

**REQUEST FOR QUALIFICATIONS  
TO PROVIDE PROFESSIONAL ENGINEERING SERVICES  
CITY OF MELBOURNE, FLORIDA**

**CLOSING DATE: AUGUST 18, 2020 – 3:00 P.M.**

<b>PROJECT</b>	<b>Water Treatment and Production Facility Improvements</b>
<b>NAME OF FIRM</b>	Jacobs Engineering Group Inc.
<b>LOCAL ADDRESS</b>	200 South Orange Avenue, Suite 900 Orlando, FL 32801
<b>PHONE NUMBER</b>	(407) 496-1938
<b>FAX NO</b>	(407) 839-5901
<b>EMAIL ADDRESS</b>	Didier.Menard@jacobs.com
<b>CONTACT PERSON</b>	Francois Didier Menard, PE
<b>TITLE</b>	Vice President/Client Account Manager

### **FIRM INFORMATION**

<b>PRIMARY SERVICES LOCATION/ADDRESS</b>	200 South Orange Avenue, Suite 900 Orlando, FL 32801
<b>PHONE NUMBER</b>	(407) 496-1938
<b>E-MAIL ADDRESS</b>	Didier.Menard@jacobs.com
<b># OF LICENSED PE's</b>	116
<b># OF NON-LICENSED TECHNICAL STAFF</b>	146
<b>% WORK EXPECTED TO BE PROVIDED BY PRIME</b>	20%
<b>YEARS IN BUSINESS</b>	73
<b>BRANCH OFFICE LOCATION/ADDRESS</b> Multiple Offices	643 SW 4th Ave. Suite 400. Gainesville, FL 32601
<b>PHONE NUMBER</b>	(352) 384-7070
<b>E-MAIL ADDRESS</b>	Tao.Fu@jacobs.com
<b># OF LICENSED PE's</b>	120
<b>NO. OF NON-LICENSED TECHNICAL STAFF</b>	95
<b>% WORK EXPECTED TO BE PROVIDED BY BRANCH</b>	40%. Other Branch Offices: 20%
<b>% WORK EXPECTED TO BE PROVIDED BY SUBS</b>	20%

## SUBCONSULTANT

<b>DISCIPLINE</b>	Water Supply/Transmission/Solids Dewatering & Disposal/ Civil Engineering
<b>LOCATION/ADDRESS</b>	Infrastructure Solution Services 7185 Murrell Rd., Suite 101, Melbourne, FL 32940
<b>PHONE NUMBER</b>	(321) 622-4646
<b>E-MAIL ADDRESS</b>	bstahl@infrastructuress.com
<b># OF EMPLOYEES</b>	30
<b>% WORK EXPECTED TO BE COMPLETED BY SUB</b>	20%
<b>YEARS IN BUSINESS</b>	8

## SUBCONSULTANT

<b>DISCIPLINE</b>	
<b>LOCATION/ADDRESS</b>	
<b>PHONE NUMBER</b>	
<b>E-MAIL ADDRESS</b>	
<b># OF EMPLOYEES</b>	
<b>% WORK EXPECTED TO BE COMPLETED BY SUB</b>	
<b>YEARS IN BUSINESS</b>	

## **RFQ – WATER TREATMENT AND WATER PRODUCTION FACILITY IMPROVEMENTS**

### **ACKNOWLEDGEMENT OF ADDENDUM(S)**

**Consultant Name/Address:**

Jacobs Engineering Group Inc.  
\_\_\_\_\_  
200 South Orange Avenue, Suite 900  
\_\_\_\_\_  
Orlando, FL 32801  
\_\_\_\_\_

Acknowledgment is hereby made of receipt of  
following addenda, if any:

No. 1 Dated July 17, 2020  
No. 2 Dated July 29, 2020  
No. 3 Dated August 10, 2020  
No. 4 Dated August 13, 2020  
No. \_\_\_\_\_ Dated \_\_\_\_\_

## ASSIGNED PERSONNEL AND EXPERIENCE

Please provide information on the primary team members who have been assigned to the project for the roles and disciplines listed below. Note: if the project engineer is also the project manager and/or principal-in –charge, you may write “Same” in the appropriate line.

ROLE	NAME OF INDIVIDUAL ASSIGNED TO THE PROJECT	PRIMARY SERVICES/ BRANCH/SUBCONSULTANT	#YEARS EXPERIENCE/ #YEARS WITH SUBMITTING FIRM	EDUCATION, DEGREE(S)
Principal-in-Charge	Didier Menard, PE	Negotiation, review and signing contracts, ensuring City's satisfaction and assigning key personnel / Orlando	22 years / 22 years	B.S. Civil Engineering
Project Manager	GJ Schers, PMP	Task and schedule management, SWTP design, overall cost and phasing management / Fort Lauderdale	29 years / 4 years	M.S. Environmental Engineering B.S. Civil Engineering
Process-Technical Lead	Joe Elarde, PE	Project technologist, task lead for media & membrane filtration, disinfection, permitting, bench and pilot testing / Naples	25 years / 22 years	M.S. Environmental Engineering B.S. Civil Engineering
Subject Matter Expert for Drinking Water and Gravity Filtration	Russell Ford, PE	Ozone and biologically active gravity media filtration, drinking water regulations, trends, latest contaminants / Parsippany, NJ	34 years / 26 years	Ph.D. & M.S. Environmental Engineering B.S. Chemical Engineering
Subject Matter Expert for Actiflo	Chandra Mysore, PE	Actiflo optimization & surface water experience at Tampa Bay FL & Harpeth Valley TN while at Veolia / Atlanta, GA	35 years / 6 years	Ph.D. & B.S. Civil Engineering M.S. Environmental Engineering
Design Manager, Design Lead - High Service Pumps	Tao Fu, PE	Engineering disciplines coordination, task lead for high service pumps / Gainesville	25 years / 13 years	M.S. Environmental Engineering B.S. Mechanical Engineering
Generators, Power and Electrical Lead	Agustin Quinones, PE	Evaluation of existing electrical and control systems / Gainesville	27 years / 3 years	B.S. Electrical Engineering
SCADA Lead	Bernie Jacobsen, PE	PLC configuration and SCADA design and implementation / Orlando	38 years / 8 years	B.S. Electrical Engineering
Construction Manager	Ken Boone	(Sub)contractor management and construction cost control / Fort Lauderdale	33 years / 7 years	B.S. Mechanical Engineering
Data Collection and Mechanical Lead	Brian Stahl, PE	Site civil, structures demolition, solids dewatering & disposal / ISS Melbourne	31 years / 8 years	M.S. Environmental Engineering
Water Quality and Disposal Evaluation Lead	Clayton McCormack, PE	Solids chemistry, dewatering & disposal / ISS Melbourne	24 years / 4 years	M.S. Environmental Engineering B.S. Chemistry

