Water Demand.** Use the defined service area, unit consumption data, and projection of future growth to calculate the future water demand. Members of our team are currently preparing an updated water demand forecast through the year 2035 for the City's 2014 water supply work plan update.

Task 2 Review and Refine Existing Water and Wastewater Models

A system model can be a powerful tool for analysis and planning, but confidence in the model results can only be achieved with a thorough system understanding and model calibration to reflect system operations. Our model development and update processes are based on a foundation of working closely with engineering and operations staff to ensure any existing system model reflects the system operation in a representative manner.

In the context of comprehensive utility management, a calibrated hydraulic model can be leveraged as a tool to develop risk based priorities for system hydraulics improvements, targeted maintenance activities and condition assessments.

Our Planning Team's general water and sewer system modeling approach in support of Comprehensive Utility Management Planning efforts generally includes the following:

Existing System Evaluation. The basis of any hydraulic model should be a thorough understanding of the existing system. Tasks include:

- Create system diagrams, reflecting major system assets and attributes (pressure zones, sub-basins, system interconnections, etc.)
- Develop facility sheets to document key characteristics of pump stations, storage tanks, control valves, and master meter vaults including SCADA control set-points and operation
- Review system operations data, including SCADA data and flow/pressure monitoring data
- Field data collection, as necessary, including system monitoring (flow, pressure), pump tests, and facility condition

Hydraulic Model Development/Update and Calibration. The ultimate goal of hydraulic model development/updates is to provide the City staff with a fully-functioning system model that City staff can use internally to evaluate proposed system changes and maintain system assets. The model would provide a sound technical basis for decisions on system expansion and renewal of existing system assets. The following tasks are typical for hydraulic model development and calibration:

- GIS data integration (either for model updates or new models) to reflect current pipe configurations
- Integration of system facility details (to reflect current system operations)
- Develop diurnal demand and flow patterns
- Allocation of existing demand and flows
- Establish peak day water demand patterns (water model) and dry/wet weather flow patterns (sewer model)
- Existing system model calibration

Future Water Demand and Sewer Flow Analysis. Understanding future system demands provides a comprehensive, long term review of an asset’s ability to meet the defined level of services for that asset.

- Establish existing and future service areas
- Existing demand and flow trends
- Planning area assessment, growth patterns throughout service area
- Project future demand and flows.

System Analysis and Issues Identification. The hydraulic model will be used as a tool to identify assets that do not meet the defined levels of services, and will allow the City to evaluate alternatives (renewal project, additional maintenance activities) to alleviate these system deficiencies.

- Establish system performance criteria, which define the City’s vision for its level of service expectations. The system level of service established for the distribution and collection system assets should be linked with the overall Asset Management defined levels of service for the City’s water and sewer utility operations.
- Conduct system analysis for existing system and future demand/flow scenarios to identify system deficiencies, or parts of the system that do not meet the defined level of service.

Task 3 Review and Assess Existing Capital Improvement Plan (CIP)

In 2001, AAWARF teamed with CH2M HILL to complete a Capital Planning Strategy Manual. As part of this process, CH2M HILL staff worked with 12 different utilities to develop a defined capital planning process – the outcome of this effort was a manual that identified and detailed seven steps to this planning process.

In assisting scores of utilities over the past decade with CIP Prioritization, our approach is still founded on the standard industry principles that were developed in 2001 and uses a ‘decision analysis’ method for scoring and prioritizing candidate projects. As part of this method, a prioritization framework will be developed that is specific to the City and this framework serves as the basis for which candidate projects are scored. Sources for this framework include the Risk Framework developed in a separate task to support prioritization for condition assessment of existing assets, the City’s existing CIP scoring model relative to the impacts of the City’s six

cylinders of excellence, and samples of other CIP prioritization frameworks developed for some of our other clients.

This task will mainly be directed toward providing a better understanding of the existing CIP related to its past development and priorities, and to provide consensus around the criteria for re-prioritizing future needs as dictated by other tasks in this comprehensive plan. This initial effort also provides insight and direction into potential opportunities to perform businesses cases for alternatives that are less capital intensive when combined with updated demand forecasts, facility evaluations, and O&M practices.

Task 4 Review and Assess On-site Facility

Facility assessments can take a variety of forms. They are most effectively performed when risk and reliability are major factors in the condition assessment methodology. Our standard process is based on the *WERF Condition Assessment Strategies and Protocols for Water and Wastewater Utility Assets* and the *International Infrastructure Manual*.

Our Planning Team will ensure that this task answers primary questions: ***What should we fix, how long will it last, and what will it cost?***

Facility Hierarchy

Our Planning Team will perform a review of the available asset registries, usually from a combination of assets delineated in the existing CIP, assets listed in the computerized maintenance management system (CMMS), and/or any financial database system. From this review, our Planning Team and City staff will determine a consensus approach with respect to the manner in which assets should be grouped. Normally, this will include major assets, systems, and/or subsystems but will not include less critical or less expensive assets, components, and/or parts. For the purpose of this assessment, the City has identified items of interest to be those with a value in the \$10,000 to \$50,000 range, and with project replacement costs that exceed \$50,000.

Develop Criteria for Review and Assessment of Infrastructure

Risk is a key concept in planning the rehabilitation and replacement of infrastructure assets. By quantifying and assessing the risk posed by the failure or inability of assets to meet the intended function, we can systematically identify capital rehabilitation and replacement options to mitigate risk. ***Effectively managing assets is a balance of minimizing life-cycle costs and maximizing asset reliability, while continuously providing established goals or levels of service.***

Our Planning Team proposes to use risk as the basis for identifying and prioritizing rehabilitation and replacement projects for incorporation into the CUSMP.

Working with the City, our Planning Team will develop an orderly process for performing condition assessments. Emphasis will be placed on balancing the involvement of City staff who will participate in the condition assessment, with the need to minimize the impact on system operations. We anticipate needing two to three City staff for two days to discuss the facilities and walk through them with us.

Perform Facility Assessment – Operations

Our Planning Team will evaluate major component assets that are part of the primary systems infrastructure. We normally provide two-person teams who specialize in doing O&M assessment. In each infrastructure area, each this team will perform a data review to gain an understanding of system performance, O&M documented practices, costs of services, deviations process goals (or violations), and permit requirement. A field assessment will be conducted with O&M staff in order to better frame O&M practices that could be improved or modified to improve efficiency, effectiveness, or better maintain equipment useful life.

A separate two-person team, who focuses specifically on energy improvement in water and wastewater facilities, will be used to conduct energy evaluations. The results of this work will be used in conjunction with the Operations Assessment to develop energy improvement recommendations.

Perform Facility Assessment – Condition

Our Planning Team will evaluate major component assets that are part of the primary systems infrastructure. We normally provide two-person teams who specialize in doing condition assessments. This team will review the major assets that form each system or subsystem, interview staff regarding asset service histories, discuss maintenance strategies in terms of remaining useful life and manufacturer useful life recommendations, and better determine the potential cascading failure effect of any poor or overloaded system on other systems within the facility.

Some of the key information that is desired for each class of asset includes:

- The useful life of the asset relative to manufacturer recommendation and the degree that the theoretical useful life should be modified (based on actual performance, best practices, or for risk/reliability/compliance)
- A consensus on the failure definition for each class of asset and a determination of the general mode of failure (age dependent, random, etc.)
- A consensus on remaining useful life based on staff experience.
- A determination of which assets or classes of assets are operated in a run-to-failure mode
- The frequency of renewal. For each system or subsystem, how is renewal (or rebuild) defined or standardized? How is renewal related to improvement of asset condition or extension of remaining useful life?
- The frequency of replacement. For each system or subsystem, how is replacement defined (specifically related to mechanical/electrical systems and structural systems)

The condition assessment team will evaluate the condition of the assets identified by direct observation for all accessible assets and by the use of non-invasive testing equipment for high priority assets. The focus of condition assessment will be for the purpose of improving and revising the CIP and renewal and replacement schedules. This type of evaluation is normally performed following the initial assessment and following a more formal evaluation of risk and criticality. This type of scope can be provided at a later date, if desired.

Testing beyond immediate external physical observation and monitoring of available meters will not be done. No teardowns or invasive or destructive testing are anticipated to be performed as part of this task. Our assessment team will identify observable code and safety issues under current building, fire, and electrical codes and standards based on the general industry experience of those present. The field condition assessment should not be considered a formal safety audit or formal safety evaluation.

Prioritize Improvements

Our Planning Team will use the risk rankings to develop a prioritized list of assets and asset components for replacement or rehabilitation. A final prioritized listing will be agreed upon with City staff.

In addition, future improvements based on the Treatment Process Capacity Assessment and Review of Existing and Proposed Regulations will be incorporated into the prioritized list of improvements.

Prepare Cost Estimates

Using the prioritized list of improvements, our Planning Team will prepare a cost estimate for each improvement. We have performed numerous detailed condition assessments across North America and have developed a database to estimate the cost to perform such work.

Our Planning Team will also perform a review of the available financial information associated with each facility, and namely the major systems and subsystems. Important information for this review will be: the

fixed asset registries, insurance records, and division budget projections in the financial system (capital and operating); asset valuations that may be included in the CMMS; recent bid tabs or engineering studies; and any other financial information that will help provide a reasonable approximation of value for all of the facilities and their systems/subsystems.

Along with the improvement description and cost, the remaining useful life of the asset will be estimated and included in the priority improvement plan matrix. Our Planning Team will review the historical corrective maintenance work order from the past three years, if available, as well as use our interviews with plant staff, our historical knowledge and internal database for each asset, and manufacturer's recommendation (if other sources are not available).

Deliverables:

- Asset list/hierarchy
- Condition scores for assessed assets
- Risk matrix of assets with relative risk scores
- Estimated cost and remaining useful life of major assets
- Prioritized list of facility improvements

Task 5 Assess Treatment Process Capacity

The purpose of this task is to assess the capacity of the water and wastewater treatment plants, and capacities of each major unit process. It is assumed that the City will provide design drawings, hydraulic profiles, previous reports and any data (for example, water levels at specific flow rates) on hydraulic limitations.

Unit Process Evaluation

In addition to capacity, performance and water quality are important and will be assessed. The objective is to develop a strong understanding of the benefits and drawbacks of each unit process, and of alternatives that better meet treatment process objectives and criteria. Each unit process will be evaluated for purpose, benefits, and drawbacks.

The condition, capacity, reliability, and performance of each unit process will be observed. Drawings, reports, design criteria, and operational data will be reviewed to establish a baseline of current performance.

The Planning Team will walk through the treatment facilities with City staff to observe physical and operational conditions firsthand. Performance and operational/maintenance issues will be discussed. This subtask will be coordinated with the condition assessment. Results from the condition assessment will be factored into the unit process evaluation, and vice versa.

Each unit process will be scored based on its ability to meet the criteria. Alternatives will be prepared for processes that do not meet the criteria and scored to determine the improvement in meeting criteria.

In addition to existing treatment processes, we will look at future processes at a conceptual level. When determining the best future treatment process, case studies of process trains from other utilities with similar water quality will be reviewed. When the treatment process trains are developed, we will prepare a plan of where they would fit physically and hydraulically on the plant property.

A preliminary construction cost estimate will be prepared for each alternative unit process that improves the City's ability to meet their future objectives.

Task 6 Review Existing and Proposed Regulations

A review of water, environmental, and OSHA regulations will provide the necessary insights on the current regulations and potential changes in regulations, in addition to emerging issues that could evolve into new regulations.

The review of these regulations will include pulling from our Planning Team’s extensive knowledge base on the emerging regulatory environment as well as reaching out to State and Federal regulators to understand the regulations that may impact the City’s CIP through the planning period. Our Planning Team will work with the City to benchmark compliance with current regulations, determine what would be needed to meet more stringent water quality goals, and plan for future regulations such as algal toxins, pharmaceuticals and endocrine disrupters, and new disinfection byproducts.

The following list provides a few examples of the drinking water regulations and emerging issues that our Planning Team actively monitor:

- Stage 1 and Stage 2 Disinfection By-Products Rule
- Long-Term 1 and Long-Term 2 Enhanced Surface Water Treatment Rules
- Long-Term Lead and Copper Rule (LT-LCR) Revisions
- Perchlorate
- Hexavalent Chromium
- Carcinogenic Volatile Organic Compounds (cVOCs)
- Micro-constituents

Our internal regulatory monitoring activities will provide a strong basis on which to build from, conducting conversations with State and Federal regulators to providing a comprehensive picture of the regulatory landscape through the study.

Task 7 Other Non-Scheduled Improvements

Our Planning Team will review other needs that were assembled by staff but that may not be in the current CIP, as well as the results from other tasks, including but not limited to, facility assessments, operations assessments, energy assessments, hydraulic issues, emerging regulatory issues, and revised demand forecasts.

It is not uncommon for some equipment or assets to be left out of particular projects for a number of different reasons. Events and circumstances frequently change over the course of CIP development and implementation, and it becomes necessary to further evaluate how “projects” were initially defined (and specifically which assets were included). It is a best practice to use a Business Case Evaluation (BCE) to develop an initial project or to modify one.

Task 8 Perform Consolidated CIP Prioritization

It is necessary to prioritize the various preferred options for capital interventions so that the utility can make the best use of its available funds in each budgetary period. After alternative options are analyzed, compared, and a preferred option is selected through the Business Case Evaluation process that will be conducted in the financial planning elements of the affordability analysis, the various candidate projects from across the utility unit can be collated and subjected to a prioritization process. This process should be based on achieving the best overall value for money.

We recommend using a Multi-Criteria Prioritization (MCP) approach that accounts for the strategic objectives of the utility – including the principles embedded within the Triple Bottom Line (TBL) – and scores the total benefit value of each individual project under consideration.

Key steps in the prioritization approach include:

1. Developing a City-specific prioritization framework
 - a. Identification of decision criteria and their importance or weighting
 - b. Identification of performance scales for each of the decision criteria to measure the benefit of candidate projects
 - c. Identification of costs for use in benefit-cost analyses and cumulative cost outputs.

2. Selecting projects for prioritization from the existing CIP or those identified in other tasks
3. Applying the framework to selected projects using data collection forms to document the process
4. Use of a spreadsheet based multi-attribute utility prioritization model to support the development of the prioritized project list
5. Review of prioritization results for verification of the prioritization framework.

One outcome of the consolidated CIP Prioritization will be to enable the City to use the CUSMP to score capital projects – water, wastewater, distribution, and collection – through a single methodology. Subsequent prioritization could be based on different criteria; for example, the potential to balance spending across different divisions or to potentially focus more priority on sustainability or some other topical area. This approach also drives consensus around the trade-offs between more capital intensive approaches and more O&M, and how limited total dollars can be spread more effectively to meet comprehensive objectives.

Long-term funding plans usually require the combination of our Planning Team working with the City's rate and fee model. Our Planning Team performs rate and fee models through our financial services division and frequently performs independent evaluations and validation of the long term funding plan in conjunction with the asset management program. The focus of this project will be to develop the baseline needs in terms of projects and timing of CIP funding, but not to optimize it with an iterative process utilizing the rate and fee model.

The end result is a prioritized set of capital improvements and initiatives that can be implemented within the available funds that are anticipated to be available. The CIP plan, in conjunction with the R&R forecast, can then be updated periodically to address changes in conditions, costs, and priorities.

Task 9 Develop a Comprehensive Asset Management (AM) System

Our Planning Team recognizes that optimal business performance can only be achieved by considering the following four areas: *strategy, managing physical assets, people effectiveness, and business processes*. A comprehensive approach to AM must also take into account organizational culture, historical workflow, specific infrastructure needs, software requirements, and business goals. When these elements are in balance, the City will consistently maximize the investment in its assets, minimize life cycle costs, effectively manage risks, and ensure continuity of levels of services in the face of changing business drivers.

An AM system is defined by the international asset management standard, ISO 55000, as forming an integrated part of the organization's management system and has a prescribed structure. It should fit in and result from the organizational objectives and the organizational plan. The asset management system includes: a) the asset management policy; b) the asset management objectives; c) the strategic asset management plan (SAMP); and d) the asset management plan(s), which are implemented in: operational planning and control, supporting activities, control activities, and other relevant processes.

An AM system goes beyond software, such as a computerized maintenance management system (CMMS), financial management, human resources management, renewal & replacement, and reliability softwares. In the commercial off-the-shelf-software market space, many companies now battle to establish their products as a combination or one or more of these features and call themselves an Enterprise Asset Management System (EAMS). There is no single product on the market that effectively and optimally does all of the software applications required by a comprehensive asset management system. In practice, most water and wastewater utilities start with the establishment of a versatile CMMS software to manage basic work orders, asset lists, and past asset performance history and interface the CMMS function with other software preferred by the utility for such functions as GIS and financial management.

Our standard approach is to evaluate the organizational context, review existing asset management processes/practices, work with the utility to determine desired modified or new processes/practices, and then

do an evaluation of the types of software(s) that will meet current standards while being robust enough to meet future goals for the system. A focused effort is placed on minimizing the number of software systems, and corresponding licensing and interfaces that are used.

Asset Management Program Evaluation and Development

The establishment of a project Mission, Vision, and Goals will serve as over-arching guidelines for the asset management program. The formal establishment of these values will help to assure the proper integration with the mission and goals of the City and ultimately, the success of the program.

The task will involve workshops with the City's appointed AM Executive Team, which will be aimed at understanding the City's mission, vision, and goals, and how the asset management program will enhance them. The first workshop will validate and confirm the vision and goals for asset management, and the second workshop will assess how progress towards those goals is measured (such as a "report card").

Our Planning Team will facilitate the workshops.

Deliverables:

- Summary for each workshop
- Electronic draft Technical Memorandum
- Incorporate CITY comments on the draft and submit the Final Technical Memorandum. Five copies of the Final Technical Memorandum will be provided, in addition to the copy submitted electronically.

Gap Analysis

Our Planning Team will facilitate a workshop for the evaluation of City's existing asset management practices. This existing practices evaluation, or "Gap Analysis" Workshop, will include a guided self-examination that allows City staff to quantitatively rank their practices as compared to industry standards and best management practices. To yield meaningful results, this Workshop should include at least 10-15% of the organization, and we recommend City participants include – at a minimum – the executive management team, the Asset Management (AM) Advisory Team, and any other key staff that City leadership considers appropriate.

The workshop will be facilitated by Planning Team member, J.D. Solomon, and supported by another experienced asset management specialist. The Gap Analysis process also supports the education of staff on industry best practices. This workshop will be conducted using standard methods, including use of an audience response system.

Following the Gap Analysis Workshop, we will analyze the data using both numeric and non-numeric management science techniques. Typically, this process does not substantially modify the initial results; however, it often creates a better understanding of what the results mean for purposes of developing an Implementation Action Plan that can effect sustainable change.

The data analysis results will be summarized in a Technical Memorandum (TM) and subsequently presented at a workshop. At this workshop, our Planning Team expects City staff to validate as many findings, future activities, and priorities as possible. Feedback from this workshop will be used to refine the evaluation and confirm direction for development of the Draft Assessment Report and Implementation Action Plan.

Deliverables:

- Conduct a Gap Analysis workshop. This workshop will also provide education for staff on industry best practices.
- Submit an electronic draft Technical Memorandum
- Present summary finding at a summary workshop
- Incorporate City comments on the draft and comments received at the summary workshop and submit the Final Technical Memorandum electronically

Asset Management Interviews

Our staff will collect data using interviews with City staff that will have a focus on broader issues related to Asset Management. This is to review best practices and gather information for informal benchmarking.

Our Planning Team will conduct interviews - each interview will last between 30 and 90 minutes. We will work with the City project manager to agree on who should be interviewed. Feedback from these interviews will be used to refine the evaluation and confirm direction for development of the Draft Assessment Report and Implementation Action Plan

Deliverables: Conduct interviews.

Data Storage and Management Review

The City has a number of systems where data is stored that can be beneficial to an asset management program. Some of these data include as-built drawings, GIS, and financial data. Our Planning Team will review existing financial documentation and processes including billing and account information provided by the City.

Our Planning Team will conduct a workshop to understand how data is stored and how it relates to maintenance management and asset management, with the aim of determining how the City would like to integrate between the systems and the asset management program (including CMMS).

Deliverables: Facilitate review workshop

Analysis and Report

Our Planning Team will prepare the AM Assessment Report and Implementation Action Plan. This report will document the findings and recommendations from the activities in the AM program development tasks. The documentation will consist of a 10- to 20-page report, two-page Microsoft Project schedule, and conceptual flow diagram for presentation purposes, and an appropriate amount of supporting documentation such as definitions and explanations of task dependencies. The report will address informal benchmarking and cite industry best practices for an AM Program.

The Implementation Action plan will be time-phased and include activity, duration, external costs/fees, internal resource requirements (staff full-time equivalents), responsible party, and critical path. A summary "action matrix" will be provided that provides the objective, strategy, actions to be taken, target completion date, cost, and inter-relationship to other actions for each core enhancement.

The draft report and plan will be submitted electronically for review, followed by a summary workshop with executive management. This workshop will allow our team to validate findings, conclusions, and implementation strategies; identify quick wins for City's AM program; and affirm the overall readiness of the City to implement.

After comments from the review workshop have been incorporated into the Draft Assessment Report and Implementation Action Plan, a workshop will be held to present the finalized plan to the City's AM Advisory Team and other key members of the organization. This workshop will be interactive and will serve as an additional alignment step for all stakeholders.

The implementation tasks that were identified in the Action Plan will be reviewed in detail to determine additional educational needs, confirm resource requirements and verify availability, and have staff identify foreseeable pitfalls of the Plan.

Deliverables:

- A draft Assessment Report and Implementation Action Plan
- Present summary findings at a summary workshop with the AM Executive Team
- Present the final report and plan at a workshop with the AM Advisory Team

- Incorporate City comments on the draft and comments received at the summary workshop and will submit the Final Assessment Report and Implementation Action Plan. Copies of the Final Assessment Report and Implementation Action Plan will be provided, in addition to the copy submitted electronically.

Computerized Maintenance Management System Review Services

Our Planning Team will review organizational material produced by the City related to CMMS selection, conduct interviews with the City staff to discuss the existing practices and desired functionality of a CMMS, and plan and facilitate a CMMS Needs Assessment workshop with managers and users of the current software systems to define the current and future needs of a CMMS. Following a compilation of the data and analysis of the existing system and practices, as well as the identification of future needs, our Planning Team will prepare a technical memorandum (TM). The TM will include a prioritized list of products for consideration by the City that analyze factors including the ability to meet mandatory and desired functional requirements, procurement cost, annual maintenance costs, and implementation requirements.

Asset Management Overview Meeting

An Asset Management overview meeting will be conducted. The meeting will include an overview of asset management practices and will focus and provide details on how a CMMS fits into an overall asset management strategy. Our Planning Team will provide two professionals to facilitate this meeting. The target audience will be representatives from all Divisions (Water Production, Finance and Administration, Information Technology, Human Resources, Continuous Improvement, and Public Affairs) to represent enterprise-wide aspects of assets (fiscal, physical, information and human resources) for the City. This meeting introduces the foundational elements for the strategic business plan, provides the framework for what is envisioned from a CMMS and the identification of critical success factors for the CMMS, and the role of a CMMS within an Asset Management Program.

Deliverables: Conduct an Asset Management overview workshop and produce critical success factors for the City CMMS

Existing Project Data Review and Conduct Interviews

Our Planning Team will review the existing published asset management and CMMS data and identify technical data gaps and/or new data requirements to support the definition of existing and future needs from a CMMS for the City. Individual or group interviews will be conducted, which will typically last 30 minutes. Our Planning Team will review existing procedures related to work order generation, equipment inventory, preventive maintenance and scheduling.

Deliverables:

- Review existing documentation provided by the City. The City will provide remote access into the City's current EMMS and GIS systems to facilitate review of the existing systems.
- Conduct interviews that will be scheduled by the City

CMMS Needs Workshop and Technical Memorandum

Immediately following the interviews, our Planning Team will prepare for and conduct a workshop to further discuss the needs and expectations of a CMMS. We will provide two professionals to facilitate this meeting.

Our Planning Team will assist in defining and prioritizing the requirements of the CMMS for the user groups along with mandatory and non-mandatory requirements based on input from the City at the CMMS Needs Workshop. The interface requirements with other databases and management systems will be determined or validated at the CMMS Needs Workshop.

Following a compilation of the data and analysis of the existing system and practices and needs workshop, our Planning Team will develop a Technical Memorandum that documents the prioritized list of CMMS business and operational requirements and will identify up to five software products which meet the major CMMS

needs of the City. The TM will include a prioritized list of products for consideration by the City that analyze factors including the ability to meet mandatory and desired functional requirements, procurement cost, annual maintenance costs, and implementation requirements.

Deliverables:

- Produce a CMMS Needs Workshop Summary
- Submit an electronic draft CMMS Needs Assessment Technical Memorandum
- Incorporate City comments on the draft and submit the Final CMMS Needs Assessment Technical Memorandum. Five copies of the Final CMMS Needs Assessment Technical Memorandum will be provided, in addition to the copy submitted electronically.

Task 10 Develop Energy Savings Evaluation Methodology

Data Collection & Review

Our Planning Team will submit an Information Needs request for plant operations data to review before conducting on-site assessment. This information will be valuable to our engineers in both orientation of plant operations and directing the focus and scheduling of on-site efforts.

Several items which we consider important to evaluate prior to the on-site visit include:

- Site utility bills in the lowest time-increment available for a typical year span (electricity & gas). If at all possible, it would be beneficial to have this parsed out for process utilities vs. office utilities.
- Facility and process drawings
- Records of secondary treatment conditions (i.e. temperature, aeration volume, blower operation conditions, residence time, treatment flow rate)
- Site motor list, if available (including motor nameplate horsepower, age, efficiency)
- List of SCADA reports available for output of plant data

If possible, this information should be provided in an electronic format, such as Microsoft Excel for utility data. If this is not available, scanned PDFs of data are acceptable, but may take more time to process and evaluate. This pre-visit data evaluation will assist our energy engineers in prioritizing investigations on site and typically reveals interactions in the treatment process that can raise some critical questions early in the evaluation process.

Deliverable: Information Needs TM

Site Visit & Staff Meetings

Kick-Off Meeting

After site data has been considered, our engineers will present any relevant analysis to the site managers at the time of the site visit. Typically this visit consists of an orientation meeting at the beginning of the visit when engineers can inquire of any relevant details and then a guided site tour. During this tour, engineers will take notes of process details, operating conditions, and photos of equipment. Engineers will need to be guided by site management in several areas of the plant for safety reasons as well as for gathering specific equipment details. A plan for site touring and guidance can be derived during this first on-site orientation meeting. We have allotted two days for this site visit to allow for sufficient site data collection and discussions with site management to accurately capture process operations and expectations.

Plant Tours and Data Logging Installation

We would also like to install several data-loggers on equipment which would record information which may prove beneficial in preliminary analysis. These data loggers are typically placed on equipment or systems we suspect could be improved upon to obtain energy savings and would remain in place for up to 4-weeks. Data loggers do not impact equipment performance and can be safely and easily removed and mailed back for data

processing. We anticipate this added evaluation would assist in refining investigation efforts required for any follow-on assessments for energy savings opportunities.

Debrief Meeting

At the conclusion of the site visit, we will have a debrief meeting with utility leadership to discuss desires and expectations for this stage of the evaluation. This meeting will serve as a final opportunity to capture any last items of information and to clarify any communications occurring during the site visit. Our staff will be prepared with necessary file storage for any data collection and transfer necessary during all meetings.

Deliverables: On-Site Plant Tours Kick-off and Debrief Meetings

Develop Recommendations & Prepare TM

The results of the Initial Evaluation will be summarized in a TM. The TM will identify a prioritized list of candidate projects, with a “scorecard” that captures the complexity, relative cost, and magnitude of savings for each proposed upgrade. While the TM will provide a qualitative discussion of proposed projects, detailed engineering and construction cost estimates will not be performed in this phase. The goal of the TM is to identify a suite of recommended projects, so the City can make an informed decision about which projects merit a more detailed analysis.

In addition to project recommendations, the TM will include a set of sample Terms & Conditions for a typical Energy Performance Contract and a brief discussion of the benefits and risks of this type of project financing.

The TM will be prepared in draft form for City staff review and comment. We will then schedule a meeting with management and operations staff to review the draft report and obtain comments on findings. All comments will be summarized and responded to in the final document.

Deliverables: Draft TM (transmitted electronically)

Task 11 Develop SCADA Master Plan

The City has been at the forefront of Integrated Municipal Information Systems for utility operations since the late 1970’s. The concept, at that time, included a series of distributed multi-level control systems and Plant Control Centers at each principal water and wastewater facility and a centralized Utility Control Center at the Utilities Administration complex for key decision support.

Over time, the system has evolved to include standardization on “open architecture” hardware and SCADA software product suites to support basic operational functions.

The Planning Team will review the City’s current SCADA planning; including recommendations for improvements in security, data management and utilization and operational support. One potential consideration may be the integration of “smart” water meters and advanced metering infrastructure (AMI) with the City’s existing wastewater collection and water distribution SCADA infrastructure. This can help consolidate the information “islands” into a uniform, spatial, collection of real time and historical information for advanced utility system management. Leveraged with advanced analytics and enterprise asset management toolsets can help solve long term utility needs while supporting day to day operational needs, as well.

Principal opportunities include:

- Understanding of water use and wastewater flow patterns by service area
- Leak identification and correction



- I/I identification and correction
- Ability to predict and correct minor issues before they escalate
- Manage distribution system water quality
- Linkage to mobile work force/automatic dispatch
- Integrate planned projects with other City projects to reduce cost

A SCADA Master Plan is intended to provide a roadmap or master plan for the City to continue to improve their control system infrastructure through a series of projects. The projects will be identified in the CUSMP and include prioritization to help the City plan and budget for control system infrastructure improvement projects as part of their annual CIP budget process.

Developing a SCADA Master Plan involves the following steps:

- Analysis of the current SCADA environment
- Development of a vision for the City future SCADA environment
- Assess the gaps from the current environment to the desired future state
- Identify technology options that fill the identified gaps
- Development a prioritized list of projects
- Final SCADA Master Plan presentation and workshop

Along with these steps, a number of face to face interviews with key management and staff, group meetings, and workshops will be conducted to gain support for the SCADA Master Plan throughout the City's organization.

Enhanced Distribution System Management



Traditional SCADA + "Smart Metering"

- Real time pressures, flows, quality
- Spatial
- Leaks
- Predictive maintenance

Benefits

- Better reliability
- Lower energy
- Lower greenhouse gas emissions
- Lower water loss

Provides the tools to sustainably manage infrastructure and optimize delivery to customers

Project Kickoff and Team Charter

A team charter workshop will be held at the City's office. This task includes preparation of the initial project work plan, and workshop agenda. The workshop will include a team charter session which will review the details of the scope of work, and assignment of team roles.

Deliverable: Meeting Minutes

SCADA Condition Assessment

A condition assessment report will be prepared for the City's SCADA system associated with the water and wastewater facilities. The report will present an accurate representation of the existing current state of the SCADA system. The preparation of this report will include interviews with key staff to document known current issues associated with the existing control system.

Deliverable:

- Review notes from field walk down
- Preparation of SCADA Condition Assessment

SCADA Vision - Future State Environment

Vision Development Workshop

Our Planning Team will conduct a workshop with key managers and staff from the City to understand the SCADA needs and requirements of the City and assist with refining the City's SCADA vision for the future. The workshop will include documenting key business objectives that will be used to evaluate the current system performance and provide guidance towards achieving the future state SCADA vision. Commonly accepted business objectives include efficiency and effectiveness of operations, product quality, service quality, risk management, regulatory /non-regulatory compliance, safeguarding assets, and reliable financial reporting.

After development of the critical business objectives list, we will perform an assessment to review the current effectiveness of meeting the key business objectives. Our Planning Team will provide forms that will assist with rating the importance and performance of each objective.

Deliverables:


- SCADA Vision Statement
- SCADA Business Objectives Assessment (Draft and Final)

Assess Gaps Supporting SCADA Vision

The rankings from the business objective assessment will help to identify gaps in performance. From these gaps, strategic action items are identified which become projects. An assessment will be performed to determine projects that will resolve the gaps and help the City to achieve their SCADA vision.

Develop a Prioritized List of Projects Supporting the SCADA Vision

Based on the results of the gap assessment, a project list will be developed that supports achieving the SCADA Vision. The project list will include a review of the relative value to performing the project, relative cost/complexity, and the risk of not taking any action. From this data, the team will assign priorities to projects based on the ranking and sequencing requirements. The project list will include a short description of the broad scope of each project and a planning level estimate of costs. This list with descriptions is intended to provide a basic understanding of each of these projects. Further project definition, scope refinement, and fee commitments will be required prior to executing each of these projects. The prioritized list will be summarized into a phased sequence schedule that is tied to the fiscal year budget cycle.



Mr. Gary W. Bors, P.E. has been a key team member in SCADA planning, design and implementation since the City's first SCADA system in 1978 and has continued in that role for many utilities over the past decades.

Deliverables: Prioritized List of Projects by Fiscal Year Schedule

Prepare the SCADA Master Plan

The SCADA Master Plan will include current state assessment, vision statement, business objective, performance assessment, prioritized project list, schedule, and an executive summary. Recommendations will be provided that support the business objectives including efficiency and effectiveness of operations, product quality, service quality, risk management, regulatory /non-regulatory compliance, safeguarding assets, and reliable financial reporting. This report would be used as a planning document to help the City plan and budget for control system infrastructure improvement projects as part of their annual CIP budget process.

The SCADA Master Plan will be presented in a workshop with the City as a draft for review comments. After review comments are incorporated, a final SCADA Master Plan will be issued.

Deliverables: SCADA Master Plan (draft and final)

Scheduling Methodology (Timeline)

Tasks	Month												
	1	2	3	4	5	6	7	8	9	10	11	12	
1 Project Future Water Demands	█	█											
2 Review and Refine Existing Water and Wastewater Models	█	█	█	█	█	█							
3 Review and Assess Existing Capital Improvement Plan (CIP)	█	█	█										
4 Review and Assess On-site Facility					█	█	█						
5 Assess Treatment Process Capacity			█	█	█								
6 Review Existing and Proposed Regulations		█	█	█									
7 Other Non-Scheduled Improvements								█	█	█			
8 Perform Consolidated CIP Prioritization							█	█	█	█	█	█	█
9 Develop a Comprehensive Asset Management (AM) System				█	█	█	█	█	█				
10 Develop Energy Savings Evaluation Methodology							█	█	█	█			
11 Develop SCADA Master Plan								█	█	█	█	█	█

Workload

CH2M HILL has assembled a locally based team consisting of our highest caliber resources and these team members pledge their full commitment and support to the success of the City

Availability of Key Team Members

Your success is our highest priority, and to that end, CH2M HILL pledges our corporate and management support to the City and this Planning Team. In addition to their familiarity with the City’s facilities and extensive similar experience in the Tri-County area and throughout Florida, our personnel have been selected for their ability to be fully committed to the City’s CUSMP project until it is successfully concluded. Project Manager, Luis Rioseco, and the staff identified in our Organization Chart (Section D of the SF330 form included

in this submittal) are fully committed and available to the City to execute tasks under this contract. ***The entire CH2M HILL team is committed to your success!***

Firm's Availability and Commitment of In-House Resources

With 26,175 employees and 202 offices worldwide, CH2M HILL is the largest employee-owned, full-service engineering consulting and construction firm in the U.S. The staff we have identified are fully available and committed to completing this project and to delivering high-quality, cost-effective services. In addition, our extensive "reach-back" staff resources—which includes 145 personnel in South Florida and more than 750 in Florida—are available to support the City's every need and will be committed as needed to achieve project success.

Facilities, Technological Capabilities, and Other Resources

The City and CH2M HILL share many of the same software packages and sophisticated tools and both keep abreast of fast-changing technology. These compatible tools ensure that we have the information available to appropriately manage your projects and share information among our integrated team.

In addition to the innovative tools featured previously in this section, we maintain extensive capabilities for electronic connectivity, linking offices, and computer workstations across the globe through wide and local area networks. This enables our professionals, regard-less of location, to immediately access the most up-to-date software tools for CAD, modeling, estimating, project controls, and scheduling. Every CH2M HILL employee has a PC or workstation that uses Windows as its platform. Project information is stored on and shared across the entire firm from network servers.

Today's virtual world enables effective team communication and coordination across town and across long distances. Ease of connectivity and information exchange among all team members is at the core of our communication strategy. Utilizing tools, such as SharePoint sites, secure project sites, Live Meeting, and Web X Meetings with webcams, remote resources will be as accessible to the team and the City. We stay at the forefront of technology that better connects us with our clients and each other.

Our Florida offices have a complete inventory of all hardware, software, communications, network, reproduction, and laboratory and testing equipment. In addition, the CH2M HILL Applied Sciences Laboratory, located in our Corvallis, Oregon, design center office, is a full-service environmental testing facility that offers specialized laboratory services, as needed.



7. References

The CH2M HILL team brings to the City a group of best in class firms with specific and relevant skills in developing and implementing Master Plans. We offer a unique combination of local management and exemplary technical skills with the expertise of industry recognized professionals in the CUSMP field.

Our credibility in the industry and with clients, both locally and worldwide, is based on a track record of successful projects like those featured in Section F of the SF330 form and a framework of best practices described in Section 6, Approach to Scope of Work, that establish effective, efficient project development, management, and delivery. CH2M HILL is committed to our client's goals and fulfilling their expectations and needs. We view our relationships as partnerships in which our success is intertwined and mutual.

Per the RFQ, this section provides references for projects with similar scope. Detailed descriptions for these contracts/projects can be found in Section E of the SF330 at the end of this submittal.

CLIENT NAME	ADDRESS	PROJECT COMPLETION
Cape Fear Public Utility Authority	235 Government Center Drive Wilmington, NC 28403	2013
CONTACT PERSON	PHONE/FAX	EMAIL ADDRESS
Gary McSmith	(910) 332-6629/ (910) 332-6352	Gary.Mcsmith@cfpua.org

Project Name/Description: Integrated Water Resource Master Planning (IWRMP) and Comprehensive Asset Management. CH2M HILL assisted CFPUA in simultaneously developing a comprehensive asset management program (existing assets), an integrated water resources master plan (system enhancement and expansion), and an enterprise strategic plan. The primary focus of the work was to optimize the use of existing assets, to better inform the organization on tradeoffs between capital and operations investments, and to provide a concise framework to inform the organization of emerging regulations, the impacts of growth and related local policies, and changing customer expectations. *Construction Cost: N/A.*

CLIENT NAME	ADDRESS	PROJECT COMPLETION
US EPA	Washington, DC	2013
CONTACT PERSON	PHONE/FAX	EMAIL ADDRESS
Adhir Kackar	(202) 566-2846/N/A	kackar.adhir@epa.gov

Project Name/Description: Community Resilience Pilot Project/Climatic Conditions Impacts. CH2M HILL, was contracted for this project which was intended to serve as a template of best practices and as a guidance document for other coastal communities throughout the eastern US. The project identified the potential risks to critical water and wastewater infrastructure posed by SLR and more intense coastal storms, in addition to land use and infrastructure policy options that reduce exposure and vulnerability of infrastructure to SLR. *Construction Cost: N/A*

CLIENT NAME	ADDRESS	PROJECT COMPLETION
City of Cocoa, Florida	65 Stone Street Cocoa, FL 32922	Ongoing / 2015 estimated

CONTACT PERSON	PHONE/FAX	EMAIL ADDRESS
Joe DeGiovine	(321) 635-7774/ (321) 433-8408	jdegiovine@cocoafl.org

Project Name/Description: SCADA Master Plan and Program Implementation. CH2M HILL has completed a SCADA Master Plan for the City of Cocoa for their water utility department. The SCADA Master Plan included development of the utility SCADA Vision, a review of their current infrastructure, identification of gaps, development of a prioritized list of projects to help achieve vision, development of budgetary cost estimates, and development of a schedule execution plan. The overall SCADA CIP budget for improvements is greater than \$8 million dollars. *Construction Cost: N/A.*

CLIENT NAME	ADDRESS	PROJECT COMPLETION
Palm Beach County Water Utilities	9045 Jog Road Boynton Beach, FL 33472	2006
CONTACT PERSON	PHONE/FAX	EMAIL ADDRESS
Brian Shields	(561) 493-6081/ (561) 493-6085	bshields@pbwater.com

Project Name/Description: Energy Evaluations. CH2M HILL provided Palm Beach County Water Utilities Department (PBCWUD) with an energy evaluation for four Water Treatment Plants (WTP No. 2, WTP No. 3, WTP No. 8 and WTP No. 9) and the Southern Region Water Reclamation Facility (SRWRF). A Draft Report was developed to identify opportunities for energy savings and to recommend changes in process control at each facility that would improve energy efficiency and reduce overall cost of power. Comprehensive field evaluations were performed. *Construction Cost: N/A.*

CLIENT NAME	ADDRESS	PROJECT COMPLETION
City of Palm Bay Utilities Dept.	1105 Troutman Blvd. Palm Bay, FL 32905	2008
CONTACT PERSON	PHONE/FAX	EMAIL ADDRESS
Dan Roberts, PE	(321) 952-3410/ (321) 674-1852	robertsd@palmbayflorida.org

Project Name/Description: Palm Bay Comprehensive Utility Master Plan. Wade Trim assisted the City in the overall review of the utility, which was performed in steps and phases starting in 2008. One of the steps involved developing a water, wastewater, and reuse master plan. The master plan included a system consisting of more than 300 miles of wastewater collection, 600 miles of water main, and 150 miles of reuse lines. Beyond the hydraulic capacity analysis conducted, our analysis included components such as impacting the system, inflow and infiltration, air entrapment, and minimum pipe velocity. The analysis included determining the need for pipeline looping or if over looping was occurring. *Construction Cost: N/A.*

CLIENT NAME	ADDRESS	PROJECT COMPLETION
Miami-Dade Water and Sewer Department	3071 SW 38th Avenue Miami, Florida 33146	2005
CONTACT PERSON	PHONE/FAX	EMAIL ADDRESS
Ralph Terrero	(786) 552-8112/ (786) 552-8639	TERRERO@miamidade.gov

Project Name/Description: This project was a full scale test program that demonstrated the performance of the simultaneous coagulation and lime softening process could achieve the goals of the Department. Hazen and Sawyer provided process evaluation, design oversight, bidding and construction management services to Miami-Dade for this project. Accelerator bench scale tests, previously conducted by Hazen and Sawyer, had indicated that a simultaneous coagulation and softening process was efficient at reducing TTHMs, THAAs and color in the finished water and produced the highest quality process water from the Accelerator units. *Construction Cost: \$23 million.*



8. Minority/Women (M/WBE) Participation

CH2M HILL supports the City's goal for greater involvement and mentoring of local M/WBEs. As a standard policy, we endeavor to involve M/WBE firms in project opportunities, and have a long history of mentoring minority firms.