## PREVIOUS SIMILAR WORK COMPLETED

List up to five (5) projects in which the Proposed Project Team has completed of similar treatment complexity, facilities of similar production capacity and treating raw waters with high organics levels. Please note projects that were completed while working for another firm.

PROJECT NAME / OWNER / REFERENCE NAME / ADDRESS / PHONE	BRIEF DESCRIPTION OF PROJECT	NAME AND ROLE OF KEY PERSONNEL INVOLVED IN PROJECT	PROJECT STATUS	WATER SOURCE / TREATMENT PROCESS
Program and Engineer of Record Services, including Design and SDC for Projects at Dyal WTP  City of Cocoa Jack Walsh, P.E. 351 Shearer Blvd. Cocoa, FL 32922-7203 (321) 433-8710	Jacobs provided design and construction services at the co-located groundwater and surface water treatment facilities at the Dyal WTP. For the groundwater facility, work covered replacement of gravity filter media and new Leopold underdrains, addition of filter covers to obtain disinfection credit, and optimization of clarifier performance. For the surface water facility, work included a new clearwell and transfer pump station and upgrades to liquid oxygen storage and ozone generation systems. For the combined facilities, projects involved replacement of chemical facilities, including conversion from chlorine gas to liquid sodium hypochlorite and replacement of ammonium sulfate, polymer and Calflo systems, electrical, and SCADA improvements. Jacobs also provided DBP formation reduction and corrosion control studies.	Didier Menard, Principal-in-Charge GJ Schers, Principal Technologist Russell Ford, Process Review Bernie Jacobsen, SCADA Design and Implementation Ken Boone, Construction Management	Most projects have been completed. Construction of filter media replacement and chemical conversion projects are ongoing.	The 12-mgd ferric sulfate coagulation, lamella separation, ozonation and dual-media filtration facility treats Taylor Creek Reservoir water. Treated surface water blends with treated groundwater of 48-mgd aeration, lime softening, and media filtration facility.
North WTP Improvements Planning, Pilot Study, Design and SDC  City of Marco Island Jeff Poteet 807 Elkcam Circle East Marco Island, FL 34145 (239) 389-5181	Jacobs evaluated existing treatment facilities, options analysis, pilot testing, and design of a new 6.7 mgd membrane filtration facility that is the first Long-Term 2 Enhanced SWTR compliant membrane filtration system in Florida. Project included analysis of blending treated surface water with RO treated brackish groundwater before storage and distribution. Treatment process was selected to improve reliability and operability, and save more than \$500,000 annually in chemical, power, and consumables cost. The design incorporated provisions for adding low-pressure RO for hardness and color removal from pre-treated surface water, which Jacobs successfully piloted. Jacobs is currently testing biological pretreatment before beginning the design of the biological and LPRO treatment systems in Fall 2020.	Joe Elarde, Planning Lead Project Manager, and Lead Process Design Engineer Tao Fu, Design Lead	MF facilities are operating. Pilot study of the new RO system was completed in June 2020. Biological filter pretreatment will be completed in October 2020 before beginning full-scale design.	Marco Lakes surface water is split-treated by lime softening and in-line alum coagulated, each followed by microfiltration. Treated water is blended with RO-treated brackish Floridan well water before distribution.
Deerpoint Lake Treatment Plant Expansion Project and Continuing Services  Bay County Utility Department Robert Majka County Manager, Utility Services (850) 248-8140	ISS was responsible for the process evaluation, pilot testing, preliminary design, planning, cost estimates, and final design of the expansion to the Bay County regional SWTP. The project utilized the high rate ballasted floc (Actiflo process) with addition of ferric sulfate, polymer and micro-sand. The project included high-service pumping, finished storage and transmission, solids dewatering/drying structure, mechanical, piping, SCADA improvements, surface water supply impoundment structure, intake, and transmission mains.	Brian Stahl, Mechanical Process Engineer, Transmission Mains, Solids Dewatering & Drying Kiran Kulkarni, Solids Dewatering & Drying Design	All of the evaluation work, design, and construction have been completed.	The 48-mgd Deerpoint Lake WTP treats surface water with ferric sulfate coagulation, Actiflo and dual-media filtration.