For this CUSMP contract, we have partnered with Chen Moore and Associates (CMA), a certified County Business Enterprise (CBE) with Broward County and Minority, Women, and Florida Veteran Business by the State of Florida. We have worked with this highly qualified firm for more than 20 years on projects for the City of Key West, the Florida Keys Aqueduct Authority, and the Seminole Tribe of Florida, and are committed to utilizing our M/WBE partner to the greatest extent possible.

History of Maximizing Local M/WBE Subconsultant Participation in South Florida

We are committed to using minority and women-owned businesses under the City's contract. From our previous work on municipal contracts in South Florida, we have developed excellent relationships with many M/WBE firms, and know which firms are qualified and what their resources and capabilities are.

As program manager for the City's WaterWorks 2011 water and wastewater capital improvement program, CH2M HILL put in place an M/WBE plan that encompassed all phases of the project, from planning through design and construction, ensuring that RFPs and RFBs were developed to provide ample opportunity for disadvantaged firms to participate on the program. For our program management contract, which had no specific M/WBE goals, CH2M HILL subcontracted work to four M/WBE firms for financial management, public outreach, surveying, and civil engineering; M/WBE participation for the program was 35 percent.

CH2M HILL has also held numerous general engineering contracts with SFWMD over the past two decades. On a recent contract, we subcontracted approximately 41 percent of our firm's total work assignments to M/WBE firms. Services provided by these firms have included surveying and mapping; geotechnical investigations/soil borings; construction management; hydrogeological testing; wetland delineations and community characterization; water and sediment characterizations; ASR feasibility analysis; and conceptual design support.

Proven, Award-Winning M/WBE Outreach

CH2M HILL has a successful track record of aggressively pursuing, wherever practical, subcontracting opportunities with small, disadvantaged, minority, veteran, service-disabled veteran, and woman-owned enterprises, as well as Historically Black Colleges and Universities and Minority Institutions in the performance of our contracts. We are an official member of the U.S. Department of Defense (DOD), U.S. Department of Energy (DOE), U.S. Department of Homeland Security (DHS), U.S. Environmental Protection Agency (EPA) and U.S. Small Business Administration (SBA) Mentor-Protégé Programs. As a mentor company,



CH2M HILL provides assistance to, and teams with, protégé firms on a wide variety of proposals and ongoing projects.

The CH2M HILL Supplier Diversity and Small Business Program has received numerous awards including: Black Enterprise Magazine’s Top 10 Corporations for Supplier Diversity; Corporation of the Year – Minority Enterprise and Education Development, Inc.; DOD’s Nunn-Perry Award; EPA Administrator’s Award; PG&E Supplier Diversity Excellence Award; SBA’s Award of Distinction; SBA’s Dwight D. Eisenhower Award—2001 and 2007, and has earned an “Outstanding” rating, the highest awarded by the Defense Contract Management Agency and the U.S. Small Business Administration, since 1998.

Local M/WBE Participation

As noted earlier in this section, the CH2M HILL team includes CMA. CMA’s active M/WBE licenses are included below.





9. Insurance Certificate

CH2M HILL carries sufficient insurance coverage to meet the City's requirements as noted in the RFQ. A copy of our standard Memorandum of Insurance is included below. CH2M HILL will, upon execution of an agreement with the City for these services, furnish to the Procurement Services Division certificate(s) of insurance which indicate that insurance coverage has been obtained which meets the requirements of the RFQ.

ACORD		CERTIFICATE OF LIABILITY INSURANCE		DATE (MM/DD/YYYY) 04/15/2014		
<p>THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.</p> <p>IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).</p>						
PRODUCER MARSH USA INC. 1225 17TH STREET, SUITE 1300 DENVER, CO 80202-5534			CONTACT NAME: PHONE (A/C, No, Ext): FAX (A/C, No): E-MAIL: ADDRESS:			
15114 -MO11-13/14			INSURER(S) AFFORDING COVERAGE		NAIC #	
INSURED CH2M HILL GLOBAL, INC. CH2M HILL ENGINEERS, INC. CH2M HILL E&C, INC. LOCKWOOD GREENE, INC. ET AL.			INSURER A: Greenwich Insurance Company		22322	
			INSURER B: National Union Fire Ins Co Pittsburgh PA		19445	
			INSURER C: XL Insurance America, Inc.		24554	
			INSURER D: Zurich American Insurance Co		16535	
			INSURER E:			
			INSURER F:			
COVERAGES		CERTIFICATE NUMBER: SEA-002401642-10		REVISION NUMBER: 4		
<p>THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.</p>						
INSR LTR	TYPE OF INSURANCE	ADDL SUBR INSR VOED	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	GENERAL LIABILITY	X X	RGE500025503	05/01/2014	05/01/2015	EACH OCCURRENCE \$ 1,500,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 1,500,000 MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ 1,500,000 GENERAL AGGREGATE \$ 5,000,000 PRODUCTS - COMPOP AGG \$ 5,000,000
<p>GEN'L AGGREGATE LIMIT APPLIES PER: POLICY <input type="checkbox"/> PRO <input type="checkbox"/> LOC <input type="checkbox"/></p>						
A	AUTOMOBILE LIABILITY	X X	RAD500025403 (AOS) RAD500025603 (MA)	05/01/2014 05/01/2014	05/01/2015 05/01/2015	COMBINED SINGLE LIMIT (Ea accident) \$ 2,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Ea accident) \$ \$
A	ANY AUTO ALL OWNED AUTOS HIRED AUTOS					SCHEDULED AUTOS NON-OWNED AUTOS
B	UMBRELLA LIAB	X				EACH OCCURRENCE \$ 5,000,000 AGGREGATE \$ 5,000,000
	EXCESS LIAB	X				
	DED	RETENTION \$				
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY	X	RWD500025203 (AOS)	05/01/2014	05/01/2015	X WC STATU- TORY LIMITS \$ OTH- ER \$
C	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/ MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N N /A	RWR500025303 (WI)	05/01/2014	05/01/2015	E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
D	PROFESSIONAL LIABILITY*		EOC3829621-12	05/01/2014	05/01/2015	Each Claim & Aggregate Each \$2,000,000 Policy Period
<p>DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)</p> <p>THE CERTIFICATE HOLDER IS INCLUDED AS AN ADDITIONAL INSURED ON THE GENERAL LIABILITY AND AUTOMOBILE LIABILITY POLICIES AS REQUIRED BY WRITTEN CONTRACT OR AGREEMENT. COVERAGE PROVIDED BY THE ABOVE GENERAL LIABILITY AND AUTO POLICIES SHALL BE PRIMARY AND NON-CONTRIBUTORY AND IS LIMITED TO THE LIABILITY RESULTING FROM THE NAMED INSURED'S OWNERSHIP AND/OR OPERATIONS. GENERAL LIABILITY AND AUTO LIABILITY INCLUDE SEPARATION OF INSURED'S AND NO CROSS SUITS EXCLUSION. GENERAL LIABILITY, AUTO LIABILITY AND WORKERS COMPENSATION POLICIES INCLUDE A WAIVER OF SUBROGATION.</p>						
CERTIFICATE HOLDER CH2M HILL GLOBAL, INC. CH2M HILL ENGINEERS, INC. CH2M HILL E&C, INC. LOCKWOOD GREENE, INC. ET AL.			CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.			
			AUTHORIZED REPRESENTATIVE of Marsh USA Inc. Sharon A. Hammer			
			<i>Sharon A. Hammer</i>			
ACORD 25 (2010/05)						© 1988-2010 ACORD CORPORATION. All rights reserved.

AGENCY CUSTOMER ID: 15114

LOC #: Denver



ADDITIONAL REMARKS SCHEDULE

Page 2 of 2

AGENCY MARSH USA INC.		NAMED INSURED CH2M HILL GLOBAL, INC. CH2M HILL ENGINEERS, INC. CH2M HILL E&C, INC. LOCKWOOD GREENE, INC. ET.AL.
POLICY NUMBER		
CARRIER	NAIC CODE	EFFECTIVE DATE:

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM.
FORM NUMBER: 25 FORM TITLE: Certificate of Liability Insurance

CONTRACTOR'S POLLUTION LIABILITY
INSURER E. INDIAN HARBOR INSURANCE CO.
POLICY NO. PEC003468103
POLICY TERM: 05/01/2014 - 05/01/2015
EACH POLLUTION CONDITION AND AGGREGATE LIMIT OF LIABILITY: \$2,000,000

*FOR PROFESSIONAL LIABILITY COVERAGE, THE AGGREGATE LIMIT IS THE TOTAL INSURANCE AVAILABLE FOR CLAIMS PRESENTED WITHIN THE POLICY PERIOD FOR ALL OPERATIONS OF THE INSURED. THE LIMIT WILL BE REDUCED BY PAYMENTS OF INDEMNITY AND EXPENSE.



10. Joint Ventures

The CH2M HILL team is not a joint-venture. CH2M HILL is the prime consultant with our team member firms as subconsultants.

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11. Subconsultants

CH2M HILL has elected to augment its in-house staff capabilities and experience with selected subconsultants, all of which have direct work experience with both the City and/or CH2M HILL. These team members offer special capabilities and expertise that will be valuable as this project moves from concept to reality. Our partners include:

Wade Trim

Wade Trim's Water Resource practice has more than 86 years of experience in working with city, county, and regional utilities to assess, program, and manage improvements to their aging collection, distribution, and treatment systems. Projects include improvements to rehabilitate deteriorating pipe, address capacity limitations, and comply with regulatory requirements. Wade Trim has four offices in Florida and 17 offices nationwide. The firm has assisted various utilities within Florida and nationally including the Cities of Palm Bay and Tampa; Islamorada, Village of Islands; the Florida Governmental Utility Authority (FGUA); Manatee County; and utility authorities in Cleveland, Cincinnati, Pittsburgh, Detroit, and Omaha.

Wade Trim and CH2M HILL have worked together on multiple projects nationally for more than 15 years in assessment regional utilities and developing a program that meets their needs for the present and future. Wade Trim's largest venture working side-by-side with CH2M HILL is for the Northeast Ohio Regional Sewer District (NEORS) for the City of Cleveland, Ohio, with their Capital Improvement Project Program Management and Combined Sewer Overflow Advance Facility Plan & Support Services. Other projects where CH2M HILL and Wade Trim have worked together include: Southerly Combined Sewer Overflow Phase 2 Long term Control Plan (both firms as subs); Capital Improvement Project Program Management, Northeast Ohio Regional Sewer District, Cleveland, OH (CH2M HILL as prime) Easterly Combined Sewer Overflow Advanced Facility Plan, Northeast Ohio Regional Sewer District, Cleveland, OH (both firms as subs); Omaha DPW Combined Sewer Overflow Program, Omaha Department of Public Works, NE(CH2M HILL as prime); Combined Sewer Overflow Advance Facility Plan & Support Services, Northeast Ohio Regional Sewer District, Cleveland, OH (Wade Trim as prime).

Hazen & Sawyer

Since 1951, Hazen and Sawyer has successfully completed thousands of projects across the United States and abroad. Headquartered in New York City, with offices throughout the world, Hazen and Sawyer employs 750 professionals providing environmental engineering and consulting services in the specialized fields of water supply, treatment, and distribution; wastewater collection, treatment, reclamation and disposal; and stormwater collection and treatment systems.

Hazen and Sawyer has provided engineering services in southeast Florida for nearly five decades and has been involved in the implementation of more than \$1.5 billion in water-related projects in Florida over the past ten years. Their expertise includes specialization in the areas of climate change adaptation strategies, greenhouse gas emission reductions, sustainable practices, water resources management, water demand management, water conservation plan implementation, water resource economics, and aquatic sciences.

Hazen and Sawyer and CH2M HILL have previously collaborated on multiple projects and programs. Our most relevant joint assignment was the completion of the City's Water and Waster Master Plan in 2000. Our roles

on that assignment included CH2M HILL providing wastewater planning and Hazen and Sawyer providing water planning. The two firms also worked on the City's Waterworks 2011 program over a nine-year period ending in 2011 with CH2M HILL serving as the Program Manager and Hazen and Sawyer serving as a designer. During this timeframe, CH2M HILL and Hazen and Sawyer collaborated to implement critical water infrastructure improvements identified in the 2000 Water and Wastewater Master Plan in 2000. Key projects on which we worked together includes:

- Prospect Wellfield Improvements
- Saltwater Intrusion Monitoring Network
- Dixie Wellfield Improvements – Phases 1 -4
- Peele-Dixie Membrane Softening WTP
- Peele-Dixie WTP Concentrate Disposal Well
- Fiveash WTP and George T. Lohmeyer WWTP Electrical System Documentation and Maintenance Service Procurement
- Fiveash WTP Upgrades – Phase I, II, and III
- Fiveash WTP Filter Rehabilitation – Phase 1 & 2
- Fiveash WTP Disinfection System Replacement
- Fiveash WTP – Plant Power Improvements
- South Andrews Ave. Water Main Improvement
- 2007 Water Master Plan Update
- Floridan Aquifer Test Wells and Conceptual Plan for the Peele-Dixie WTP

CH2M HILL and Hazen and Sawyer have also worked together on a climate change project to assess how to make New York City's wastewater infrastructure more resilient to extreme weather; the Rockaway project which assessed whether it makes more sense to upgrade a small WWTP long-term or turn it into a pumping station; PO-88, a research and development contract focused on the New York City BNR program; and AWT2, a design/DSDC contract providing supplemental carbon storage and feed systems at five wastewater treatment plants. In addition, Hazen and Sawyer worked closely with Wade Trim on the Village of Islamorada Wastewater Master Plan, a project that involved all collection and transmission facilities within a 17-mile long service area.

Chen Moore and Associates

Chen Moore and Associates (CMA) is a multi-discipline consulting firm with offices in Broward, Miami-Dade, Palm Beach, Martin, Orange and Alachua Counties and well as in the Republic of Panama. Founded in 1986, CMA specializes in civil and environmental engineering, landscape architecture, planning, GIS analysis and mapping, and construction engineering inspection. CMA is a Florida state and locally certified small, disadvantaged and minority business enterprise firm.

CMA has worked on over 40 projects for the City of Fort Lauderdale over the last 25 years, providing a wide range of services to various City Departments. CMA also has a long relationship with CH2M HILL, dating back over 20 years. Currently, CMA is interacting with CH2M HILL for the City of Key West (CMA is prime consultant with CH2M HILL as subconsultant), the Florida Keys Aqueduct Authority (CMA is prime consultant, CH2M HILL is Owner's Representative) and the Seminole Tribe of Florida (CMA is prime consultant, CH2M HILL is Owner's Representative). This long familiarity with both CH2M HILL and the City make CMA a seamless team member, allowing for expertise to be communicated with minimal coordination.

Craven Thompson & Associates, Inc.

Craven Thompson & Associates, Inc. (CTA) was founded in 1961 as an engineering and surveying firm dedicated primarily to serving the needs of public sector clients in the rapid growth area of South Florida. Over the past fifty-three years, CTA has grown into a multi-disciplinary firm comprised of specialized teams each fully staffed with top caliber professional and support personnel, serving clients in both the public and private sectors. The firm has an experienced and qualified staff of fifty-nine employees ready to assist the City of Fort Lauderdale.

CTA has modeled (with Haestad Methods WaterCAD and SewerCAD), designed and permitted hundreds of miles of water and sanitary sewer main in Broward County. CTA's Survey staff has over 20 years of GIS experience. We currently run the latest version of ESRI's ArcGIS software version 10.1 and have been involved with multiple Municipalities in development of GIS databases and mapping projects.

NON-COLLUSION STATEMENT:

By signing this offer, the vendor/contractor certifies that this offer is made independently and *free* from collusion. Vendor shall disclose below any City of Fort Lauderdale, FL officer or employee, or any relative of any such officer or employee who is an officer or director of, or has a material interest in, the vendor's business, who is in a position to influence this procurement.

Any City of Fort Lauderdale, FL officer or employee who has any input into the writing of specifications or requirements, solicitation of offers, decision to award, evaluation of offers, or any other activity pertinent to this procurement is presumed, for purposes hereof, to be in a position to influence this procurement.

For purposes hereof, a person has a material interest if they directly or indirectly own more than 5 percent of the total assets or capital stock of any business entity, or if they otherwise stand to personally gain if the contract is awarded to this vendor.

In accordance with City of Fort Lauderdale, FL Policy and Standards Manual, 6.10.8.3,

3.3. City employees may not contract with the City through any corporation or business entity in which they or their immediate family members hold a controlling financial interest (e.g. ownership of five (5) percent or more).

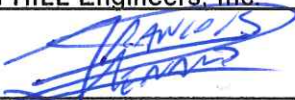
3.4. Immediate family members (spouse, parents and children) are also prohibited from contracting with the City subject to the same general rules.

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

<u>NAME</u>	<u>RELATIONSHIPS</u>
_____	_____
_____	_____
_____	_____
_____	_____

In the event the vendor does not indicate any names, the City shall interpret this to mean that the vendor has indicated that no such relationships exist.

CH2M HILL Engineers, Inc.
Firm

 V.P.
Name/Title

June 13, 2014
Date

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LOCAL BUSINESS PREFERENCE CERTIFICATION STATEMENT

The Business identified below certifies that it qualifies for the local BUSINESS preference classification as indicated herein, and further certifies and agrees that it will re-affirm it's local preference classification annually no later than thirty (30) calendar days prior to the anniversary of the date of a contract awarded pursuant to this ITB. Violation of the foregoing provision may result in contract termination.

(1) _____ is a **Class A** Business as defined in City of Fort Lauderdale Ordinance No. C-12-04, Sec.2-199.2. A copy of the City of Fort Lauderdale current year Business Tax Receipt and a complete list of full-time employees and their addresses shall be provided within 10 calendar days of a formal request by the City.

Business Name

(2) CH2M HILL Engineers, Inc. is a **Class B** Business as defined in the City of Fort Lauderdale Ordinance No. C-12-04, Sec.2-199.2. A copy of the Business Tax Receipt or a complete list of full-time employees and their addresses shall be provided within 10 calendar days of a formal request by the City.

Business Name

(3) _____ is a **Class C** Business as defined in the City of Fort Lauderdale Ordinance No. C-12-04, Sec.2-199.2. A copy of the Broward County Business Tax Receipt shall be provided within 10 calendar days of a formal request by the City.

Business Name

(4) _____ requests a **Conditional Class A** classification as defined in the City of Fort Lauderdale Ordinance No. C-12-04, Sec.2-199.2. Written certification of intent shall be provided within 10 calendar days of a formal request by the City.

Business Name

(5) _____ requests a **Conditional Class B** classification as defined in the City of Fort Lauderdale Ordinance No. C-12-04, Sec.2-199.2. Written certification of intent shall be provided within 10 calendar days of a formal request by the City.

Business Name

(6) _____ is considered a **Class D** Business as defined in the City of Fort Lauderdale Ordinance No. C-12-04, Sec.2-199.2. and does not qualify for Local Preference consideration.

Business Name

BIDDER'S COMPANY:
CH2M HILL Engineers, Inc.

AUTHORIZED COMPANY PERSON:

Francois Menard
NAME


SIGNATURE

June 13, 2014
DATE

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A. CONTRACT INFORMATION

1. TITLE AND LOCATION (City and State)

Comprehensive Utility Strategic Master Plan, City of Fort Lauderdale, Florida

2. PUBLIC NOTICE DATE

5/15/2014

3. SOLICITATION OR PROJECT NUMBER

RFQ # 246-11426

B. ARCHITECT-ENGINEER POINT OF CONTACT

4. NAME AND TITLE

Luis Rioseco, Project Manager

5. NAME OF FIRM

CH2M HILL Engineers, Inc.

6. TELEPHONE NUMBER

(954) 214-9980

7. FAX NUMBER

(954) 772-2621

8. E-MAIL ADDRESS

Luis.Rioseco@ch2m.com

C. PROPOSED TEAM

(Complete this section for the prime contractor and all key subcontractors.)

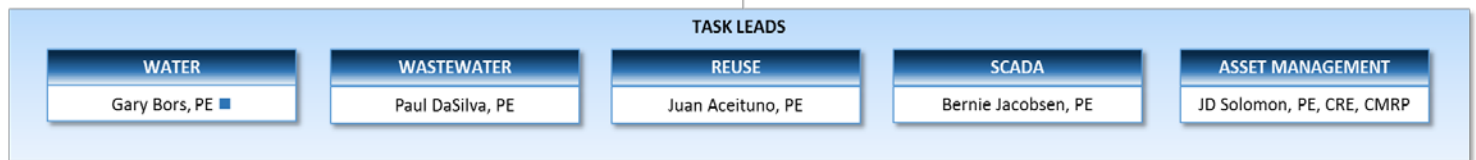
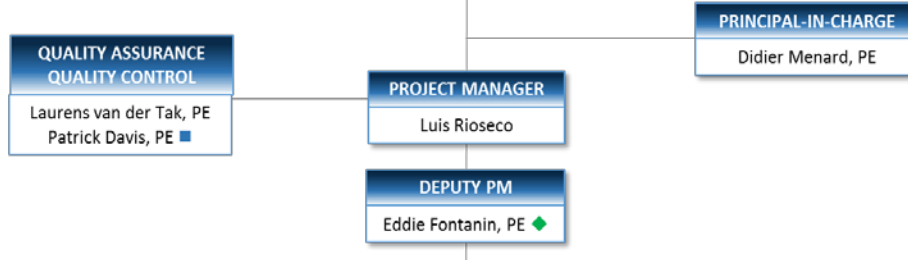
	(Check)			9. FIRM NAME	10. ADDRESS	11. ROLE IN THIS CONTRACT
	PRIME	J-V PARTNER	SUB-CONTRACTOR			
a.	X			CH2M HILL Engineers, Inc. <input checked="" type="checkbox"/> CHECK IF BRANCH OFFICE	550 W. Cypress Creek Rd, Ste. 400 Fort Lauderdale, Florida 33309	Project management, wastewater, water
b.	X			CH2M HILL Engineers, Inc. <input checked="" type="checkbox"/> CHECK IF BRANCH OFFICE	3150 SW 38 Avenue, Suite 700 Miami, Florida 33146	Project management, reuse
c.	X			CH2M HILL Engineers, Inc. <input checked="" type="checkbox"/> CHECK IF BRANCH OFFICE	225 East Robinson St., Suite 505 Orlando, Florida 32801	Project management, SCADA, water, CIP
d.	X			CH2M HILL Engineers, Inc. <input checked="" type="checkbox"/> CHECK IF BRANCH OFFICE	3120 Highwoods Blvd., Suite 214 Raleigh, North Carolina 27604	Asset Management, climate change and sea level rise, CMMS
e.	X			CH2M HILL Engineers, Inc. <input checked="" type="checkbox"/> CHECK IF BRANCH OFFICE	1100 Wayne Avenue, Suite 1150 Silver Spring, Maryland 20910	QA/QC, climate change and sea level rise
f.			X	Hazen & Sawyer <input checked="" type="checkbox"/> CHECK IF BRANCH OFFICE	4000 Hollywood Boulevard, 750N Hollywood, Florida 33021	QA/QC, Water system lead, demand forecasting, modeling, water supply, treatment and distribution
g.			X	Wade Trim <input checked="" type="checkbox"/> CHECK IF BRANCH OFFICE	3790 Dixie Highway. NE Suite D Palm Bay, Florida 32905	Project management, collection systems, reuse
h.			X	Chen Moore & Associates <input checked="" type="checkbox"/> CHECK IF BRANCH OFFICE	500 W. Cypress Creek Rd, Ste. 630 Fort Lauderdale, Florida 33309	Modeling
i.			X	Craven Thompson & Associates, Inc. <input checked="" type="checkbox"/> CHECK IF BRANCH OFFICE	3563 NW 53rd Street Fort Lauderdale, Florida	Hydraulic modeling and GIS

Subconsultants

- Hazen & Sawyer
- ◆ Wade Trim, Inc.
- Chen Moore & Associates, Inc.
- ▲ Craven Thompson & Associates, Inc.



Venice of America



MASTER PLANNING TEAM

Technical Experts – Water

Ed Davis, PE
Joe Elarde, PE

Water Supply

Albert Muniz, PE ■

WTP Design and Capacity Evaluations

Tom Waldeck, PE
Steve Riley, PE

Water and Wastewater Systems Models

Patrick Gibney, PE ▲
Tiezheng Wang, PhD, PE ■
Peter Moore, PE ●

GIS/Survey

Richard Pryce, PSM ▲

Technical Expert –Wastewater

Randy Boe, PE

Water Distribution and Wastewater Collection Systems

Scott Williams, PE
Oscar Duarte, PE ◆

WWTP Design and Capacity Evaluation

Randy Boe, PE
Tom Johnson

Climate Change & Sea Level Rise

Laurens van der Tak, PE
Adam Sharpe

Electrical

PY Keskar, PE

Technical Experts – Reuse

Dan Burden, PhD, PE ◆

Facility Operations & Maintenance Assessments

Joe Simbolick (Wastewater)
Dave Friess (Water)

Facility Condition Assessments

Tom Brzezinski, PE ◆

Energy Audits

Tom Johnson

CMMS

Bernie Jacobsen, PE
Kathryn Benson, PE

Technical Expert – SCADA

Brian Starks, PE

Demand Analysis, Forecasting, and Support

Adam Sharpe
Grace Johns, PhD ■

CIP Prioritization

Adam Sharpe
Ed Davis, PE

Emerging Regulatory Issues

Joe Elarde, PE (Water)
Randy Boe, PE (Wastewater)

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

(Complete one Section E for each key person.)

12. NAME Luis Rioseco, Jr., CGC	13. ROLE IN THIS CONTRACT Project Manager	14. YEARS EXPERIENCE	
		a. TOTAL 22	b. WITH CURRENT FIRM 8

15. FIRM NAME AND LOCATION (City and State)
CH2M HILL, Miami, FL

16. EDUCATION (DEGREE AND SPECIALIZATION) BS, Electrical Engineering Graduate of the Navy's Officer Nuclear Power School and Operator Training Pipeline	17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Certified General Contractor: Florida Department of Defense Certified Contracting Officer (Level II)
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18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.)
- Over 13 years of exceptional facilities, construction and engineering management, and project organizational leadership experience
 - Navy and Marine Corps Commendation Medal for actions as Deputy Operations Officer responsible for 280 construction contracts valued over \$1.2B; developed methods to forecast cost and schedule metrics enhancing the command's ability to make sound business decisions.
 - Experience managing CIP for more than \$340 million in annual work conducted at all Navy and Marine Corps activities in the NE US
 - Extensive construction oversight experience integrating construction and design teams

19. RELEVANT PROJECTS

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
South District WWTP Improvements and Cogeneration Facility, Miami-Dade Water and Sewer Department (WASD), Miami, FL	2011	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
<p>a. Project Manager. Managed this renewal and rehabilitation general engineering services contract for WASD's South District WWTP. Significant projects included designing the cogeneration units. Assisted with the preparation of a Request for Proposal (RFP) package for the design, permitting, acquisition and installation using a design/build delivery method. The team developed a permitting strategy to update the plant's Title V Air Operational permit. Another project in this program included the replacement, and screening improvements to plants 1 and 2 final design and services during construction. Participated in the basis of design phase and managed the final design to install four new fine plate screens at the SDWWTP headworks facility. Construction included the installation of approximately 45 miles per year of gravity sewer in a populated urban environment.</p>		
Seminole Tribe of Florida Program Support, Ft. Lauderdale FL	Ongoing	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
<p>b. Program Manager. Managed program that includes \$150 million, 5-year Capital Improvement Program (CIP). The program is comprised of numerous projects to update and modernize and expand potable water, sanitary sewer, and reclaimed water infrastructure.</p>		
Upgrade Pier Complex; Naval Weapon Station Earle; Earle, New Jersey	2006	2006
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input type="checkbox"/> Check if project performed with current firm	
<p>c. Integrated Product Team Leader/Deputy Operations Officer Engineering Field Activity Northeast. Led the contracting team, project and construction managers in a congressional re-programming effort to remove unforeseen discarded munitions in the spoils. Luis coordinated incremental funding and resolved permitting and construction issues requiring multi-agency coordination. The \$126-million project included demolition and disposal of debris from an existing pier and access trestle and new ammunition loading pier and trestle. Other work included dredging, new utilities, and renovating a pier for temporary use. Construction Cost: \$126 Million.</p>		
Truman Mole Pier Repairs, Naval Air Station, Key West, FL	2004	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input type="checkbox"/> Check if project performed with current firm	
<p>e. Deputy Public Works Officer and Port Operations Officer. Supervised nearly 200 employees in seven divisions, including environmental engineering, maintenance and utilities, transportation, facilities maintenance engineering, oil-spill response, and port operations. Project activities included demolition, upgrades to shore power connections, lift stations, and repairs to pilings.</p>		

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT
(Complete one Section E for each key person.)

12. NAME Eddie Fontanin, PE	13. ROLE IN THIS CONTRACT Deputy Project Manager	14. YEARS EXPERIENCE	
		a. TOTAL 19	b. WITH CURRENT FIRM 17
15. FIRM NAME AND LOCATION (City and State) Wade Trim, Inc. (Palm Bay, FL)			
16. EDUCATION (DEGREE AND SPECIALIZATION) BS Environmental Engineering, University of Windsor, Ontario, 1995		17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) PE: Florida, No. 68602; MI, No. 6201049150	
18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) FWEA Reuse Committee; National Association of Sewer Service Companies; American Water Works Association; Society of American Military Engineers; American Public Works Association			

19. RELEVANT PROJECTS

(1) TITLE AND LOCATION (City and State)		(2) YEAR COMPLETED	
Utility Assessment & Program (Palm Bay, FL)		PROFESSIONAL SERVICES 2009	CONSTRUCTION (If applicable) Ongoing
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE		<input checked="" type="checkbox"/> Check if project performed with current firm	
a. Project included a condition and operational assessment of the City's water, wastewater, and reclaim treatment plants. The scope was to review and identify operational improvements, means of reducing electrical consumption, and CIP and R&R projects. Led a team of treatment process, electrical, and structural engineers, along with operations staff in assessing needs and improvements. Projects were identified including scope, cost, schedule, and effort to be performed in-house. Project Manager.			
Palm Bay Comprehensive Utility Master Plan (Palm Bay, FL)		PROFESSIONAL SERVICES 2012	CONSTRUCTION (If applicable) N/A
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE		<input checked="" type="checkbox"/> Check if project performed with current firm	
b. Wade Trim assisted the City in the overall review of its utilities, which was performed in steps and phases. One of the steps involved developing a water, wastewater, and reuse master plan. The master plan included a system consisting of more than 300 miles of wastewater collection, 600 miles of water main, and 150 miles of reuse lines. The hydraulic capacity analysis conducted included components such as impacting the system, inflow and infiltration, air entrapment, and minimum pipe velocity. Wade Trim also conducted an assessment and a project implementation program for the City's 10-MGD water, 1-MGD wastewater, and 1.2-MGD reuse treatment plants. During the evaluation of the condition and operation of the treatment plants factors were considered such as ease of operation, operation efficiency, energy efficiency, and ability to accommodate flows for present and future. Project Manager.			
Utility Project Program (North Port, FL)		PROFESSIONAL SERVICES 2014	CONSTRUCTION (If applicable) N/A
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE		<input checked="" type="checkbox"/> Check if project performed with current firm	
c. Project consisted of doing a complete assessment of the City's utility system in order to re-establish the R&R and CIP projects needed. The system consisted of a water, wastewater, and reuse treatment plant, and pipelines and lift stations. Review of previous master plan reports was conducted to assess whether information or projects could be carried forward under the new program. All hydraulic pipeline modeling was performed using Bentley software WaterGEMS and SewerGEMS. Project Manager.			
SCADA Master Plan (Palm Bay, FL)		PROFESSIONAL SERVICES 2013	CONSTRUCTION (If applicable) N/A
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE		<input checked="" type="checkbox"/> Check if project performed with current firm	
d. Wade Trim performed a SCADA master plan of the City of Palm Bay's entire utility system to document the current inventory of software and hardware, establish the City's goals for the overall SCADA moving forward, and prepare projects and initiative for the City to follow to achieve its goals. The SCADA system included the water, wastewater, and reuse treatment plants, along with more than 100 lift stations, two deep injection wells, 12 water monitoring stations, and an ASR well. Project Manager.			
TOHO Water Authority Operations & E&I Improvements (Kissimmee, FL)		PROFESSIONAL SERVICES 2012	CONSTRUCTION (If applicable) Ongoing
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE		<input checked="" type="checkbox"/> Check if project performed with current firm	
e. Wade Trim was contracted by the Toho Water Authority Operations Division to perform various projects related to their SCADA system, and E&I improvements at their treatment plants and lift station. The focus of TOHO is to consider energy efficiency. These projects involve PCL upgrades and sludge pump panel at belt filter presses, review of power correction capacitor at water treatment plants, replacement of relay control at wastewater treatment plants, and switch gear maintenance at water and wastewater treatment plants. Project Manager.			

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT
(Complete one Section E for each key person.)

12. NAME Laurens van der Tak, PE	13. ROLE IN THIS CONTRACT Quality Assurance/Quality Control	14. YEARS EXPERIENCE	
		a. TOTAL 27	b. WITH CURRENT FIRM 26

15. FIRM NAME AND LOCATION (City and State)
CH2M HILL, Silver Springs, MD

16. EDUCATION (DEGREE AND SPECIALIZATION) MS, Agricultural Engineering; BA, Biology; BS, Agricultural Engineering	17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer: Virginia and Maryland
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18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.)

- More than 27 years of experience on water resources projects involving in hydrologic and hydraulic modeling, water resource systems planning and analysis, water quality modeling, stormwater and watershed management, water and sanitary and combined sewer system planning and design, and GIS applications.
- Widely recognized technical expert on climate impacts adaption strategies and he serves as CH2M HILL's Technology Lead for Climate Change Adaptation services and Chair of the American Water Works Association's Climate Change Committee.

19. RELEVANT PROJECTS

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
Confronting Climate Change: An Early Analysis of Water and Wastewater Adaptation Costs, NACWA/AMWA, Working with the National Association of Clean Water Agencies (NACWA) and the Association of the Metropolitan Water Agencies (AMWA)	PROFESSIONAL SERVICES 2009	CONSTRUCTION (If applicable) N/A

a. (3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Check if project performed with current firm

Wastewater Task Leader. CH2M HILL developed a report to inform the US Congress and the water community detailing the impacts climate change can have on wastewater and drinking water utilities and estimating the adaptation costs for these critical facilities for the US. Mr. van der Tak led the team developing adaptation strategies and costs for the wastewater sector. Climate change impacts to wastewater and drinking water utilities, which provide critical economic, public health, and environmental benefits, include sea level rise and extreme flooding that can inundate and incapacitate treatment facilities; water quality degradation and increased treatment requirements; water scarcity and the need to develop new drinking water supplies; and lower flows in drought conditions that can affect the operation of treatment facilities.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
Community Resilience Pilot Project, U.S. Environmental Protection Agency (EPA) Office of Sustainable Communities, Wilmington, NC	PROFESSIONAL SERVICES 2013	CONSTRUCTION (If applicable) N/A

b. (3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Check if project performed with current firm

Senior Consultant. EPA contracted CH2M HILL to support a community resilience project designed to assist in identifying potential risks to critical infrastructure posed by SLR and more intense coastal storms, and in identifying land use and infrastructure policy options that reduce exposure and vulnerability of infrastructure to SLR. Responsibilities included a site visit and workshop to determine the focus of the vulnerability assessment; application of SLR and storm surge estimates to identify potentially vulnerable infrastructure; determination of risk to infrastructure; and identification of potential mitigation strategies

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
Confronting Climate Change: An Early Analysis of Water and Wastewater Adaptation Costs, National Association of Clean Water Agencies and Association of the Metropolitan Water Agencies	PROFESSIONAL SERVICES 2010	CONSTRUCTION (If applicable) N/A

c. (3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Check if project performed with current firm

Wastewater Task Leader. Developed a report to inform the U.S. Congress and water community detailing the impacts climate change can have on wastewater and drinking water utilities and estimating the adaptation costs for these critical facilities for the U.S.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
Watershed Initiative for National Natural Environmental Resources (WINNER) for USAID, Haiti	PROFESSIONAL SERVICES 2009	CONSTRUCTION (If applicable) N/A

d. (3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Check if project performed with current firm

Task Manager. Conducted an assessment of ongoing and planned watershed management and irrigation management interventions, and developed a plan for moving forward on developing watershed management plans and flood early warning systems.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

(Complete one Section E for each key person.)

12. NAME Patrick A. Davis, PE	13. ROLE IN THIS CONTRACT Technical Advisory Committee	14. YEARS EXPERIENCE	
		a. TOTAL 35	b. WITH CURRENT FIRM 33

15. FIRM NAME AND LOCATION (City and State)

Hazen and Sawyer, PC, Hollywood, Florida

16. EDUCATION (DEGREE AND SPECIALIZATION)

BS, Civil Engineering

17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE)

PE – Civil Engineering: (FL, NY, NC, MA, and VA)

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.)

- American Water Works Association, Water Environment Federation, American Society of Civil Engineers, Underground Injection Practices Control, ASHRAE, NSPE, TAPPI, National AWWA Dual Distribution Committee, Chairman - Florida AWWA Water Reuse Committee

19. RELEVANT PROJECTS

	(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
a.	Lower East Coast Water Supply Solution Broward and Palm Beach Counties, Florida	2010	
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
	Hazen and Sawyer conceptualized and evaluated the feasibility of developing the C-51 Reservoir to harvest stormwater for public water supply. The reservoir would provide about 120-mgd of water to recharge the surficial aquifer allow water utilities in south Florida to withdraw water above their current permitted water allocations under the Regional Water Availability Rule. This water supply has the potential to become an alternative water source for the City of Fort Lauderdale and other southeast Florida water utilities. Specific Role: Project Director.		
b.	14.5-mgd Nanofiltration Facility Town of Jupiter, Florida	2010	2010
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
	The Town of Jupiter operates a water treatment plant with four independent treatment processes: lime softening, ion exchange, and reverse osmosis (RO) and Nanofiltration (NF). The Town retained Hazen and Sawyer to design, permit and oversee pilot testing and provide technical assistance during construction for its 14.5-mgd NF Facility (expandable to 17 mgd). Design was completed in January 2007; construction was completed in 2010. Specific Role: Project Director.		
c.	City of Riviera Beach Water and Wastewater Master Plan Riviera Beach, Florida	2013	
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
	Hazen and Sawyer master planned water and wastewater infrastructure through the year 2030 for the City of Riviera Beach Utility District. The scope included: water supply; water treatment; water distribution and storage; along with wastewater collection, pumping and transmission. The infrastructure was evaluated relative to: 1) capacity to meet future growth (hydraulic modeling) 2) regulatory compliance (current and future regulations); 3) water quality and 4) renewal and replacement to ensure long-term sustainability. Specific Role: Project Director.		
d.	Broward County Regional Reuse Master Plan Broward County, Florida	2014	
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
	Hazen and Sawyer lead the planning team, involving 28 municipalities, to develop a Regional Reuse Master Plan to enhance and proliferate reclaimed water utilization throughout Broward County. Hazen and Sawyer developed the master plan as a platform for coordination and communication, including two dynamic planning tools allowing decision-makers to explore and analyze large amounts of data related to reclaimed water development. Specific Role: Project Director.		
e.	Lime Softening Water Treatment Plant Rehabilitation North Miami, Florida	2014	
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
	The Winson WTP is a lime softening treatment plant with a permitted capacity of 9.3 mgd (treating Biscayne Aquifer raw water). The WTP was constructed in the early 1960s; many of its existing facilities are at the end of their useful lives. Hazen and Sawyer planned, designed and permitted rehabilitation of the existing facilities (including: filter media, underdrains and valves replacement; new high service, backwash and transfer pump stations; new chemical facilities and new electrical distribution system. Specific Role: Project Director.		