PROJECT NAME / OWNER / REFERENCE NAME / ADDRESS / PHONE	BRIEF DESCRIPTION OF PROJECT	NAME AND ROLE OF KEY PERSONNEL INVOLVED IN PROJECT	PROJECT STATUS	WATER SOURCE / TREATMENT PROCESS
David L Tippin WTP (DLT WTP) High Service Pumping and Other Improvements - Design Build City of Tampa Water Department Roy McKenzie 306 E. Jackson Street Tampa, Florida 33602 (813) 274-7104	The City of Tampa DLT WTP is a 120-mgd surface WTP that treats high-organic and turbidity Hillsborough River water. Jacobs designed the 40-mgd Actiflo expansion in 2001 that included adding ozone and biological activated carbon (BAC)/sand dual-media filters. Jacobs is currently designing the expansion and replacement of the high service pump station. The improvements design also changes the existing clearwell and piping configuration to improve DLTWTF staff's ability to maintain the clearwells, eliminate hydraulic restrictions, enhance backwash source/control, improve chemical mixing, extend disinfection contact time, and increase potable water storage volume.	Joe Elarde, Lead Process Designer and Permitting Tao Fu, Lead Process Mechanical Designer Russell Ford, Quality Control Reviewer	Currently completing 90 percent design with construction mobilization anticipated in late 2020.	Hillsborough River water is split-treated with Actiflo (40-mgd) and conventional coagulation/flocculation/sedimentation (80-mgd) before joint treatment by ozone and BAC-capped dual-media gravity filters. Post treatment includes chlorine contact, ammonia addition, and high service pumping.
Process Upgrades and Equipment Replacement at Choa Chu Kang Waterworks Public Utilities Board Nguyen Phuong Hanh (Ms) Senior Engineer Phone: +65 9723 8040	Jacobs designed upgrades to the existing treatment plant to make it more robust, primarily in terms of increased organic loading and incidental spikes of micro-constituents brought about by ongoing urbanization. Upgrades included low pressure membranes, the first full-scale ceramic membrane installation at a municipal potable water plant in the world, procured via competitive life cycle costing selection criteria. The upgraded process provides a robust multi-barrier protection against pathogens, per the US EPA Long Term 2 Enhanced Surface Water Treatment Rule. Project included the replacement of aged equipment and structures. Plant shutdowns were limited both in duration and capacity through detailed planning upfront and careful construction sequencing. Extensive bench tests were performed to evaluate Taste & Odor (MIB and Geosmin) removal efficiency with ozone and an advanced oxidation process while minimizing bromate formation.	Russell Ford, Process Lead Jesus Garcia, Principal Technologist	Construction completed in 2017.	Surface water from the western catchment basin stored in multiple reservoirs, is treated with a conventional coagulation/flocculation/sedimentation (100-mgd) plant that was expanded with low pressure oxidant-resistant ceramic membranes, ozone, and BAC contactors.

**FORM D**

## **PROJECT APPROACH – GRAVITY FILTER SYSTEM IMPROVEMENTS**

Describe in detail your firm's approach to successful completion of this project using the remainder of this page and a maximum of one additional page (8½ x 11"). Include a discussion of specialized skills, knowledge and expertise of your project team, which will be utilized to complete the project.

---

### **FORM F-1**

The City operates two treatment plants co-located along Lake Washington Road, known as John A. Buckley Surface Water Treatment Plant (SWTP) and Joe Mullins Reverse Osmosis (RO) WTP. The Rapid Gravity Filter (RGF) System is part of the SWTP that treats surface water from Lake Washington. Settled and ozonated water is dosed with sodium hydroxide with a target pH of 8.1 and gravitates to the biologically active RGF filters. The dual-media filter beds consist of 60 inches of 1.3 mm effective size (ES) GAC over 12 inches of 0.5 mm ES silica sand, supported on FRP Leopold type 'S' block underdrains with IMS caps.

In 2001, the RGF System was added during the Phase 1 improvements project, which also covered a new raw water pump station, Actiflo, and a blend/CT tank and transfer pump station. Four of the six filters were refurbished while two new filters were added. In 2007, ozonation and a backwash pump station were added during the Phase 2 improvements project. Both phases were designed by CH2M (now Jacobs), with records still available and design engineers still with the firm and included on the team. GAC media is replaced every 12 to 18 months due to media fouling caused by insufficient backwashing. Also, some equipment in the filter gallery (e.g. obsolete valve actuators, ultrasonic level & turbidity instruments) has been replaced. Lastly, a PLC/SCADA replacement project for the SWTP is currently ongoing, updating RGF System controls.

The filtration rate is 4.0 gpm/sf at design flow with one filter out of operation and empty bed contact time approximately 10 minutes. The media filters provide multiple purposes, including residual turbidity and organics removal and micro-constituent barrier that may be present in the source water. Typical run time at current average flows of 13 mgd is around 60 to 70 hours. When one filter is down for backwash or maintenance, run times decrease rapidly and filtered water turbidities increase. Backwashing is performed mostly manually and is achieved by a combined air-water wash with low water backwash rates, followed by rinse with high water backwash rates. This rinse rate has to be limited to around 17 gpm/sf, as opposed to the design rate of 25 gpm/sf, due to a restriction in the filter drainage lines. Filters share a common submerged inlet with flow control through a flow meter and control valve in the filter effluent pipe.

Based on the condition assessment performed as part of the Master Plan, the concrete filter structures have numerous cracks in elevated concrete slabs and walls. The four filters refurbished in 2001 show several areas where spalled concrete was patched, and leaking cracks repaired with injections. The two newer filters are observed to be leaking at construction joints. There has been indication that the underdrains may have deficiencies after 20 years of continuous operations, and it is suggested that a detailed inspection and repairs or replacement (R&R) be done during the next media replacement project. Butterfly water and air valves in the filter gallery are leaking water, but due to limited space and piping fittings arrangement, valve replacement cannot be done without temporarily seizing operation of a block of filters, as filter influent and filter effluent pipes are all connected. Past filter gallery flooding has negatively affected the condition of mechanical and electrical equipment. Two de-humidifiers are currently obsolete and atmospheric conditions are hot and humid, causing further wear and tear of the equipment.

Despite the condition, the performance of the filters has been relatively good, with filtered water turbidity around 0.1 NTU and residual iron less than 0.01 mg/L. Filtered water from the SWTP is blended with permeate from the RO WTP before final disinfection with first sodium hypochlorite and then formation of chloramines with dosing anhydrous ammonia. Post treatment chemicals include carbon dioxide and sodium hydroxide for alkalinity recovery in the finished water.

Because of above issues, the RGF System received the third highest risk score (after ozone, degasifier & scrubbers) during the condition assessment performed as part of the Master Plan. The Capital Improvement Plan (CIP) covers the following components: (A) increase backwash drain capacity (\$1.3 m) – ongoing project, (B) replace filter valves, remaining actuators, electrical panels, flow meters and cabling, and dehumidifiers in the filter gallery (\$2.8 m), (C) inspect and provide R&R to the filter underdrains and make concrete repairs to concrete structures (\$1.2 m) and (D) add new gravity or pressure filters to establish appropriate system redundancy (\$8.6 m).

As part of our response to this RFQ, we have compared Melbourne's RGF System against newer biologically active gravity media filters and talked to our subject matter experts who work in different geographical areas and have experience with design, startup, and operation of RGF Systems under different conditions and in different process arrangements. Based on these discussions, we conclude that the City operates a relatively conservative RGF System that requires urgent R&R work and needs expansion. Also, the City is in a similar situation with the Actiflo Treatment Process, consisting of two undersized, parallel trains.

Our overarching, innovative approach to the SWTP improvements covers the following sequential steps:

1. Execute a pilot testing program to verify suggested Actiflo improvements, optimize filter performance, study pre-filtration for the preferred long-term SWTP solution, and review the feasibility of backwash recovery with membranes and UV.
2. Expand the RGF System with additional filtration capacity. This allows a block of existing filters to be taken out of operation for a limited duration for valve replacement.
3. Provide urgent R&R to the existing RGF System as per the CIP and optimize the filter performance. Once complete, this allows one Actiflo train to be taken offline, while relying on an expanded and refurbished RGF System for capturing floc carry-over.
4. Make enhancements to each Actiflo train while offline, covering larger de-sludge pumps, extend sedimentation area, and provide urgent R&R to concrete structure and internal equipment.

The main benefit of this approach is to execute the urgent Actiflo and filter R&R program, while avoiding the expense of a new third Actiflo train that will not be required in the preferred long-term SWTP solution for the City. The refurbished and new media filters will however be reused in the future.

We have assumed that the City will finish the design and construction of the filter drain improvements project in Fiscal Year 2021 so that the filters can be backwashed at the intended design rinse rate and media fouling can be limited, thus extending the GAC life. The project includes the removal of the rectangular clarifier with associated rapid mix and flocculation chambers for locating new process equipment.

In step 2), gravity media filters may be re-purposed in the future as roughing filters upstream of a dual membrane treatment system, possibly replacing Actiflo in the future, or re-purposed as post treatment GAC absorbers. The design of the additional filters may be similar to the existing RGF System in terms of hydraulics, filtration area and rate, and filter media size and depth. Alternatively, if pressure filters are considered, they may be designed with a similar contact time but with a reduced filtration rate, finer media, and shallower depth. As part of this solution, we suggest performing pilot testing with a series of filter columns to test different filter media designs under different arrangements and water quality conditions, as mentioned above. This includes verifying benefits of adding a nutrient to improve the biological filter performance by optimizing mass ratio for Carbon (bioavailable) : Nitrogen : Phosphate.

In step 3), the critical aspect is providing proper isolation of each filter from the main process so that R&R work can be executed while that media filter is offline. The filter influent channel and filter effluent pipe are connected with all filters without intermediate isolation means. Therefore, the first step is to install temporary or permanent isolation valves and gates during a short plant outage so that a block of filters can be taken offline and each filter influent and filter effluent valve can be replaced.

One further innovative suggestion is to provide separate treatment for the dirty filter backwash water and return the treated backwash water back into the process. One option the City may want to explore is using low pressure membrane filtration and UV disinfection, implemented successfully by this team for the City of Parksville, City of North Bay, and Windsor Lake in Canada. This provides an effective backwash treatment, allowing treated backwash waters to be recycled downstream of the media filters, subject to regulatory approval. It will also provide the team with experience using membrane processes on this surface water, which are integral to the long-term SWTP solution for the City. This revised recycle flow arrangement will reduce flows through the entire process, minimize pH swings of Actiflo feed water, and improve the overall treatment performance.

We would be delighted to further explain our suggested sequence of implementation of SWTP improvements and explore our innovative filter ideas described above in an oral interview.

## **PROJECT APPROACH – ENHANCEMENT OF ACTIFLO TREATMENT PROCESS**

Describe in detail your firm's approach to successful completion of this project using the remainder of this page and a maximum of one additional page (8½ x 11"). Include a discussion of specialized skills, knowledge and expertise of your project team, which will be utilized to complete the project.