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT
(Complete one Section E for each key person.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Gary W. Bors, PE	Water Systems	38	37

15. FIRM NAME AND LOCATION (City and State)
Hazen and Sawyer, PC, Hollywood, Florida

16. EDUCATION (DEGREE AND SPECIALIZATION) BS, Civil Engineering MS, Water Resource Engineering	17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) PE – Civil Engineering: (FL, NY, and NC)
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18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.)

- American Society of Civil Engineers, American Water Works Association, Water Environment Federation, National Society of Professional Engineers, Instrument Society of America, American Water Resources Association, Technical Association of the Pulp & Paper Industry, Industrial Computing Society

19. RELEVANT PROJECTS

	(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
a.	City of Riviera Beach Water and Wastewater Master Plan Riviera Beach, Florida	2013	
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
	Hazen and Sawyer master planned water and wastewater infrastructure through the year 2030 for the City of Riviera Beach Utility District. The scope included: water supply; water treatment; water distribution and storage; along with wastewater collection, pumping and transmission. The infrastructure was evaluated relative to: 1) capacity to meet future growth (hydraulic modeling) 2) regulatory compliance (current and future regulations); 3) water quality and 4) renewal and replacement to ensure long-term sustainability. Specific Role: Quality Control.		
b.	Broward County Regional Reuse Master Plan Broward County, Florida	2014	
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
	Hazen and Sawyer lead the planning team, involving 28 municipalities, to develop a Regional Reuse Master Plan to enhance and proliferate reclaimed water utilization throughout Broward County. Hazen and Sawyer developed the master plan as a platform for coordination and communication, including two dynamic planning tools allowing decision-makers to explore and analyze large amounts of data related to reclaimed water development. Specific Role: Quality Control.		
c.	Lime Softening Water Treatment Plant Rehabilitation North Miami, Florida	2014	
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
	The Winson WTP is a lime softening treatment plant with a permitted capacity of 9.3 mgd (treating Biscayne Aquifer raw water). The WTP was constructed in the early 1960s; many of its existing facilities are at the end of their useful lives. Hazen and Sawyer planned, designed and permitted rehabilitation of the existing facilities (including: filter media, underdrains and valves replacement; new high service, backwash and transfer pump stations; new chemical facilities and new electrical distribution system. Specific Role: Quality Control.		
d.	City of Hallandale Beach Membrane Softening Facility Hallandale Beach, Florida	2008	2008
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
	The City retained Hazen and Sawyer to provide pilot testing, design, bidding, permitting and construction management services for a new 6-mgd membrane facility to replace an equivalent volume of existing lime softening capacity at its water treatment plant. Total buildout capacity of the new membrane facility will be 13-mgd, which includes up to 4 mgd of brackish water reverse osmosis treatment capacity. Hazen and Sawyer has completed the design, permitting, and construction oversight of the membrane facility. Specific Role: Quality Control.		
e.	City of Melbourne's Water Distribution System Master Plan Melbourne, Florida	2001	
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
	Hazen and Sawyer developed the City of Melbourne's Water Distribution System Master Plan and Water System Improvements in January 2001. One of the key components of the projects, was the design and bidding services of the Harlock Road Water Main Extension. The project included line stops in order to remove an existing concrete encased 90-degree bend so that a tee and valve could be installed for the new water main loop. Specific Role: Quality Control.		

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT
(Complete one Section E for each key person.)

12. NAME Paul DaSilva, P.Eng	13. ROLE IN THIS CONTRACT Wastewater Task Lead	14. YEARS EXPERIENCE	
		a. TOTAL 46	b. WITH CURRENT FIRM 46
15. FIRM NAME AND LOCATION (City and State) CH2M HILL, Ft. Lauderdale, FL			
16. EDUCATION (DEGREE AND SPECIALIZATION) BA Science, Civil Engineering		17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer: Ontario	
18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.)			
<ul style="list-style-type: none"> ▪ Prior experience with programs of more than \$400 million, including the Island-wide Water and Wastewater Capital Improvement Program (CIP) in Puerto Rico ▪ Has led major program teams in design and construction of significant water and wastewater capital improvement programs 			

19. RELEVANT PROJECTS

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
Miami-Dade South District Waste Water Treatment Plant; Miami, FL	2013	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
<p>a. Project Manager. Managed all project management activities for \$80 million plant improvements at this 112-mgd plant; provided single point of contact for the client and overall quality responsibility. Under this program, managed the preparation and bidding of a \$20 million plus cogeneration facility upgrade to replace three 25 year old engines with 4 new ones each having twice capacity of old engines. The system has a 5 to 7 year payback based on biogas availability and less if natural gas is used to supplement operation to maximum engine generator output. This project is one of the first Design Build procurements that the Water and Sewer Department (WASD) has undertaken.</p>		
(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
Island-wide Infrastructure Program Management Support, Puerto Rico Infrastructure and Financing Authority, Puerto Rico	2010	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
<p>b. Program Management Team Member. Managed groups of up to nine project staff involved in more than \$400 million in water infrastructure construction. Construction team manager for water distribution system, which included 4-inch- to 66-inch- diameter water mains up to 10 miles long, large pumping stations up to 72 mgd, and water reservoirs with capacities from 1 mg to 8 mg.</p>		
(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
Immediate Action Plan, Island-wide Water and Waste Water Infrastructure Improvement Program, Puerto Rico Infrastructure and Financing Authority; San Juan, Puerto Rico	2002	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
<p>c. Design and Construction Team Manager. Managed a team responsible for design of \$100 million of diverse water supply and waste water treatment infrastructure projects. Concurrently provided quality control oversight of 22 local consulting firms preparing designs for additional \$100 million in projects.</p>		

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

(Complete one Section E for each key person.)

12. NAME Juan Aceituno, P.E.	13. ROLE IN THIS CONTRACT Reuse Task Lead	14. YEARS EXPERIENCE	
		a. TOTAL 18	b. WITH CURRENT FIRM 7
15. FIRM NAME AND LOCATION (City and State) CH2M HILL, Miami, FL			
16. EDUCATION (DEGREE AND SPECIALIZATION) M.B.A., M.E., B.S., Civil Engineering		17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer: Florida and Texas Construction Document Technologist, Construction Specification Institute Certification Associate Value Specialist, SAVE Certification	
18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) <ul style="list-style-type: none"> Bilingual licensed civil engineer with 18 years of experience in environmental engineering. Experience includes the planning, analysis, and design of water distribution and wastewater collection systems including pumping facilities. Experienced in water distribution network modeling and master plan studies for wastewater systems. 			

19. RELEVANT PROJECTS

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
District WWTP Renewal and Replacement (R&R): Cogeneration Facility Improvements, Miami-Dade Water and Sewer Department, Miami, FL	PROFESSIONAL SERVICES Ongoing	CONSTRUCTION (If applicable)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
a. Project Manager. Assisted with the review and analysis of all aspects for improvements to the existing cogeneration facility. Assisted with the evaluation to recommend the required number and size of cogeneration unit sizes. As part of this effort, he assisted with the preparation of a Request for Proposal (RFP) package for the design, permitting, acquisition and installation of up to four cogeneration units using a design-build delivery method. Developed a permitting strategy to update the plant's Title V Air Operational permit. Managing various disciplines to provide engineering support services during the design and construction phases.		
Midway Stormwater Pump Station, Department of Environmental Resources Management (DERM), Miami, Florida	PROFESSIONAL SERVICES Ongoing	CONSTRUCTION (If applicable)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
b. Project Manager. Assisted with managing the final design to install four new fine plate screens (3 mm orifice) at the SDWWTP Headworks Facility. The design required modifications to an existing facility to construct screenings systems improvements for Plants 1 & 2 consisting of grit chamber modifications and fine screens installation, construction of a new Plant 1 Electrical Building, Plant control system modifications, site civil and storm water modifications and installation of a new fire alarm system. Currently is managing permitting with the local Building Department. Engineering support services during construction will be provided.		
Sanitary Sewer Evaluation System (SSES) Phases I and II, City of Miami Beach, Florida	PROFESSIONAL SERVICES 2006	CONSTRUCTION (If applicable)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
c. Project Manager. Responsible for developing a technical report for the City of Miami Beach summarizing the requirements outlined in the Volume Sewer Customer Ordinance (VSCO) in Miami-Dade County. As part of the requirements for SSES Phases I and II, evaluated work already performed by the City and presented the results in a format acceptable to the local county regulatory agency. Developed a preliminary plan for conducting flow monitoring to determine Night-Time Flows and Dry/Wet Average Daily Flows for the City's 23 sanitary sewer basins.		
South Miami Heights Water Treatment Plant Program, Miami-Dade Water and Sewer Department, Miami, FL	PROFESSIONAL SERVICES 2006	CONSTRUCTION (If applicable)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
d. Project Manager. Managing the design of the new 20-mgd South Miami Heights (SMH) membrane water treatment plant program with an estimated construction value of \$100M. Prepared the mechanical specifications and drawings for yard piping at the site, pre-treatment strainers, and above ground fuel storage tanks. Also responsible for taking this project through the permitting process. During the final design, responsible for interacting with the client's engineering department to request information.		

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT
(Complete one Section E for each key person.)

12. NAME Bernie Jacobsen, PE	13. ROLE IN THIS CONTRACT SCADA Task Lead	14. YEARS EXPERIENCE	
		a. TOTAL 24	b. WITH CURRENT FIRM 17

15. FIRM NAME AND LOCATION (City and State)
CH2M HILL, Orlando, FL

16. EDUCATION (DEGREE AND SPECIALIZATION)
BS Electrical Engineering with Honors

17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE)
Professional Engineer: Florida

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.)

- Serves as the Utility Management Solutions (UMS) service team lead for Florida
- Responsibilities include Project Management, M&IS consulting, facility information management consulting, facility automation consulting, IT Master Plan management, network design services management, detailed I&C design, and project coordination, including plant startup support
- Extensive experience with the use of various types of SCADA hardware and software, including Allen-Bradley and Siemens Programmable Logic Controllers (PLCs), various Distributed Control Systems (DCSs), and Human Machine Interface (HMI) packages such as Intellution and Wonderware.

19. RELEVANT PROJECTS

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
Orange County Design Build Services for Electrical and I&C Water System Improvements, Orange County, FL	2005	
a. (3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
Project Manager. Responsible for planning, design, and construction services of a SCADA system for multiple water supply facilities including five Water Supply Facilities, two Repump Facilities, and the Central Lab. These OCU facilities have a combined permitted capacity of 27.7 mgd Maximum Daily Flow (MDF). Design or Consulting Fee: \$226,288		

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
Information Technology (IT) Master Plan, Florida Keys Aqueduct Authority (FKAA)	2005	
b. (3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
Project Manager. Responsible for the development of an IT Master Plan (ITMP) for FKAA which provided a 3 to 5 year IT Master Plan for implementing new Information Technology (IT) and Information Systems (IS) at FKAA. Specific strategic requirements included: Operations systems (SCADA including enterprise systems integration); Business systems and executive level reporting including integration between the systems; Geographic Information Systems (GIS) including integration with business and operation systems; IT Infrastructure such as networks (wireline and wireless), building cabling, IT Asset Management, and support systems required to accomplish objectives. Design or Consulting Fee: \$115,720		

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
Facility Automation and Information Management Implementation, Orlando Utilities Commission (OUC), Orlando, FL	2004	N/A
c. (3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
Project Manager. Responsible for planning, design, and construction phase services including programming and implementation services of a SCADA system for OUC's Sky Lake Water Treatment Plant (WTP) which included remote monitoring and control. The Sky Lake WTP has a permitted capacity of 22.5 mgd Maximum Daily Flow (MDF). Design or Consulting Fee: \$440,000		

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
Aloma Design-Build Facility Automation; City of Winter Park, FL	2006	2006
d. (3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
Project Manager. Design-build facility automation project at the Aloma Water Treatment Plant (WTP). Automation includes well pumping, ground storage tanks, liquid oxygen, ozone generation, ozone contactors, deox blowers, destruct units, sodium hypochlorite, sodium hydroxide, fluoride, and high service pumping.		

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT
(Complete one Section E for each key person.)

12. NAME JD Solomon, PE, CRE, CMRP	13. ROLE IN THIS CONTRACT Asset Management Task Lead	14. YEARS EXPERIENCE	
		a. TOTAL 26	b. WITH CURRENT FIRM 11

15. FIRM NAME AND LOCATION (City and State)
CH2M HILL, Raleigh, NC

16. EDUCATION (DEGREE AND SPECIALIZATION) Professional Certificate, Strategic Decision & Risk Mgmt. MBA, Finance BS, Civil Engineering	17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer: North Carolina, SC, and VA; Certified Reliability Engineer (CRE); Certified Lean Management and Six Sigma Black Belt Certified Maintenance & Reliability Professional (CMRP)
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18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.)

- Formal and practical experience in planning, reliability engineering, public policy, communications, and strategic decision analysis
- Certified as a planner by the American Institute of Certified Planners (active for a decade)
- Participated in and led similar integrated strategic planning effort for water and wastewater utilities
- 26 years of experience for infrastructure, environmental, planning, and management consulting projects, with focus on water & wastewater utilities; accomplished and well regarded project manager; can secure support & resources to complete projects.

19. RELEVANT PROJECTS

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
Integrated Water Resources Management Plan, Asset management and Strategic plan Development, Cape Fear Public Utilities, Wilmington, NC	2013	N/A
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
<p>a. Project manager and senior consultant for asset management program, senior consultant in support of PM Adam Sharpe for Integrated water resources management plan (IWRMP), and senior consultant for enterprise strategic plan. All three projects were performed simultaneously. IWRMP including consolidating and new development of demand forecasts, evaluation of raw water supply alternatives, systems assessments for treatment, distribution, collection, reuse and conservation, stakeholder facilitation, CIP prioritization, and communication/presentation plans and documentation.</p>		
(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
Integrated Water Resources Management Plan, Water System Model and Reliability Assessment, and Long Range Water Supply Plan, Town of Cary, NC	2013	N/A
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
<p>b. Senior consultant for multiple phase program. Initial project included the development of an integrated water resources plan (IWRMP) which included common source water evaluation, demand forecasting, system assessments, emerging issues, and stakeholder facilitation for treatment, distribution, collections, reuse, and conservation. Second project included development of new water system models and reliability studies. Final project included the strategic 50-year long range water supply plan (LWRMP) to prepare the region to meet their water resources challenges in a dynamic and holistic way, through development of a Water Resources Portfolio. The Portfolio provides a mix of practical strategies that can be applied to meet water resources responsibilities by implementing the right actions at the right time.</p>		
(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
Water System Regionalization Study, Water & Sewer Authority of Cabarrus County (WSACC), Concord NC	2009	N/A
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
<p>c. Project manager for rapidly growing county adjacent to Charlotte NC. Project included long range planning and regionalization alternatives related to three major water systems and their raw water supplies, infrastructure and reliability assessments, demand projections, financial analysis, revised CIP development, partnership structures, and stakeholder communications.</p>		

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F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT
(Present as many projects as requested by the agency, or 10 projects, if not specified. Complete one Section F for each project.)

20. EXAMPLE PROJECT KEY NUMBER
1

21. TITLE AND LOCATION *(City and State)*

**Long Range Water Resources Plan
 Town of Cary, NC**

22. YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2014	N/A

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER

Town of Cary, NC

b. POINT OF CONTACT NAME

Leila Goodwin

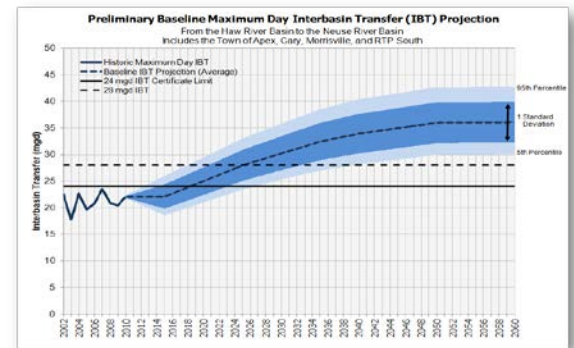
c. POINT OF CONTACT TELEPHONE NUMBER

(919) 462-3846

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size, and cost)*

CH2M HILL has been the primary water system consultant for the Town of Cary for more than 20 years. Since the economic crisis of 2008, the Town has worked aggressively to optimize its existing infrastructure, to better integrate its system, to plan and secure its primary water supply sources for the next 50 years, and to apply leading edge approaches to do so.

As part of the Integrated Water Resources Management Plan (IWRMP), Cary retained CH2M HILL to assess its current customer water use trends, identify future water demands, and evaluate supply, conservation, and reclaimed water alternatives to meet anticipated increased demand from the continuing sustained growth in its service area. CH2M HILL also conducted workshops and surveys of regulatory officials and the commercial industry (i.e., John Deere Landscapes) to assess trends in future water resource regulations as well as trends in water consumption practices in the residential and commercial sectors



The overall objective of the IWRMP was to determine the most cost-effective way to meet current and future water supply needs of the customers, as well as the systems regulatory requirements. To accomplish this objective, CH2M HILL: developed a detailed project approach to understand current customer water use trends; developed geographically-based water demand and wastewater flow projections; developed alternatives to reduce reliance on potable water supplies through conservation and reuse; evaluated trends which may influence the Town's water resources management strategies, and evaluated the cost-effectiveness and financial impact of these alternatives.

The IWRMP also indicated that a more uniform hydraulic model was also needed to truly evaluate and optimize the water system. CH2M Hill performed a holistic revision of the model, and subsequently performed system reliability analysis to determine where best to optimize the system and better meet service levels. The town subsequently hired CH2M HILL to do a similar upgrade and assessment of their wastewater model.

CH2M HILL was next chartered to perform a 50-year Long Range Water Supply Plan (LRWSP) to evaluate the reliability of and to secure long range water supply needs. Water demands and water supplies, as well as costs and schedules related to a short list of options for an alternatives analysis, were evaluated using probabilistic models to further quantify uncertainties and risks. Consideration of regional solutions to water supply include the Jordan Lake Partnership and its allocation process and teaming with neighboring communities who also need to develop future water supply security. Under these various scenarios, a preferred alternative was determined and CH2M HILL worked successfully with the Town to effect state legislation that ultimately made the preferred alternative more viable and saved an estimated \$3M and 3 to 5 years of implementation time.

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

(1) FIRM NAME	(2) FIRM LOCATION <i>(City and State)</i>	(3) ROLE
a. CH2M HILL	Raleigh, NC	Prime

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT
(Present as many projects as requested by the agency, or 10 projects, if not specified. Complete one Section F for each project.)

20. EXAMPLE PROJECT KEY NUMBER

2

21. TITLE AND LOCATION *(City and State)*

CFPUA Integrated Water Resource Master Planning (IWRMP) and Comprehensive Asset Management, Wilmington, NC

22. YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2013	N/A

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER

Cape Fear Public Utility Authority (CFPUA)

b. POINT OF CONTACT NAME

IWRMP: Gary McSmith, Eng. Manager
Asset Management: Beth Eckert, Environmental & Safety Management Department Director

c. POINT OF CONTACT TELEPHONE NUMBER

Gary McSmith (910) 332-6629
 Beth Eckert (910) 332-6646

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size, and cost)*

CH2M HILL assisted CFPUA in simultaneously developing a comprehensive asset management program (existing assets), an integrated water resources master plan (system enhancement and expansion), and an enterprise strategic plan. The primary focus of the work was to optimize the use of existing assets, to better inform the organization on tradeoffs between capital and operations investments, and to provide a concise framework to inform the organization of emerging regulations, the impacts of growth and related local policies, and changing customer expectations.

Optimizing Water Resources & Enhancing Operations

Following regionalization between the City of Wilmington and New Hanover County, CFPUA now owns, operates, and maintains the public water distribution and wastewater collection systems. CFPUA retained CH2M HILL to determine the most cost-effective way to meet the needs of their integrated service area while considering multiple existing water supply sources, interconnection of two separate water distribution systems, future growth potential, options to become a regional service provider, increasing regulatory pressures, and changing climatic conditions. This effort was collectively referred to as the "Integrated Water Resource Master Plan" (IWRMP).

Additionally, CH2M HILL assisted CFPUA in the implementation of its industry-leading Comprehensive Asset Management Program, including development of a strategic business plan and selection of a Computerized Maintenance Management System (CMMS).

Strategic Water Resource Planning

CH2M HILL worked with CFPUA to initiate a multi-phased approach in early 2009 to understand current customer water use trends, develop water demand and wastewater flow projections linked to GIS, develop water resource management alternatives which reduce reliance on potable water supplies, evaluate trends which may influence CFPUA water resources management strategies, identify opportunities for the optimization of future operations and evaluate the cost-effectiveness and financial impact of these resource management alternatives. The Plan ultimately provides CFPUA with a strategic roadmap that through successive steps focuses future expenditures of time and effort on specific areas of potential water resource management, including water conservation, aquifer storage and recovery and reuse.

Asset Management of Existing Infrastructure

CH2M HILL assisted CFPUA in developing an asset management program with activities ranging from strategic business plan, selection and implementation of a computerized maintenance management system (CMMS), established levels of service, developing an asset hierarchy, risk criteria, condition assessments of over 500 assets, and unifying multiple financial tools into a single framework for water and wastewater and maintenance and operations evaluations. System modeling and integrated master planning for multiple infrastructure aspects including water treatment, wastewater treatment, water distribution, and wastewater collection systems was performed.



25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) FIRM NAME	(2) FIRM LOCATION <i>(City and State)</i>	(3) ROLE
a.	CH2M HILL	Raleigh, NC	Prime
b.	CH2M HILL	Charlotte, NC	Prime

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT
(Present as many projects as requested by the agency, or 10 projects, if not specified. Complete one Section F for each project.)

20. EXAMPLE PROJECT KEY NUMBER

3

21. TITLE AND LOCATION *(City and State)*

**Broward County Regional Reuse Master Plan
 Broward County, FL**

22. YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2013	N/A

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER

Broward County Natural Resources Planning and Management Division

b. POINT OF CONTACT NAME

Jennifer L. Jurado, PhD
 Director

c. POINT OF CONTACT TELEPHONE NUMBER

(954) 519-1464

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size, and cost)*

Broward County, as a progressive, environmentally conscientious government entity, conceived the Regional Reuse Master Plan project as a mechanism to enhance and proliferate the existing reclaimed water infrastructure throughout Broward County. As over 28 municipalities were involved, the project team, led by Hazen and Sawyer, embarked on the project through a series of stakeholder workshops, involving all municipalities within Broward County as well as multiple permitting agencies and planning organizations within the County.

Following a series of stakeholder workshops, Hazen and Sawyer developed the Countywide reclaimed water master plan that identified the most cost-effective opportunities for reuse development in the County. The evaluation of the potential reclaimed water projects included a significant consideration of climate change and the effects of climate change, including sea level rise, potentially longer droughts, heavier rainfalls, flooding, etc. on water resources throughout the County. Steven Lamb, PG of Federico, Lamb, and Associates provided the hydrogeological analysis of potential reclaimed water methods and along with the Hazen and Sawyer team, determined that large scale spray irrigation of reclaimed water are the most resilient reclaimed water projects to the effects of climate change.

Hazen and Sawyer and the County recognized that this master planning effort would be more effective as a tool for utilities rather than a prescriptive plan for utilities. Therefore, Hazen and Sawyer developed the master plan as a platform for coordination and communication, including two dynamic planning tools allowing decision-makers to explore and analyze large amounts of data related to reclaimed water development. The first tool is a GIS based depiction of reclaimed water opportunities for large scale irrigation on a Google Earth platform, for selection of potential projects now and in the future. The second tool is a criteria evaluation model, for analysis of those potential projects based on relevant criteria.

Hazen and Sawyer prepared the Master Plan over a twelve month period, at a cost of \$500,000. The scope of the master plan included the following:

- Compilation of existing information from municipal and county reuse studies and data for all County treatment facilities
- Determination of reuse opportunities by identifying potential slow rate land application users across the County.
- Development of a Google Earth based reclaimed water master planning tool and criteria evaluation model for use in determining and comparing reclaimed water opportunities.
- Compilation of County planning data including: future public works projects, climate change effects, wellfield locations and other information into the master planning tool.
- Evaluation of potential reclaimed water opportunities against the effects of potential climate change and sea level rise over the next 50 years
- Investigation into the potential coordination of new reclaimed water pipelines with other transportation and utility infrastructure projects in an effort to achieve cost savings.
- Determination and analysis of regional reuse projects and their associated costs and benefits.

At project completion, the planning tools were distributed to Stakeholders. The stakeholders, as a result of this project and the tools that are now in their possession, may now coordinate future reclaimed water projects with other public works projects on the horizon, achieving cost savings, minimizing environmental impacts and lessening public disturbances.



The National Association of Counties (NACo) has granted Broward County a 2014 Achievement Award for its program titled "Broward County-wide Reuse Master Plan and Implementation Strategy" in the category of Environmental Protection and Energy for development of this innovative program.

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

a.	(1) FIRM NAME	(2) FIRM LOCATION <i>(City and State)</i>	(3) ROLE
	Hazen and Sawyer, P.C.	Hollywood, Florida	Primary Consultant

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT
(Present as many projects as requested by the agency, or 10 projects, if not specified. Complete one Section F for each project.)

20. EXAMPLE PROJECT KEY NUMBER

4

21. TITLE AND LOCATION *(City and State)*

**City of Riviera Beach Water and Wastewater Master Plan
 Riviera Beach, FL**

22. YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2012	

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER

City of Riviera Beach Utility District

b. POINT OF CONTACT NAME

Louis C. Aurigemma, P.E., F.ASCE
 Executive Director

c. POINT OF CONTACT TELEPHONE NUMBER

(561) 845-4185

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size, and cost)*

Hazen and Sawyer was retained in late November 2011 by the City of Riviera Beach Utility District (District) to provide master planning services for the City's water and wastewater infrastructure through the year 2030. The District's water infrastructure includes a Biscayne Aquifer wellfield that includes 28 groundwater wells, 58,000 feet of raw water transmission system, 17.5 million gallon per day capacity conventional lime softening water treatment plant (WTP), 86 miles of water distribution pipe ranging from 1 to 30-inch diameter, three remote water storage tanks and repumping stations. The District's wastewater infrastructure includes 169 miles of gravity sewer piping (ranging from 4 to 30-inch diameter), 37 miles of wastewater transmission system piping (ranging from 2 to 36-inch diameter), and 51 lift stations. The District conveys its sewage to the East Central Regional Water Reclamation Facility (ECRWF) for treatment.

WTP Process Optimization Bench-Scale Testing. The District operates a conventional lime softening water treatment plant treating groundwater. The WTP utilizes aluminum hydroxide and polymer as coagulant aids. The WTP was originally constructed in 1958 and expanded several times over the years to its current 17.5 mgd capacity. Hazen and Sawyer conducted bench-scale testing using Hazen and Sawyer's mobile laboratory to assess the efficacy of improving treatment performance at a minimal operating cost increase, assess the feasibility of low cost operational changes to obtain 4-log virus treatment under the federal Ground Water Rule (GWR), assess the condition of the filter media, simulate distribution system byproduct formation of alternative disinfection strategies, and assess water quality changes resulting from switching from chlorine to sodium hypochlorite disinfectant. Bench-scale results indicated that eliminating aluminum hydroxide and polymer addition and replacing it with ferric chloride would be beneficial relative to settled water turbidity. The study recommended conducting full-scale ferric chloride testing along with a series of capital improvements related to replacing certain WTP components that were observed to be at the end of their useful life. The District is currently considering performing the recommended full-scale testing.

Renewal and Replacement Improvements and Capacity Improvements. The project included condition assessment of the existing water and wastewater infrastructure to identify renewal and replacement (R&R) needs through the year 2030. Additionally, water and sewer hydraulic models were developed to assess the need for capacity, water quality and redundancy related improvement needs through the year 2030.

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

a.	(1) FIRM NAME	(2) FIRM LOCATION <i>(City and State)</i>	(3) ROLE
	Hazen and Sawyer, P.C.	Tampa, Florida	Primary Consultant
	Hazen and Sawyer, P.C.	Hollywood, Florida	Primary Consultant
	Hazen and Sawyer, P.C.	Boca Raton, Florida	Primary Consultant

<p align="center">F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT <i>(Present as many projects as requested by the agency, or 10 projects, if not specified. Complete one Section F for each project.)</i></p>	<p>20. EXAMPLE PROJECT KEY NUMBER 5</p>
---	--

<p>21. TITLE AND LOCATION <i>(City and State)</i></p> <p>Palm Bay Comprehensive Utility Master Plan Palm Bay, FL</p>	<p>22. YEAR COMPLETED</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; padding: 5px;">PROFESSIONAL SERVICES</td> <td style="width:50%; padding: 5px;">CONSTRUCTION (if applicable)</td> </tr> <tr> <td style="text-align: center; padding: 5px;">2008</td> <td style="text-align: center; padding: 5px;">Ongoing</td> </tr> </table>	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)	2008	Ongoing
PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)				
2008	Ongoing				

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER	b. POINT OF CONTACT NAME	c. POINT OF CONTACT TELEPHONE NUMBER
City of Palm Bay Utilities Department	Dan Roberts, PE	(321) 952-3410

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size, and cost)*

In 2008, the Palm Bay Utilities Department set a goal to review all perspectives of the utilities field operation and project programs to be completed. The objective was to re-examine the overall utilities to ensure that projects and scopes met the needs of the utility for the present and future, and reviewed means of improving the overall field operations of the utility. As the sole engineering consultant, Wade Trim assisted the City in the overall review of the utility, which was performed in steps and phases starting in 2008. One of the steps involved developing a water, wastewater, and reuse master plan. The master plan included a system consisting of more than 300 miles of wastewater collection, 600 miles of water main, and 150 miles of reuse lines. Beyond the hydraulic capacity analysis conducted, our analysis included components such as impacting the system, inflow and infiltration, air entrapment, and minimum pipe velocity. The analysis included determining the need for pipeline looping or if over looping was occurring.

Wade Trim also conducted an assessment and a project implementation program for the City's 10-MGD water, 1-MGD wastewater, and 1.2-MGD reuse treatment plants. During the evaluation of the condition and operation of the treatment plants factors were considered such as ease of operation, operation efficiency, energy efficiency, and ability to accommodate flows for present and future.

In a separate document, a review of means and technology available of biosolids disposal was conducted to again confirm if the current practice of removing solids was the best practice for the utilities based on the current condition and future regulatory changes. A cost benefit analysis was performed for the City to use as a tool in reviewing its options.

Understanding that energy efficiency results in cost savings, the Utilities Department requested Wade Trim to perform an energy efficiency study of the wastewater and reuse treatment facilities to determine whether there were means of reducing energy consumption. Wade Trim recommended a series of operational and project improvements, which the City implemented, resulting in an overall energy reduction by 40%. This study was presented in a workshop at the 2013 WEFTEC Conference in Chicago, Illinois.

Wade Trim performed a SCADA master plan of the entire utility system to document the City's existing inventory of software and hardware and established the goals for the overall SCADA master plan moving forward and prepared projects and initiative for the City to follow to achieve its goals. The SCADA system included the aforementioned treatment plants, along with more than 100 lift stations, two deep injection wells, 12 water monitoring stations, and an ASR well.

Wade Trim assisted the City in establishing an Asset Management System as well. The objective was to not only assist the City in selecting and implementing a CMMS but also to develop protocol and procedures in maintaining the City's Asset Management System. Wade Trim worked with the City over a brief transition period, which the City had been maintaining and expanding.

Project Cost: \$2.7M

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

(1) FIRM NAME	(2) FIRM LOCATION <i>(City and State)</i>	(3) ROLE
a. Wade Trim, Inc.	Palm Bay, FL	Prime Consultant

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT
(Present as many projects as requested by the agency, or 10 projects, if not specified. Complete one Section F for each project.)

20. EXAMPLE PROJECT KEY NUMBER

6

21. TITLE AND LOCATION *(City and State)*

**Water Quality Modeling
 Coconut Creek, FL**

22. YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2014	N/A

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER	b. POINT OF CONTACT NAME	c. POINT OF CONTACT TELEPHONE NUMBER
City of Coconut Creek	Jean Dupuis	(954) 956-1489

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size, and cost)*

Chen Moore and Associates was contracted by the City of Coconut Creek to update their existing water model. The project includes adding water quality components and model proposed improvements for the City's consideration for implementation. Services include converting the existing model into InfoWater V8.1 by Innovyze, updating the model to current conditions and outlining the updates made to the model. In addition, Chen Moore and Associates coordinated with the City and County to determine the disinfection inputs into the model and update the model accordingly. After providing the model results, they were coordinated with field residual chlorine test results by the city and calibrated. Lastly, Chen Moore and Associates coordinated with the City to provide potential additional disinfection locations/techniques for addition into the model and ran model iterations to determine the effectiveness of each alternative. A technical report was created outlining the existing deficiencies, proposed alternatives and modeling results. CMA then worked with the City to prepare a design build package for a new Water Disinfection System which has been constructed and put into operation.



Cost: \$34,340 (fee)

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

a.	(1) FIRM NAME	(2) FIRM LOCATION <i>(City and State)</i>	(3) ROLE
	Chen Moore and Associates	Fort Lauderdale, FL	Prime

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT
(Present as many projects as requested by the agency, or 10 projects, if not specified. Complete one Section F for each project.)

20. EXAMPLE PROJECT KEY NUMBER

7

21. TITLE AND LOCATION *(City and State)*

**Energy Evaluations
 Palm Beach County FL**

22. YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2006	N/A

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER

Palm Beach County Water Utilities

b. POINT OF CONTACT NAME

Brian Shields

c. POINT OF CONTACT TELEPHONE NUMBER

(561) 493-6081

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size, and cost)*

CH2M HILL provided Palm Beach County Water Utilities Department (PBCWUD) with an energy evaluation for four Water Treatment Plants (WTP No. 2, WTP No. 3, WTP No. 8 and WTP No. 9) and the Southern Region Water Reclamation Facility (SRWRF). The following Draft Report was developed to identify opportunities for energy savings and to recommend changes in process control at each facility that would improve energy efficiency and reduce overall cost of power. Comprehensive field evaluations were performed in two stages. They commenced on December 5, 2005 and were completed on January 17-20, 2006. The evaluations included detailed input and explanations of each treatment-facility process and operations given by the plant superintendent and the operating staff during specific plant workshops and interviews. A personnel team consisting of engineering and operations consultants from CH2M HILL, Operations Management International Inc. (OMI), Brown and Caldwell, and Hillers Electrical Engineering conducted the surveys. The team evaluated process operations and practices, and surveyed plant facilities to identify opportunities to improve energy efficiency. Costing for each category was conducted on the individual piece of equipment or process based on the type of control or modification recommended and taking the entire process in consideration. Power savings were compared against the different rate structures used or rate structures that are feasible based on the current Florida Power & Light Company (FPL) rate structures available. In all cases, the Commercial Industrial Load Control Program (CILC) rate structure provided the most economical power rate.

Power costs were generated using OMI's static power cost models. The kilowatt (kW) and demand generated from each process or piece of equipment was modeled at the cwTent mode of operations and at the recommended mode of operations or with identified modifications. The models were calibrated against actual power bills provided by PBCWUD. If actual runtime hours of some process were not available, the equipment data, pump curves, and or listed output capacity provided or obtained during the evaluation period were used to estimate runtimes that best fit the process and actual power bills. This was the baseline for all potential cost savings calculations. In cases where 24-hour flows vary greatly, such as the distribution pumps, diurnal flow data was utilized each hour. Power costs for different flows were generated based on the time of day for peak and off peak and inserted into the hourly diurnal flow values for the process provided by PBCWUD. Average annual savings were generated using this information.

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) FIRM NAME	(2) FIRM LOCATION <i>(City and State)</i>	(3) ROLE
a.	CH2M HILL	Palm Beach Gardens, FL	Prime

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT
(Present as many projects as requested by the agency, or 10 projects, if not specified. Complete one Section F for each project.)

20. EXAMPLE PROJECT KEY NUMBER

8

21. TITLE AND LOCATION *(City and State)*

**Long-Term Demand Forecasting System
Tampa, FL**

22. YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2010	

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER

Tampa Bay Water

b. POINT OF CONTACT NAME

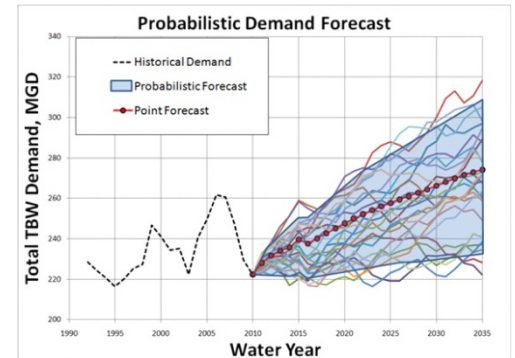
Alison Adams, Ph.D., P.E.

c. POINT OF CONTACT TELEPHONE NUMBER

(727) 791-2314

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size, and cost)*

Tampa Bay Water commissioned Hazen and Sawyer to develop their Long-Term Demand Forecasting System (LTDFS), a regional demand model that calculates potable water demand inclusive of the influence of weather, socioeconomic, and policy conditions. This model is combined with time series projections, or "point projections", of socioeconomic growth and weather/policy conditions to generate forecasts of water demand. In addition, the model is designed to predict demand on a geographic basis, allowing demand to be forecasted for seven distinct Water Demand Planning Areas in the Tampa Bay Water service area, and on a sectoral basis, allowing demand to be forecasted for three different customer classes (single-family, multifamily, and nonresidential). The sectoral demand models are based on statistical relationships estimated from water use, demographic, and climatic data for over 1,400 Traffic Analysis Zone in the Tampa Bay Water service area, which form the basis of Water Demand Planning Areas.



Hazen and Sawyer also designed procedures for estimating uncertainty in future socioeconomic growth and weather/policy conditions from past variability in those conditions over space and time. Coupling these procedures with the LTDFS has allowed production of time-series ensemble (or scenario-based) forecasts of demand suitable for:

- Stand-alone analysis of demand uncertainty and variability due to weather, climate, and socioeconomic factors, providing ranges of possible demands in future years, and
- Combining demand projections with water supply alternatives and operational policies for Future Needs Analysis, where forecasts of demand are explicitly coupled with supply alternatives for evaluation of supply reliability.

The output of the LTDFS is critical for establishing water supply reliability targets under both normal weather and drought scenarios and allows for an examination of the risks associated with planning for various capital projects. The probabilistic demand forecast became the foundation for timing and quantity of System Configuration II water supply development. Furthermore, the LTDFS is tied to Tampa Bay Water's Long-Term Supply Plan and feeds Tampa Bay Water's Demand Management Plan that assesses water conservation potential stemming from future gains in indoor water efficiency and best practices for irrigation and cooling.

Hazen and Sawyer also developed and implemented an annual update and verification process in consultation with Tampa Bay Water that monitors the predictive performance of the demand models, as well as updates longer-term economic, demographic, and water efficiency expectations.

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

a.	(1) FIRM NAME	(2) FIRM LOCATION <i>(City and State)</i>	(3) ROLE
	Hazen and Sawyer, P.C.	Hollywood, Florida	Primary Consultant
b.	(1) FIRM NAME	(2) FIRM LOCATION <i>(City and State)</i>	(3) ROLE
	Hazen and Sawyer, P.C.	Tampa, Florida	Primary Consultant

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT
(Present as many projects as requested by the agency, or 10 projects, if not specified. Complete one Section F for each project.)