---

### **FORM F-2**

Similar to the RGF System, the Actiflo® Treatment Process (Actiflo) is part of the City's SWTP that treats surface water from Lake Washington. Raw water contains elevated levels of organic material, turbidity levels that can spike to 100 NTU during a storm, and moderate levels of hardness and alkalinity. Concentrations of organic material and minerals fluctuate during the year and follow wet and dry season patterns. Source water may also contain algae (producing taste & odor and Microcystis) and micro-constituents like simazine and is classified in Bin 1 of the Long-Term 2 Enhanced SWTR, and therefore, no additional treatment for Cryptosporidium is needed.

In 2001, Actiflo was added as part of the Phase 1 improvements project while in 2007, ozonation was added as part of the Phase 2 improvements project. Both phases were designed by CH2M (now Jacobs). Many of the older basins were repurposed for treatment and/or storage of Actiflo underflows and dirty filter backwash waters. Since then, the City has replaced the polystyrene tube settlers with increased spacing due to solids blocking flows; changed to Philadelphia coagulation and maturation mixers with hydrofoil blades, TEFC motor, inverter-duty drives & desiccant dryers to improve performance and reduce breakdown frequency; and resized the hydrocyclones and retrofitted with appropriate materials, including urethane body, rubber lining and 304 SST support stand. The Water Champ coagulation mixing was discontinued.

Performance has been relatively okay in terms of turbidity removal, but the system is sensitive to operational and maintenance issues (like failure of any component) and to source water quality changes due to limited overall detention time. Also, operating costs are high due to large amounts of ferric sulfate (average 150-200 mg/L) and sodium hydroxide (average 50-80 mg/L) being used. Even under average flows or under challenging source water conditions, suspended solids may carry over and settle in the ozone contactors and/or surface-blind the media filters. Dissolved iron originating from the coagulant also carries over, is oxidized by ozone and subsequently removed by the filters, causing additional solids loading and GAC media fouling. Actiflo is operated at a pH of 3.8-4.0 for optimal organics removal, and these conditions are aggressive to concrete structures and metal equipment. Currently, treated recycle water is returned upstream of the ferric sulfate injection at around 10% of the raw water flow. Recycle water has a fluctuating pH affecting the coagulation/clarification process.

As a consequence of the 3-inch polystyrene tubes retrofit, each Actiflo train can only treat the design flow of 10-mgd under excellent raw water quality conditions, but that drops to around 6-7-mgd under challenging conditions. Also, because of having only two trains, the system's firm capacity is only 7-10-mgd, less than the average production flow of 13-mgd. Failure of a mixer, sludge scraper, de-sludge pump, valve, or hydrocyclone will cause a shutdown of that Actiflo train, thus reducing the SWTP capacity. To keep up with the high solids production in the sedimentation zone and to avoid solids carry-over, three (of the four) de-sludge pumps run continuously, resulting in higher underflows than was designed; e.g. underflows are typically 7-8 percent of raw water flow as opposed to 4 percent as per design.

Since 2001, Actiflo has made product improvements, of which some have been retrofitted in the existing facility, including larger diameter tubes, better and more reliable mixers, and better sized and more durable hydrocyclones. The detention times and mixing energy levels in the injection and maturation compartments have remained the same, however the current Actiflo product does not include an injection zone, as metal coagulation is typically performed in the upstream feed pipe. Also, sedimentation zones in the current Actiflo product are typically larger, therefore reducing sedimentation rates.

Because of above issues, Actiflo received the fifth highest risk score (after ozone, degasifier & scrubbers, media filters and Canova pump station) during the Master Plan condition assessment. The CIP covers the following: (A) replace de-sludge pumps, valves and polystyrene tubes and recoat/repair scrapers and mixers (\$0.9 m), (B) increase sedimentation area by modifying the concrete structure and replacing sludge scrapers and associated variable speed drives (\$1.3 m), and (C), add a third Actiflo train with a rated capacity of 10-mgd to establish appropriate system redundancy (\$5.9 m).

City of Melbourne – RFQ for Professional Engineering Services  
Water Treatment and Water Production Facility Improvements

As part of our response to this RFQ, we have compared the Melbourne design to later generation Actiflo systems (see below) and talked to our subject matter experts who were involved in these projects. As shown, the City operates a similar Actiflo System, but the retrofit with the larger diameter tubes has increased the projected loading rate and effectively reduced the sedimentation capacity.

Facility Name	City of Melbourne SWTP	San Juan Chama WTP	Tampa Bay SWTP	Woodland-Davis WTP
Location (Service Date)	Melbourne SWTP (2001)	Albuquerque, NM (2008)	Tampa Bay, FL (2003, 2012)	Woodland, CA (2016)
Flow (mgd)	20	90	60 and 120	30
Source / Process	Lake / Actiflo, Ozone, BRGF	River / Pre-sed., Actiflo, Ozone, BRGF	River (3 sources) / Actiflo, Ozone, BRGF	River / Actiflo, Ozone, BRGF
Coagulant Dose (mg/L)	140-300	40-60 mg/L FeCl <sub>3</sub>	60-95 mg/L Fe <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>	10-60 mg/L Fe <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>
Flocculation Time (min)	7	N/A	5	4.2
Sed. Rate (gpm/sf)	28	N/A	30	29
Projected Loading Rate (gpm/sf)	1.8 (was 0.8 with 1.5' tubes)	NA	1.8	1.1

Our suggested sequence of implementation of SWTP improvements was explained in the project approach for gravity filter system improvements. First few steps in our suggested sequence is to execute a pilot testing program and then to improve and expand the existing RGF System so that a more resilient filtration system is available, capable of capturing iron and floc carry-over from Actiflo. Last step is to make R&R improvements to Actiflo and to correct the reduced sedimentation capacity caused by the larger tubes. This requires changes to the Actiflo internals and can only be done by taking an Actiflo train offline.