20. EXAMPLE PROJECT KEY NUMBER

9

21. TITLE AND LOCATION *(City and State)*

**SCADA Master Plan and SCADA Program Implementation
 City of Cocoa, FL**

22. YEAR COMPLETED

PROFESSIONAL SERVICES
Ongoing

CONSTRUCTION (if applicable)

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER

City of Cocoa, Florida

b. POINT OF CONTACT NAME

Joe DeGiovine

c. POINT OF CONTACT TELEPHONE NUMBER

(321) 635-7774

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size, and cost)*

CH2M HILL has completed a SCADA Master Plan for the City of Cocoa for their water utility department. The SCADA Master Plan included development of the utility SCADA Vision, a review of their current infrastructure, identification of gaps, development of a prioritized list of projects to help achieve vision, development of budgetary cost estimates, and development of a schedule execution plan. The overall SCADA CIP budget for improvements is greater than \$8 million dollars. Identified projects include: SCADA Master Plan, design and build a new modernized control room, complete replacement of PLC system, complete replacement of HMI system, development of control system hardware and software standards, development of advanced automation control narratives, energy efficiency evaluation, chemical efficiency evaluation, telemetry radio path study, telemetry design, new radios and PLC system for a large wellfield (~50 sites), radio tower design, detailed wiring designs, facility automation SCADA programming, turnkey design build services, automated regulatory reporting system, network design services, cyber security evaluation, new access control system, new security video cameras, selection of a CMMS system, and use of automation to streamline manual data entry tasks.

Features of this project include:

- SCADA design and implementation services
- Configuration of Programmable Logic Controls (PLC)
- Configuration of Human Machine Interface (HMI)
- Systems design integration
- Equipment procurement
- Telemetry system design and implementation services
- Start- up testing and commissioning
- Network design services
- On-call emergency support
- Staff training
- Quality control
- Asset management system integration
- Video equipment design for visual verification of ground conditions and security



The SCADA Master Plan provided a 5-year roadmap or master plan to allow the City of Cocoa to improve their control system infrastructure, and included a new modernized control room.



The project is currently in the implementation stage. It will be completed by the end of 2015.

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

a.	(1) FIRM NAME	(2) FIRM LOCATION <i>(City and State)</i>	(3) ROLE
	CH2M HILL	Orlando, FL	Prime

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT
(Present as many projects as requested by the agency, or 10 projects, if not specified. Complete one Section F for each project.)

20. EXAMPLE PROJECT KEY NUMBER

10

21. TITLE AND LOCATION (City and State)

**John E. Preston Lime Softening WTP Expansion
 Miami, FL**

22. YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2005	2005

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER

Miami-Dade Water and Sewer Department

b. POINT OF CONTACT NAME

Luis Aguiar
 Assistant Director Water Division

c. POINT OF CONTACT TELEPHONE NUMBER

(305) 332-9425

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

Project Highlights

- A full scale test program demonstrated the performance of the simultaneous coagulation and lime softening process could achieve the goals of the Department.
- The Accelerator bench scale testing indicated that the simultaneous coagulation and softening process could meet the Stage 1 DBP regulations and may meet the Stage 2 criteria. The full scale Accelerator tests confirmed that both the Stage 1 and Stage 2 DBP criteria could be met with the process.
- The full-scale test results showed a marked improvement over the bench test data with the exception of the color removal. However, the color can be further reduced by increasing the process chlorine contact time until the TTHM and THAA concentrations approach the Stage 2 DBP criteria; or by using ozone.



The following conclusions were used as the basis of design for plant expansion:

- The Accelerator simultaneous coagulation and softening process with air strippers can produce a finished water which meets the Stage 2 DBP criteria with a finished water color below 10 SCU.
- Ferric sulfate was recommended for use in future operations since the ferric chloride will increase the chlorides in the finished water, possibly producing a more corrosive water supply.
- Anionic polymer allowed a more stable treatment process with sludge blankets which could easily be controlled during all flow conditions.
- The control of the chemical dosages is critical to the process. An improved lime feed system was recommended and all chemical feeds should be readily measured and controlled for optimum efficiency. The color can be reduced from 12 SCU by increasing the 3-minute chlorine contact period or increasing the chlorine feed from 5 to 10 ppm.
- The sludge removal system of both the Accelerators and Chlorine Contact Basin No. 2 must be improved to increase the efficiency of the sludge draw-off process.
- The Chlorine Contact Basin hydraulics should be improved to reduce the short circuiting of flows through the units.

Hazen and Sawyer provided process evaluation, design oversight, bidding and construction management services to Miami-Dade for this project. The total project cost was \$23 million.

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

a.	(1) FIRM NAME	(2) FIRM LOCATION (City and State)	(3) ROLE
	Hazen and Sawyer, P.C.	Hollywood, FL	Primary Consultant

G. KEY PERSONNEL PARTICIPATION IN EXAMPLE PROJECTS

26. NAMES OF KEY PERSONNEL (From Section E, Block 12)	27. ROLE IN THIS CONTRACT (From Section E, Block 13)	28. EXAMPLE PROJECTS LISTED IN SECTION F (Fill in "Example Projects Key" section below before completing table. Place "X" under project key number for participation in same or similar role.)									
		1	2	3	4	5	6	7	8	9	10
Luis Rioseco, Jr., CGC	Project Manager										
Eddie Fontanin, PE	Deputy Project Manager					■					
Laurens van der Tak, PE	QA/QC										
Patrick Davis, PE	QA/QC			■							■
Gary Bors, PE	Water Task Lead			■							■
Paul DaSilva, PE	Wastewater Task Lead										
Juan Aceituno, PE	Reuse Task Lead										
Bernie Jacobsen, PE	SCADA Task Lead									■	
JD Solomon, PE, CRE, CMRP	Asset Management Task Lead	■	■								

29. EXAMPLE PROJECTS KEY

NO.	TITLE OF EXAMPLE PROJECT (FROM SECTION F)	NO.	TITLE OF EXAMPLE PROJECT (FROM SECTION F)
1	Long Range Water Resources Plan Town of Cary, NC	6	Water Quality Modeling Coconut Creek, FL
2	CFPUA Integrated Water Resource Master Planning (IWRMP) and Comprehensive Asset Management, Wilmington, NC	7	Energy Evaluations Palm Beach County FL
3	Broward County Regional Reuse Master Plan Broward County, FL	8	Long-Term Demand Forecasting System Tampa, FL
4	City of Riviera Beach Water and Wastewater Master Plan Riviera Beach, FL	9	SCADA Master Plan and SCADA Program Implementation, City of Cocoa, FL
5	Palm Bay Comprehensive Utility Master Plan Palm Bay, FL	10	John E. Preston Lime Softening WTP Expansion Miami, FL

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Section H Additional Information

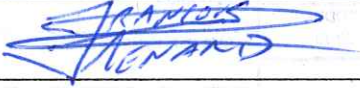
30. Provide any additional information requested by the Agency. Attach additional sheets as needed.

The CH2M HILL Team has submitted our qualifications and experience in this SF330, Section A-G, and in the required sections of the Statement of Qualifications.

I. AUTHORIZED REPRESENTATIVE

The foregoing is a statement of facts.

31. SIGNATURE



32. DATE

June 13, 2014

33. NAME AND TITLE

Francois Menard, Vice President

ARCHITECT-ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER (If Any)
RFQ 246-11426

PART II – GENERAL QUALIFICATIONS


(If a firm has branch offices, complete for each specific branch office seeking work.)

2a. FIRM (OR BRANCH OFFICE) NAME CH2M HILL, Fort Lauderdale, FL			3. YEAR ESTABLISHED 1983	4. DUNS NUMBER
2b. STREET 550 W. Cypress Creek Road Suite 400			5. OWNERSHIP	
2c. CITY Fort Lauderdale			2d. STATE FL	2e. ZIP CODE 33309
6a. POINT OF CONTACT NAME AND TITLE Menard, Didier, Client/Account Relationship Management 3			a. TYPE Corporation	
6b. TELEPHONE NUMBER 407-423-0030			b. SMALL BUSINESS STATUS	
6c. E-MAIL ADDRESS didier.menard@ch2m.com			7. NAME OF FIRM (If block 2a is branch office) CH2M HILL, INC. 9191 S. Jamaica St. (P.O. Box 241325, Denver, CO 80224-9325) Englewood, CO 80112-5946 Phone : 303-771-0900 Fax : 720-286-9250 TIN No. 59-0918189 CH2M HILL, INC., is a wholly owned subsidiary of CH2M HILL COMPANIES, LTD. which, through its Inter-company Pricing Agreement with other CH2M HILL subsidiaries, delivers the corporation's full range of services and can pledge the combined experience of all CH2M HILL affiliated companies.	
8a. FORMER FIRM NAME(S) (If any)			8b. YR. ESTABLISHED	8c. DUNS NUMBER

9. EMPLOYEES BY DISCIPLINE				10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL REVENUE FOR LAST 5 YEARS		
a. Function Code	b. Discipline	c. No. of Employees		a. Profile Code	b. Experience	c. Revenue Index Number (see below)
		(1) FIRM	(2) BRANCH			
02	Administrative	4084	6	E13	Environmental Testing and analysis	1
08	CADD Technician	117	1	P05	Planning (Community, Regional, Areawide and State)	1
12	Civil Engineer	892	1	P13	Public Safety Facilities	1
15	Construction Inspector	112	2	S07	Solid Wastes; Incineration; Landfill	1
16	Construction Manager	488	5	W02	Water Resources; Hydrology; Ground Water	1
20	Economist	127	1	W03	Water Supply; Treatment and Distribution	5
23	Environmental Engineer	836	3			
24	Environmental Scientist	684	1			
34	Hydrologist	219	2			
48	Project Manager	826	2			
58	Technician/Analyst	780	1			
62	Water Resources Engineer	746	3			
02	Designer	1194	2			
08	IT Professional	428	1			
13	Program Manager	306	2			
15	Project Controls	454	1			
	Other Employees	14430	1			
	Total	26723	35			

12. AUTHORIZED REPRESENTATIVE

The foregoing is a statement of facts.

	b. DATE 06/13/2014
a. SIGNATURE	
c. NAME AND TITLE Bob Bailey, President, CH2M HILL Water Business Group	

ARCHITECT-ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER (If Any)
RFQ 246-11426

PART II – GENERAL QUALIFICATIONS

(If a firm has branch offices, complete for each specific branch office seeking work.)

2a. FIRM (OR BRANCH OFFICE) NAME CH2M HILL Inc., Miami, FL			3. YEAR ESTABLISHED 1991	4. DUNS NUMBER
2b. STREET 3150 SW 38 Avenue Suite 700			5. OWNERSHIP	
2c. CITY Miami	2d. STATE FL	2e. ZIP CODE 33146	a. TYPE Corporation	
6a. POINT OF CONTACT NAME AND TITLE Menard, Didier, Vice President			b. SMALL BUSINESS STATUS	
6b. TELEPHONE NUMBER 407-423-0030	6c. E-MAIL ADDRESS didier.menard@ch2m.com		7. NAME OF FIRM (If block 2a is branch office) CH2M HILL, INC. 9191 S. Jamaica St. (P.O. Box 241325, Denver, CO 80224-9325) Englewood, CO 80112-5946 Phone : 303-771-0900 Fax : 720-286-9250 TIN No. 59-0918189 CH2M HILL, INC., is a wholly owned subsidiary of CH2M HILL COMPANIES, LTD. which, through its Inter-company Pricing Agreement with other CH2M HILL subsidiaries, delivers the corporation's full range of services and can pledge the combined experience of all CH2M HILL affiliated companies.	
8a. FORMER FIRM NAME(S) (If any)			8b. YR. ESTABLISHED	8c. DUNS NUMBER

9. EMPLOYEES BY DISCIPLINE				10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL REVENUE FOR LAST 5 YEARS		
a. Function Code	b. Discipline	c. No. of Employees		a. Profile Code	b. Experience	c. Revenue Index Number (see below)
		(1) FIRM	(2) BRANCH			
16	Construction Manager	488	1	C07	Coastal Engineering	1
23	Environmental Engineer	836	2	C15	Construction Management	1
52	Sanitary Engineer	149	1	E03	Electrical Studies and Design	1
62	Water Resources Engineer	746	2	E09	Environmental Impact Studies, Assessments or Statements	1
01	Operations & Maintenance Personnel	3288	1	E11	Environmental Planning	1
13	Program Manager	306	4	E12	Environmental Remediation	6
				I03	Industrial Waste Treatment	1
				S04	Sewage Collection, Treatment and Disposal	2
				S07	Solid Wastes; Incineration; Landfill	1
	Other Employees	20910	0	W02	Water Resources; Hydrology; Ground Water	4
Total		26723	11	W03	Water Supply; Treatment and Distribution	4

<p>11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS <i>(Insert revenue index number shown at right)</i></p> <table style="width: 100%;"> <tr> <td>a. Federal Work</td> <td style="text-align: center;">1</td> </tr> <tr> <td>b. Non-Federal Work</td> <td style="text-align: center;">7</td> </tr> <tr> <td>c. Total Work</td> <td style="text-align: center;">7</td> </tr> </table>	a. Federal Work	1	b. Non-Federal Work	7	c. Total Work	7	<p style="text-align: center;">PROFESSIONAL SERVICES REVENUE INDEX NUMBER</p> <table style="width: 100%;"> <tr> <td>1. Less than \$100,000</td> <td>6. \$2 million to less than \$5 million</td> </tr> <tr> <td>2. \$100,00 to less than \$250,000</td> <td>7. \$5 million to less than \$10 million</td> </tr> <tr> <td>3. \$250,000 to less than \$500,000</td> <td>8. \$10 million to less than \$25 million</td> </tr> <tr> <td>4. \$500,000 to less than \$1 million</td> <td>9. \$25 million to less than \$50 million</td> </tr> <tr> <td>5. \$1 million to less than \$2 million</td> <td>10. \$50 million or greater</td> </tr> </table>	1. Less than \$100,000	6. \$2 million to less than \$5 million	2. \$100,00 to less than \$250,000	7. \$5 million to less than \$10 million	3. \$250,000 to less than \$500,000	8. \$10 million to less than \$25 million	4. \$500,000 to less than \$1 million	9. \$25 million to less than \$50 million	5. \$1 million to less than \$2 million	10. \$50 million or greater
a. Federal Work	1																
b. Non-Federal Work	7																
c. Total Work	7																
1. Less than \$100,000	6. \$2 million to less than \$5 million																
2. \$100,00 to less than \$250,000	7. \$5 million to less than \$10 million																
3. \$250,000 to less than \$500,000	8. \$10 million to less than \$25 million																
4. \$500,000 to less than \$1 million	9. \$25 million to less than \$50 million																
5. \$1 million to less than \$2 million	10. \$50 million or greater																

12. AUTHORIZED REPRESENTATIVE

The foregoing is a statement of facts.

	b. DATE 06/13/2014
--	-----------------------

a. SIGNATURE
c. NAME AND TITLE
Bob Bailey, President, CH2M HILL Water Business Group

ARCHITECT-ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER (If Any)
RFQ 246-11426

PART II – GENERAL QUALIFICATIONS


(If a firm has branch offices, complete for each specific branch office seeking work.)

2a. FIRM (OR BRANCH OFFICE) NAME CH2M HILL Inc., Orlando, FL			3. YEAR ESTABLISHED 1985	4. DUNS NUMBER
2b. STREET 225 East Robinson Street Suite 505			5. OWNERSHIP	
2c. CITY Orlando	2d. STATE FL	2e. ZIP CODE 32801-4321	a. TYPE Corporation	
6a. POINT OF CONTACT NAME AND TITLE Menard, Didier, Vice President			b. SMALL BUSINESS STATUS	
6b. TELEPHONE NUMBER 407-423-0030	6c. E-MAIL ADDRESS didier.menard@ch2m.com		7. NAME OF FIRM (If block 2a is branch office) CH2M HILL, INC. 9191 S. Jamaica St. (P.O. Box 241325, Denver, CO 80224-9325) Englewood, CO 80112-5946 Phone : 303-771-0900 Fax : 720-286-9250 TIN No. 59-0918189 CH2M HILL, INC., is a wholly owned subsidiary of CH2M HILL COMPANIES, LTD. which, through its Inter-company Pricing Agreement with other CH2M HILL subsidiaries, delivers the corporation's full range of services and can pledge the combined experience of all CH2M HILL affiliated companies.	
8a. FORMER FIRM NAME(S) (If any)			8b. YR. ESTABLISHED	8c. DUNS NUMBER

9. EMPLOYEES BY DISCIPLINE				10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL REVENUE FOR LAST 5 YEARS		
a. Function Code	b. Discipline	c. No. of Employees		a. Profile Code	b. Experience	c. Revenue Index Number (see below)
		(1) FIRM	(2) BRANCH			
02	Administrative	4084	14	C15	Construction Management	4
12	Civil Engineer	892	5	E08	Engineering Economics	4
14	Computer Programmer	86	1	E09	Environmental EIS, Assessments or Statements	4
16	Construction Manager	488	2	E11	Environmental Planning	1
23	Environmental Engineer	836	4	H07	Highways; Streets; Airfield Paving; Parking Lots	6
24	Environmental Scientist	684	1	P05	Planning	1
34	Hydrologist	219	1	P06	Planning (Site, Installation, and Project)	3
42	Mechanical Engineer	679	1	S04	Sewage Collection, Treatment and Disposal	1
47	Planner: Urban/Regional	349	5	S07	Solid Wastes; Incineration; Landfill	4
50	Risk Assessor	67	1	T03	Traffic & Transportation Engineering	5
52	Sanitary Engineer	149	2	W02	Water Resources; Hydrology; Ground Water	2
60	Transportation Engineer	1490	11			
62	Water Resources Engineer	746	2			
01	Operations & Maintenance Personnel	3288	3			
07	Instrumentation & Controls Engineer	278	3			
08	IT Professional	428	2			
12	Procurement Specialist	462	1			
14	QA/QC Specialist	206	1			
15	Project Controls	454	2			
	Other Employees	7705	2			
	Total	26723	77			

12. AUTHORIZED REPRESENTATIVE

The foregoing is a statement of facts.

a. SIGNATURE  c. NAME AND TITLE Bob Bailey, President, CH2M HILL Water Business Group	b. DATE 06/13/2014
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ARCHITECT-ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER (If Any)
RFQ 246-11426

PART II – GENERAL QUALIFICATIONS

(If a firm has branch offices, complete for each specific branch office seeking work.)

2a. FIRM (OR BRANCH OFFICE) NAME CH2M HILL Inc., Raleigh, NC			3. YEAR ESTABLISHED June 2013 (Original Mar 1997)	4. DUNS NUMBER
2b. STREET 3120 Highwoods Blvd. Suite 214			5. OWNERSHIP	
2c. CITY Raleigh			a. TYPE Corporation	
2d. STATE NC			2e. ZIP CODE 27604	
6a. POINT OF CONTACT NAME AND TITLE Menard, Didier, Vice President			b. SMALL BUSINESS STATUS	
6b. TELEPHONE NUMBER 407-423-0030			6c. E-MAIL ADDRESS didier.menard@ch2m.com	
			7. NAME OF FIRM (If block 2a is branch office) CH2M HILL, INC. 9191 S. Jamaica St. (P.O. Box 241325, Denver, CO 80224-9325) Englewood, CO 80112-5946 Phone : 303-771-0900 Fax : 720-286-9250 TIN No. 59-0918189 CH2M HILL, INC., is a wholly owned subsidiary of CH2M HILL COMPANIES, LTD. which, through its Inter-company Pricing Agreement with other CH2M HILL subsidiaries, delivers the corporation's full range of services and can pledge the combined experience of all CH2M HILL affiliated companies.	
8a. FORMER FIRM NAME(S) (If any)			8b. YR. ESTABLISHED	8c. DUNS NUMBER

9. EMPLOYEES BY DISCIPLINE				10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL REVENUE FOR LAST 5 YEARS		
a. Function Code	b. Discipline	c. No. of Employees		a. Profile Code	b. Experience	c. Revenue Index Number (see below)
		(1) FIRM	(2) BRANCH			
02	Administrative	4084	1	C13	Computer Facilities; Computer Service	1
07	Biologist	126	1	E09	Environmental Impact Studies, Assessments or Statements	1
12	Civil Engineer	892	4	E11	Environmental Planning	1
23	Environmental Engineer	836	5	E12	Environmental Remediation	1
24	Environmental Scientist	684	2	E13	Environmental Testing and analysis	1
29	Geographic Information System Specialist	134	3	H03	Hazardous, Toxic, Radioactive Waste Remediation	4
30	Geologist	214	2	P05	Planning (Community, Regional, Areawide and State)	1
34	Hydrologist	219	3	P06	Planning (Site, Installation, and Project)	1
42	Mechanical Engineer	679	1	S04	Sewage Collection, Treatment and Disposal	1
48	Project Manager	826	2	W02	Water Resources; Hydrology; Ground Water	1
51	Safety/Occupational Health Engineer	523	1	W03	Water Supply; Treatment and Distribution	2
52	Sanitary Engineer	149	2			
57	Structural Engineer	559	1			
58	Technician/Analyst	780	1			
62	Water Resources Engineer	746	4			
08	IT Professional	428	3			
09	Munitions Response	31	1			
12	Procurement Specialist	462	1			
	Other Employees	14351	2			
Total		26723	40			

12. AUTHORIZED REPRESENTATIVE

The foregoing is a statement of facts.

a. SIGNATURE c. NAME AND TITLE Bob Bailey, President, CH2M HILL Water Business Group	b. DATE 06/13/2014
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ARCHITECT-ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER (If Any)
RFQ 246-11426

PART II – GENERAL QUALIFICATIONS

(If a firm has branch offices, complete for each specific branch office seeking work.)