As mentioned, we have engaged with our Actiflo experts who have experience in different geographical areas and with different source waters. Our innovative solutions include:

- Optimize maturation conditions by adding a Turbomix 304 SST draft tube around the flocculation mixer. This is now standard in the updated Actiflo product, improves maturation and sedimentation conditions, and is a relatively simple retrofit.
- Improve coagulation conditions by introducing flash mixing conditions for ferric sulfate with adding a new static mixer in the raw water pipeline. This will improve coagulant efficiency and reduce iron carry over. As part of this solution, we suggest performing a series of jar tests under these conditions to optimize chemical doses, followed by confirmation in the pilot testing program.
- Increase de-sludging capacity by replacing the existing de-sludge pumps with new, larger de-sludge pumps and associated valving and piping. Pump replacement was covered in the CIP, however we suggest upsizing to increase sand recirculation flows. This will improve de-sludge operations while reducing underflows and enhancing sedimentation conditions.
- Increase sedimentation and projected tube area by sacrificing the injection zone and using that zone for maturation so that the wall between maturation and sedimentation compartments can be moved while maintaining the appropriate chute velocities and flocculation times. This can be considered in conjunction with maximizing tube length, considering blower backwashing and reconfiguring the arrangement and/or material of the tubes. The intent is to restore the projected surface loading and cross flow rates, as per the original design. This can be modelled and coordinated with Veolia. Although this solution has good potential, the modification requires a structural reconfiguration requiring an extended train shutdown.

While the Actiflo internals are modified, it is suggested to perform other R&R work as per the CIP, including replacing or rehabilitating sludge scrapers and associated variable speed drives, re-oat mixers and other steel parts, and make repairs to the concrete structures. Our suggested sequence of implementation of SWTP improvements avoids the addition of the third Actiflo train, saving substantial capital expenditure.

We would be delighted to further explain our suggested implementation sequence of SWTP improvements and explore our innovative Actiflo ideas described above in an oral interview.

===== end =====

## **CONFLICT OF INTEREST CERTIFICATION FOR CONSULTANT/CONTRACTOR**

I certify that I have no present conflict of interest, that I have no knowledge of any conflict of interest that my firm may have, and that I will recuse myself from any capacity of decision making, approval, disapproval, or recommendation on any contract if I have a conflict of interest or a potential conflict of interest.

Consultants/Contractors are expected to safeguard their ability to make objective, fair and impartial decisions when performing work for the City, and therefore may not accept benefits of any sort under circumstances in which it could be inferred by a reasonable observer that the benefit was intended to influence a pending or future decision of theirs, or to reward a past decision. Consultants performing work for the Department should avoid any conduct (whether in the context of business, financial, or social relationships) which might undermine the public trust, whether or not that conduct is unethical or lends itself to the appearance of ethical impropriety.

I realize that violation of the above mentioned standards could result in the termination of my work for the City.

The City reserves the right to request additional information on these subjects and also to eliminate any firm from the selection process that has material conflict(s) of interest or a history of litigation resulting from engineering errors or omissions or unethical or illegal business practices. The City Manager shall make any such determination.

Contract No./Project Description(s):

RFQ for Professional Engineering Services

Water Treatment and Water Production Facility Improvements

---

Financial Project Number(s):

N/A

---

Each undersigned individual hereby attests that he/she has no conflicts of interest related to the contract(s) identified above.

Printed Names

Francois Didier Menard, PE

Signatures



Date

8/17/2020

## **MINORITY BUSINESS ENTERPRISE**

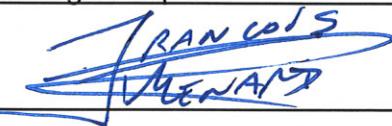
State whether your firm or any firm to which you may subcontract services related to this project, is a certified minority business enterprise as defined by the Florida Small and Minority Business Assistance Act of 1985.

Prime Consultant: No

Subcontracted Services: No

**COMPANY'S REPRESENTATIVE WHO IS AUTHORIZED  
TO SUBMIT THIS STATEMENT OF QUALIFICATIONS**

COMPANY NAME Jacobs Engineering Group Inc.

AUTHORIZED SIGNATURE 

NAME (PRINT OR TYPE) Francois Didier Menard, PE

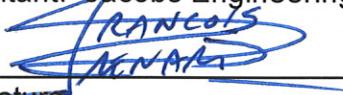
TITLE Vice President/Client Account Manager

DATE 8/17/2020

**CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY  
AND VOLUNTARY EXCLUSION FOR FEDERAL AID CONTRACTS**  
(Compliance with 49CFR, Section 29.510)  
(Appendix B Certification]

It is certified that neither the below identified firm nor its principals are presently suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any federal department or agency.

Name of Consultant: Jacobs Engineering Group Inc.

By:  Date: 8/17/2020  
Authorized Signature

Title: Vice President/Client Account Manager

**Instructions for Certification**

1. By signing and submitting this certification with the proposal, the prospective lower tier participant is providing the certification set out below.
2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the Department may pursue available remedies, including suspension and/or debarment.
3. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted. If at any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
4. The terms 'covered transaction', 'debarred', 'suspended', 'ineligible', 'lower tier covered transaction', 'participant', 'person', 'primary covered transaction', 'principal', 'proposal', and 'voluntarily excluded', as used in this clause, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive Order 12549. You may contact the person to which this proposal is being submitted for assistance in obtaining a copy of those regulations.
5. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
6. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled 'Appendix B: Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transaction', without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.
8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
9. Except for transactions authorized under paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the Department may pursue available remedies, including suspension and/or debarment.

**CERTIFICATION FOR DISCLOSURE OF LOBBYING ACTIVITIES  
ON FEDERAL-AID CONTRACTS  
(Compliance with 49CFR, Section 20.100 (b))**

The prospective participant certifies, by signing this certification, that to the best of his or her knowledge and belief:

- (1) No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any federal grant, the making of any federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities", in accordance with its instructions. (Standard Form-LLL can be obtained from the Florida Department of Transportation's Professional Services Administrator or Contractual Services Office.)

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

The prospective participant also agrees by submitting his or her proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such subrecipients shall certify and disclose accordingly.

Name of Consultant: Jacobs Engineering Group Inc.

By:  Date: 8/17/2020  
Authorized Signature

Title: Vice President/Client Account Manager

**NON-COLLUSION AFFIDAVIT OF PRIME PROPOSER**

STATE OF Florida )  
                      )  
COUNTY OF Orange ) SS  
                      )

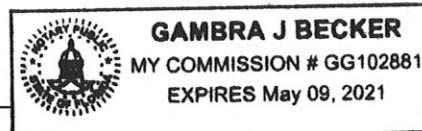
Francois Didier Menard, PE \_\_\_\_\_, being first duly sworn, deposes and says that:

1. He/She is Vice President/Client Account Manager of Jacobs Engineering Group Inc. the Proposer that has submitted the attached proposal for "Professional Engineering Services for Water Treatment and Water Production Facility Improvements."
2. He/She is fully informed respecting the preparation and contents of the attached Proposal and of all pertinent circumstances respecting such Proposal;
3. Such Proposal is genuine and is not a collusive or sham Proposal;
4. Neither the said Proposer nor any of its officers, partners, City's, agents, representatives, employees or parties of interest including this affiant, has in any way colluded, conspired, connived or agreed directly or indirectly with any other Proposer, firm or person to submit a collusive or sham Proposal in connection with the Contract for which the attached Proposal has been submitted or to refrain from bidding in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Proposer, firm or person to fix the price or prices in the attached Proposal or of any other Proposer or to fix any overhead, profit or cost element of the Proposal price or the Proposal price of any Proposer, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the City of Melbourne or any person interested in the proposed Contract; and
5. The price or prices quoted in the attached Proposal are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Proposer or any of its agents, representatives, City's, employees, or parties in interest, including this affiant.

François Didier Menard was acknowledged before me by  physical presence  
or  remote audio-visual means, this 17<sup>TH</sup> day of AUGUST, 2020.

Gambra J Becker  
Notary Public

My Commission expires: May 09, 2021  
(Seal)



### TRUTH-IN-NEGOTIATION CERTIFICATION

Pursuant to Section 287.055(5)(a), Florida Statutes, for any lump-sum or cost-plus-a-fixed fee professional services contract over the threshold amount provided in Section 287.017, Florida Statutes for CATEGORY FOUR, the City of Melbourne requires the Consultant to execute this certificate and include it with the submittal of the Technical Proposal, or as prescribed in the contract advertisement.

The Consultant hereby certifies, covenants and warrants that wage rates and other factual unit costs supporting the compensation for this project's agreement will be accurate, complete, and current at the time of contracting.

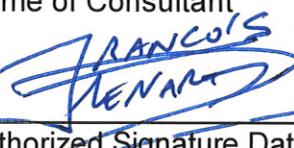
The Consultant further agrees that the original agreement price and any additions thereto shall be adjusted to exclude any significant sums by which the Department determines the agreement price was increased due to inaccurate, incomplete, or non-current wage rates and other factual unit costs. All such agreement adjustments shall be made within one (1) year following the end of the agreement. For purpose of this certificate, the end of the agreement shall be deemed to be the date of the final billing or acceptance of the work by the Department, whichever is later.

Jacobs Engineering Group Inc.

---

Name of Consultant

By:

  
Authorized Signature

---

8/17/2020

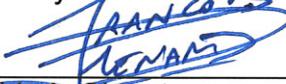
Date

## DRUG-FREE WORKPLACE FORM

The undersigned vendor in accordance with Florida Statute 287.087 hereby certifies that Jacobs Engineering Group Inc. does:  
(Name of Business)

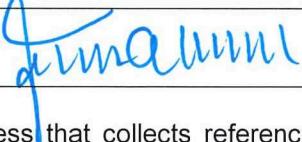
1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.
2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.
3. Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in subsection (1).
4. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, any violation of Chapter 1893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.
5. Impose a sanction on or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.
6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

  
Bidder's Signature

8/17/2020

Date

<b>Name of Company/Individuals Requesting Reference Information:</b>	Jacobs
<b>Name of Evaluator Completing Reference:</b>	Jack Walsh, PE
<b>Name of Evaluator's Company</b>	City of Cocoa
<b>Email Address of Evaluator</b>	<a href="mailto:jwalsh@cocoafl.org">jwalsh@cocoafl.org</a>
<b>Phone Number of Evaluator</b>	(321) 433-8710
<b>Signature of Evaluator</b>	

City of Melbourne is implementing a process that collects reference information on firms and their key personnel to be used in the selection of firms to perform professional consulting services for the Water Production Facility Evaluation and Master Plan. The Name of the Company listed in the above has listed you as a client for which they have previously performed work. Please complete the survey. Please rate each criteria to the best of your knowledge on a scale of 1 to 10, with 10 representing that you were very satisfied (and would hire the firm/individual again) and 1 representing that you were very unsatisfied (and would never hire the firm/individual again). If you do not have sufficient knowledge of past performance in a particular area, leave it blank and the item or form will be scored "0."