2a. FIRM (OR BRANCH OFFICE) NAME CH2M HILL Inc., Silver Spring, MD			3. YEAR ESTABLISHED June 2000	4. DUNS NUMBER
2b. STREET 1100 Wayne Avenue Suite 1150			5. OWNERSHIP	
2c. CITY Silver Spring	2d. STATE MD	2e. ZIP CODE 20910	a. TYPE Corporation	
6a. POINT OF CONTACT NAME AND TITLE Menard, Didier, Vice President			b. SMALL BUSINESS STATUS	
6b. TELEPHONE NUMBER 407-423-0030	6c. E-MAIL ADDRESS didier.menard@ch2m.com		7. NAME OF FIRM (If block 2a is branch office) CH2M HILL, INC. 9191 S. Jamaica St. (P.O. Box 241325, Denver, CO 80224-9325) Englewood, CO 80112-5946 Phone : 303-771-0900 Fax : 720-286-9250 TIN No. 59-0918189 CH2M HILL, INC., is a wholly owned subsidiary of CH2M HILL COMPANIES, LTD. which, through its Inter-company Pricing Agreement with other CH2M HILL subsidiaries, delivers the corporation's full range of services and can pledge the combined experience of all CH2M HILL affiliated companies.	
8a. FORMER FIRM NAME(S) (If any)			8b. YR. ESTABLISHED	8c. DUNS NUMBER

9. EMPLOYEES BY DISCIPLINE				10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL REVENUE FOR LAST 5 YEARS		
a. Function Code	b. Discipline	c. No. of Employees		a. Profile Code	b. Experience	c. Revenue Index Number (see below)
		(1) FIRM	(2) BRANCH			
02	Administrative	4084	3	C04	Chemical Processing & Storage	1
16	Construction Manager	488	1	E09	Environmental Impact Studies, Assessments or Statements	1
23	Environmental Engineer	836	3	E10	Environmental and Natural Resource Mapping	1
24	Environmental Scientist	684	1	E11	Environmental Planning	2
30	Geologist	214	2	E12	Environmental Remediation	3
32	Hydraulic Engineer	71	2	E13	Environmental Testing and analysis	1
48	Project Manager	826	2	O01	Office Buildings; Industrial Parks	1
52	Sanitary Engineer	149	2	P12	Power Generation, Transmission, Distribution	1
60	Transportation Engineer	1490	3	S04	Sewage Collection, Treatment and Disposal	7
62	Water Resources Engineer	746	2	S13	Storm Water Handling & Facilities	1
11	Process Engineer	418	1	W02	Water Resources; Hydrology; Ground Water	2
13	Program Manager	306	2	W03	Water Supply; Treatment and Distribution	6
14	QA/QC Specialist	206	1			
	Other Employees	16205	1			
Total		26723	26			

12. AUTHORIZED REPRESENTATIVE

The foregoing is a statement of facts.

<p>a. SIGNATURE c. NAME AND TITLE Bob Bailey, President, CH2M HILL Water Business Group</p>	<p>b. DATE 06/13/2014</p>
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ARCHITECT - ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER (If any)
RFQ # 246-11426

PART II - GENERAL QUALIFICATIONS

(If a firm has branch offices, complete for each specific branch office seeking work.)


2a. FIRM (OR BRANCH OFFICE) NAME Hazen and Sawyer, P.C.			3. YEAR ESTABLISHED 1951	4. DUNS NUMBER 064966138
2b. STREET 4000 Hollywood Boulevard, 750N			5. OWNERSHIP	
2c. CITY Hollywood	2d. STATE FL	2e. ZIP CODE 33021	a. TYPE Employee Owned	
6a. POINT OF CONTACT NAME AND TITLE Patrick A. Davis, P.E., Vice President			b. SMALL BUSINESS STATUS	
6b. TELEPHONE NUMBER (954) 987-0066	6c. E-MAIL ADDRESS pdavis@hazenandsawyer.com		7. NAME OF FIRM (If block 2a is a branch office)	
8a. FORMER FIRM NAME(S) (If any)			8b. YR. ESTABLISHED	8c. DUNS NUMBER

9. EMPLOYEES BY DISCIPLINE				10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS*		
a. Function Code	b. Discipline	c. No. of Employees		a. Profile Code	b. Experience	c. Revenue Index Number (see below)
		(1) FIRM	(2) BRANCH			
02	Administrative	94	10	C15	Construction Management	8
06	Architects	8	0	C18	Cost Estimating	4
08	CAD Technicians/Designers	57	4	D02	Dams (Earth, Rock)	6
10	Chemical Engineers	19	2	D04	Design-Build	6
12	Civil Engineers	62	0	E03	Electrical Studies & Design	5
15	Construction Inspectors	42	3	E07	Energy Conservation	4
16	Construction Managers	22	0	E09	Environmental Impact Studies	5
18	Cost Engineer/Estimator	11	0	F20	Financial/Rate Studies	5
20	Economists	4	1	H04	HVAC	4
21	Electrical Engineers	33	2	I03	Industrial Waste Treatment	3
23	Environmental Engineers	272	19	P05	Planning (Community)	4
24	Environmental Scientists	16	1	P06	Planning (Site)	4
42	Mechanical Engineers	25	0	P07	Plumbing and Piping Design	6
57	Structural Engineers	22	1	S04	Sewage Collection	10
62	Water Resources Engineers	14	0	S07	Solid Wastes	2
	Technicians/Field Technicians	26	0	S10	Surveying; Platting; Mapping	3
	O&M Specialists	8	2	S11	Sustainable Design	5
	Other	5	0	S13	Stormwater Handling & Facilities	7
				S20	Start-Up/Operations	5
				T02	Testing & Inspection Services	3
				W02	Water Resources	4
				W03	Water Supply	9
	Total	740	45			

11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS (Insert revenue index number shown at right)		PROFESSIONAL SERVICES REVENUE INDEX NUMBER			
a. Federal Work	3	1. Less than \$100,000	6. \$2 million to less than \$5 million	7. \$5 million to less than \$10 million	8. \$10 million to less than \$25 million
b. Non-Federal Work	10	2. \$100,00 to less than \$250,000	9. \$25 million to less than \$50 million	10. \$50 million or greater	
c. Total Work	10	3. \$250,000 to less than \$500,000	4. \$500,000 to less than \$1 million	5. \$1 million to less than \$2 million	

12. AUTHORIZED REPRESENTATIVE

The foregoing is a statement of facts.

a. SIGNATURE 	b. DATE June 16, 2014
c. NAME AND TITLE Patrick A. Davis, P.E., Vice President	

AUTHORIZED FOR LOCAL REPRODUCTION

ARCHITECT-ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER (If Any)
RFQ 246-11426

PART II – GENERAL QUALIFICATIONS

(If a firm has branch offices, complete for each specific branch office seeking work.)


2a. FIRM (OR BRANCH OFFICE) NAME Wade Trim, Inc.			3. YEAR ESTABLISHED 1984	4. DUNS NUMBER 80-938-2575
2b. STREET 3790 Dixie Highway NE, Suite D			5. OWNERSHIP	
2c. CITY Palm Bay	2d. STATE FL	2e. ZIP CODE 32905	a. TYPE Corporation	
6a. POINT OF CONTACT NAME AND TITLE Eddie Fontanin, Vice President			b. SMALL BUSINESS STATUS N/A	
6b. TELEPHONE NUMBER 321.728.3389		6c. E-MAIL ADDRESS efontanin@wadetrim.com		
8a. FORMER FIRM NAME(S) (If any)			8b. YR. ESTABLISHED	8c. DUNS NUMBER
Edwin Orr Engineering			1926	N/A
Wade Trim, Inc.			1966	N/A
Wade Trim, Inc. - Tampa			19847	N/A

9. EMPLOYEES BY DISCIPLINE				10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL REVENUE FOR LAST 5 YEARS		
a. Function Code	b. Discipline	c. No. of Employees		a. Profile Code	b. Experience	c. Revenue Index Number (see below)
		(1) FIRM	(2) BRANCH			
02	Administrative	43	00	C15	Construction Management	4
08	CADD Technician	20	01	E03	Electrical Studies & Design	4
12	Civil Engineer	43	00	H07	Highways; Streets; Parking Lots	7
15	Construction Inspector	18	00	P05	Planning (Community, Area)	4
16	Construction Manager	11	00	R06	Rehabilitation (Structures, Facilities)	6
21	Electrical Engineer	05	01	S04	Sewage Collection; Treatment	6
47	Planner: Urban/Regional	09	00	T03	Traffic & Transportation Engineering	6
60	Transportation Engineer	17	00	U02	Urban Renewals; Development	4
62	Water Resources Engineer	36	07	W02	Water Resources; Hydrology	8
	Other Employees	90	00	W03	Water Supply; Distribution; Treatment	6
Total		292	09	Z01	Zoning; Land Use Studies	4

11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS <i>(Insert revenue index number shown at right)</i>		PROFESSIONAL SERVICES REVENUE INDEX NUMBER	
a. Federal Work	9	1. Less than \$100,000	6. \$2 million to less than \$5 million
b. Non-Federal Work	9	2. \$100,00 to less than \$250,000	7. \$5 million to less than \$10 million
c. Total Work	10	3. \$250,000 to less than \$500,000	8. \$10 million to less than \$25 million
		4. \$500,000 to less than \$1 million	9. \$25 million to less than \$50 million
		5. \$1 million to less than \$2 million	10. \$50 million or greater

12. AUTHORIZED REPRESENTATIVE

The foregoing is a statement of facts.

a. SIGNATURE  c. NAME AND TITLE Eddie Fontanin, Vice President	b. DATE June 12, 2014
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ARCHITECT – ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER (If any)
246-11426

PART II – GENERAL QUALIFICATIONS

(If a firm has branch offices, complete for each specific branch office seeking work.)

2a. FIRM (OR BRANCH OFFICE) NAME Chen Moore and Associates			3. YEAR ESTABLISHED 1986	4. DUNS NUMBER 859459547
2b. STREET 500 West Cypress Creek Road, Suite 630			5. OWNERSHIP	
2c. CITY Fort Lauderdale		2d. STATE FL	2e. ZIP CODE 33309	
6a. POINT OF CONTACT NAME AND TITLE Peter Moore, P.E., LEED AP, President			a. TYPE Corporation	
6b. TELEPHONE NUMBER (954) 730-0707		6c. E-MAIL ADDRESS pmoore@chenmoore.com		
8a. FORMER FIRM NAME(S) (If any) Chen and Associates Consulting Engineers, Inc.			8b. YR. ESTABLISHED 1986	8c. DUNS NUMBER 859459547
			b. SMALL BUSINESS STATUS Yes (Miami CBE, FL MBE, FDOT DBE)	
			7. NAME OF FIRM (If block 2a is a branch office) Chen Moore and Associates	

9. EMPLOYEES BY DISCIPLINE				10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS		
a. Function Code	b. Discipline	c. No. of Employees		a. Profile Code	b. Experience	c. Revenue Index Number
		(1) FIRM	(2) BRANCH			
12	Civil Engineers	17	7	P04	Pipelines (Cross-country--Liquid & Gas)	5
08	CADD Technicians	6	4	S13	Stormwater Handling & Facilities	6
15	Construction Inspectors	3	2	T02	Testing & Inspection Services	5
16	Construction Managers	1	1	R06	Rehabilitation (Buildings; Structures;	1
02	Administrative	5	5	P13	Public Safety Facilities	1
39	Landscape Architect	3	0	T03	Traffic & Transportation Engineering	1
				U02	Urban Renewals; Community Development	2
				C18	Cost Estimating; Cost Engineering and	2
				S11	Sustainable Design	1
				Z01	Zoning; Land Use Studies	2
				V01	Value Analysis; Life-Cycle Costing	1
				W02	Water Resources; Hydrology; Ground Water	3
				R11	Rivers Canals; Waterways; Flood Control	2
				E09	Environmental Impact Studies, Assessments	1
				I03	Industrial Waste Treatment	1
				P05	Planning (Community; Regional; Areawide &	2
				P06	Planning (Site, Installation and Project)	1
				C10	Commercial Building; (low rise); Shopping	2
				W03	Water Supply; Treatment and Distribution	4
				H07	Highways; Streets; Airfield Paving; Parking	3
	Other Employees	0	19	S04	Sewage Collection, Treatment & Disposal	4
	Total	35	19	C15	Construction Management	4
Total		35	19			

<p>11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS (Insert revenue index number shown at right)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>a. Federal Work</td> <td style="text-align: center;">1</td> </tr> <tr> <td>b. Non-Federal Work</td> <td style="text-align: center;">6</td> </tr> <tr> <td>c. Total Work</td> <td style="text-align: center;">6</td> </tr> </table>	a. Federal Work	1	b. Non-Federal Work	6	c. Total Work	6	<p style="text-align: center;">PROFESSIONAL SERVICES REVENUE INDEX NUMBER</p> <table style="width: 100%;"> <tr> <td style="width: 50%;"> 1. Less than \$100,000 2. \$100,000 to less than \$250,000 3. \$250,000 to less than \$500,000 4. \$500,000 to less than \$1 million 5. \$1 million to less than \$2 million </td> <td style="width: 50%;"> 6. \$2 million to less than \$5 million 7. \$5 million to less than \$10 million 8. \$10 million to less than \$25 million 9. \$25 million to less than \$50 million 10. \$50 million or greater </td> </tr> </table>	1. Less than \$100,000 2. \$100,000 to less than \$250,000 3. \$250,000 to less than \$500,000 4. \$500,000 to less than \$1 million 5. \$1 million to less than \$2 million	6. \$2 million to less than \$5 million 7. \$5 million to less than \$10 million 8. \$10 million to less than \$25 million 9. \$25 million to less than \$50 million 10. \$50 million or greater
a. Federal Work	1								
b. Non-Federal Work	6								
c. Total Work	6								
1. Less than \$100,000 2. \$100,000 to less than \$250,000 3. \$250,000 to less than \$500,000 4. \$500,000 to less than \$1 million 5. \$1 million to less than \$2 million	6. \$2 million to less than \$5 million 7. \$5 million to less than \$10 million 8. \$10 million to less than \$25 million 9. \$25 million to less than \$50 million 10. \$50 million or greater								

12. AUTHORIZED REPRESENTATIVE
The foregoing is a statement of facts.

a. SIGNATURE 	b. DATE June , 2014
c. NAME AND TITLE Peter Moore, P.E., LEED AP, President	

ARCHITECT ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER (If any)

RFQ #246-11426

PART II - GENERAL QUALIFICATIONS


(If a firm has branch offices, complete for each specific branch office seeking work.)

2a. FIRM (OR BRANCH OFFICE) NAME Craven Thompson & Associates, Inc.			3. YEAR ESTABLISHED 1962	4. DUNS NUMBER 06-362-4910
2b. STREET 3563 NW 53 rd Street			5. OWNERSHIP	
2c. CITY Fort Lauderdale	2d. STATE Florida	2e. ZIP CODE 33309	a. TYPE Corporation	
6a. POINT OF CONTACT NAME AND TITLE Patrick Gibney, P.E., Vice President, Engineering			b. SMALL BUSINESS STATUS N/A	
6b. TELEPHONE NUMBER (954) 739-6400		6c. E-MAIL ADDRESS pgibney@craventhompson.com		
7. NAME OF FIRM (If block 2a is a branch office)			Same	

8a. FORMER FIRM NAME(S) (If any)			8b. YR. ESTABLISHED	8c. DUNS NUMBER
Davis and Craven, Inc./Davis, Craven, Thompson, Inc./Craven Thompson, Inc.			1961 / 1973 / 1975	

9. EMPLOYEES BY DISCIPLINE				10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS						
a. Function Code	b. Discipline	c. No. of Employees		a. Profile Code	b. Experience	c. Revenue Index Number (see below)	a. Profile Code	b. Experience	c. Revenue Index Number (see below)	
		(1) FIRM	(2) BRANCH							
02	Administrative	11		A06	Airports; Term. & Hangars	6	L01	Lab.; Med. Research Facilities	3	
08	AutoCAD Technicians	4		A08	Animal Facilities	1	L02	Land Surveying	1	
12	Civil Engineers	15	1	A11	Auditoriums & Theaters	1	L04	Libraries; Museums; Galleries	2	
15	Construction Inspectors	8		B01	Barracks; Dormitories	1	O01	Office Bldgs.; Industrial Parks	5	
16	Const. Management	1		B02	Bridges	1	P05	Planning (Comm.,Regional)	1	
38	Land Surveyor	16		C06	Churches; Chapels	1	P06	Planning (Site, Installation)	2	
39	Landscape Architect	3		C10	Commercial Bldg.; Shopping	6	P13	Public Safety Facilities	3	
47	Planners; Urban/Regional	1		C11	Community Facilities	4	R03	Railroad; Rapid Transit	3	
				D07	Dining Halls; Clubs; Rest.	1	R04	Rec. Fac. (Parks, Marinas)	6	
				E02	Educational Facilities	6	R06	Rehabilitation (Buildings)	2	
				E09	Environmental Impact Studies	1	R09	Resources Recov.; Recycling	1	
				E11	Environmental Planning	1	R11	Rivers; Canals; Waterways	2	
				F02	Field Houses; Gyms; Stadiums	1	S04	Sewage Collection, Treatment	5	
				G01	Garages; Vehicle Maint. Fac.	4	S07	Solid Wastes; Incin.; Landfill	5	
				H01	Harbors; Ship Terminal Fac.	7	S10	Surveying; Platting; Mapping	1	
				H06	High-rise	1	S13	Storm Water Handling & Fac.	6	
				H07	Hwys.; Streets; Parking Lots	7	T02	Testing and Inspection Serv.	1	
				H09	Hospital & Medical Facilities	5	T03	Traffic & Trans. Engineer	4	
				H10	Hotels; Motels	4	T04	Topo. Survey & Mapping	1	
				H11	Housing (Res.,Apts.,Condo)	7	U02	Urban Renewals; Comm. Dev.	9	
				I01	Industrial Buildings	5	W01	Warehouses & Depots	1	
	Other Employees			I06	Irrigation; Drainage	3	W02	Water Resources; Hydrology	2	
	Total	59	1	J01	Judicial & Courtroom Fac.	3	W03	Water Supply; Treatment	4	

11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS (Insert revenue index number shown at right)		PROFESSIONAL SERVICES REVENUE INDEX NUMBER			
a. Federal Work	1	1. Less than \$100,000	6. \$2 million to less than \$5 million	7. \$5 million to less than \$10 million	8. \$10 million to less than \$25 million
b. Non-Federal Work	8	2. \$100,000 to less than \$250,000	8. \$10 million to less than \$25 million	9. \$25 million to less than \$50 million	10. \$50 million or greater
c. Total Work	8	3. \$250,000 to less than \$500,000	4. \$500,000 to less than \$1 million	5. \$1 million to less than \$2 million	

12. AUTHORIZED REPRESENTATIVE The foregoing is a statement of facts.	
a. SIGNATURE 	b. DATE June 12, 2014
c. NAME AND TITLE Patrick Gibney, P.E., Vice President, Engineering	





CH2MHILL®