Project Description: CCRIP Design      Completion Date: April 2020

Project Budget: \$2,514,513      Project Number of Days: 600 Days

Change Orders - Dollars Added : N/A      Change Orders - Days Added: N/A

Item	Criteria	Score
1	Ability to manage the project costs (minimize change orders to scope).	10
2	Ability to maintain project schedule (complete on-time or early).	10
3	Quality of work.	10
4	Quality of consultative advice provided on the project.	10
5	Professionalism and ability to manage personnel.	10
6	Project administration (completed documents, final invoice, final product turnover; invoices; manuals or going forward documentation, etc.)	10
7	Ability to verbally communicate and document information clearly and succinctly.	10
8	Ability to manage risks and unexpected project circumstances.	10
9	Ability to follow contract documents, policies, procedures, rules, regulations, etc.	10
10	Overall comfort level with hiring the company in the future (customer satisfaction).	10
<b>TOTAL SCORE OF ALL ITEMS</b>		100

Please include this completed survey to Lisa Solina ([lisa.solina@mlbfl.org](mailto:lisa.solina@mlbfl.org)) or 321.608.7308 by August 18, 2020

<b>Name of Company/Individuals Requesting Reference Information:</b>	Jacobs
<b>Name of Evaluator Completing Reference:</b>	Kim Hoskins, PE
<b>Name of Evaluator's Company</b>	Bonita Springs Utility, Inc.
<b>Email Address of Evaluator</b>	KHoskins@bsu.us
<b>Phone Number of Evaluator</b>	(239) 390-4834
<b>Signature of Evaluator</b>	<i>KTHL 8/14/20</i>

City of Melbourne is implementing a process that collects reference information on firms and their key personnel to be used in the selection of firms to perform professional consulting services for the Water Production Facility Evaluation and Master Plan. The Name of the Company listed in the above has listed you as a client for which they have previously performed work. Please complete the survey. Please rate each criteria to the best of your knowledge on a scale of 1 to 10, with 10 representing that you were very satisfied (and would hire the firm/individual again) and 1 representing that you were very unsatisfied (and would never hire the firm/individual again). If you do not have sufficient knowledge of past performance in a particular area, leave it blank and the item or form will be scored "0."

Project Description: BSU WTP 2-MW Diesel and 2-MW Natural Gas Generator Upgrade Completion Date: June 2020

Project Budget: \$400,000 Project Number of Days: 180

Change Orders - Dollars Added : 0 Change Orders - Days Added: 0

Item	Criteria	Score
1	Ability to manage the project costs (minimize change orders to scope).	10
2	Ability to maintain project schedule (complete on-time or early).	10
3	Quality of work.	10
4	Quality of consultative advice provided on the project.	10
5	Professionalism and ability to manage personnel.	10
6	Project administration (completed documents, final invoice, final product turnover; invoices; manuals or going forward documentation, etc.)	10
7	Ability to verbally communicate and document information clearly and succinctly.	10
8	Ability to manage risks and unexpected project circumstances.	10
9	Ability to follow contract documents, policies, procedures, rules, regulations, etc.	10
10	Overall comfort level with hiring the company in the future (customer satisfaction).	10
<b>TOTAL SCORE OF ALL ITEMS</b>		100

Please include this completed survey to Lisa Solina ([lisa.solina@mlbfl.org](mailto:lisa.solina@mlbfl.org)) or 321.608.7308 by August 18, 2020

<b>Name of Company/Individuals Requesting Reference Information:</b>	Jacobs
<b>Name of Evaluator Completing Reference:</b>	Jason Vogel
<b>Name of Evaluator's Company</b>	Ave Maria Utility Company
<b>Email Address of Evaluator</b>	<a href="mailto:jvogel@amuc.com">jvogel@amuc.com</a>
<b>Phone Number of Evaluator</b>	(239) 348-0248
<b>Signature of Evaluator</b>	 <span style="float: right;">Digitally signed by Jason D. Vogel Date: 2020.08.17 15:29:54 -04'00'</span>

City of Melbourne is implementing a process that collects reference information on firms and their key personnel to be used in the selection of firms to perform professional consulting services for the Water Production Facility Evaluation and Master Plan. The Name of the Company listed in the above has listed you as a client for which they have previously performed work. Please complete the survey. Please rate each criteria to the best of your knowledge on a scale of 1 to 10, with 10 representing that you were very satisfied (and would hire the firm/individual again) and 1 representing that you were very unsatisfied (and would never hire the firm/individual again). If you do not have sufficient knowledge of past performance in a particular area, leave it blank and the item or form will be scored "0."

Project Description: Ave Maria WTP Planning Completion Date: August 2019

Project Budget: \$78,218 Project Number of Days: 365

Change Orders - Dollars Added : \$0 Change Orders - Days Added: 0

Item	Criteria	Score
1	Ability to manage the project costs (minimize change orders to scope).	10
2	Ability to maintain project schedule (complete on-time or early).	10
3	Quality of work.	10
4	Quality of consultative advice provided on the project.	10
5	Professionalism and ability to manage personnel.	10
6	Project administration (completed documents, final invoice, final product turnover; invoices; manuals or going forward documentation, etc.)	10
7	Ability to verbally communicate and document information clearly and succinctly.	10
8	Ability to manage risks and unexpected project circumstances.	10
9	Ability to follow contract documents, policies, procedures, rules, regulations, etc.	10
10	Overall comfort level with hiring the company in the future (customer satisfaction).	10
<b>TOTAL SCORE OF ALL ITEMS</b>		100

Please include this completed survey to Lisa Solina ([lisa.solina@mlbfl.org](mailto:lisa.solina@mlbfl.org)) or 321.608.7308 by August 18, 2020