



1365 Hamlet Ave Clearwater, FL 33756, (727) 442-7196

**SUPPLEMENTAL WORK ORDER INITIATION FORM
for the CITY OF CLEARWATER**

Date: February 1, 2017

Project Number: 0992-0230

City Project Number: 16-0032-UT

1. PROJECT TITLE:

Reverse Osmosis WTP #1 Blend Tank Removal Project

2. SCOPE OF SERVICES:

The City of Clearwater (City) is currently utilizing two 20,000 gallon blend tanks that operate in series to blend RO permeate, RO bypass and off-spec water. The tanks are nearing the end of their useful life and the City would like to demolish the tanks and have the ability to send the three process streams directly to the two (2) ground storage tanks (GSTs), which operate in parallel. McKim & Creed performed an evaluation for the feasibility of removing the blend tanks from the treatment process and it was determined the blend tanks could be removed. The results of the evaluation were summarized and included in a technical memorandum, dated November 21, 2016. The City has requested McKim & Creed to provide professional engineering consulting services needed to design, permit and to provide limited construction phase services needed to demolish the tanks, and to modify the piping and pumps associated with the Transfer Pump Station. The work included with this scope of services includes the following tasks:

DESIGN PHASE

The general design concept included in the *Reverse Osmosis WTP#1 Blend Tank Removal Evaluation* memorandum (memo) will be advanced to ultimately provide biddable construction drawings and technical specifications. Final Issue for Bid drawings and technical specifications will be signed and sealed per Florida Statute for the permitting and bidding phases of the project. Progress review meetings are included at each submittal phase. Based on the size and type of the project, it is recommended that two design submittal packages be produced; one at 75% design and the other at Issue for Bid.

Task 3.0 – Design Phase Services

General Project Management Services: The effort included in the Project Management Services is estimated based on the tasks of this Scope of Services for design and construction phases. The

Project Management Task includes kickoff meeting, project setup, monthly progress reports and invoicing.

Quality Assurance / Quality Control (QA/QC): McKim & Creed shall provide QA/QC reviews at key points in the project. For this service McKim & Creed will utilize the service of senior and/or experienced professionals to perform the QA/QC reviews.

Task 3.1 – 75% Design Drawings and Specifications

Advance conceptual design from the memo and prepare 75% drawings, technical specifications, engineer's opinion of probable construction cost and preliminary project schedule. Submit three (3) full size drawings, five (5) hard copies (11"x17"), (4) hard copies specifications, and an electronic (PDF) copy via e-mail to City staff for review and comment.

Task 3.1.1 75% Design Review Meeting

A 75% review meeting with the design team and City staff will be scheduled approximately 14 calendar days after the 75% submittal to review and address City comments. Meeting minutes will be prepared and provided to City staff via e-mail (PDF copy).

Task 3.2 – Issue for Bid Design Drawings and Technical Specifications

Incorporate City comments and revisions from the 75% review meeting and from FDEP permitting and advance the drawings and specifications to Issue for Bid status. Five (5) signed & sealed sets of drawings (24"x36"), technical specifications, updated engineer's opinion of probable construction cost, project schedule and CD-ROM with CAD and PDF copies of the complete package will be submitted to the City for advertisement. In addition, the McKim & Creed will provide the City with up to two (2) signed and sealed sets of Issue for Bid drawings and technical specifications that will be used by City staff to obtain City Building Department permits (if required).

Task 3.3 – FDEP Permitting

Subsequent to the 75% review meeting, McKim & Creed will prepare the FDEP Application for a Specific Permit to Construct PWS Components and will submit the permit application to the FDEP. McKim and Creed has time budgeted to address up to two (2) sets RAI comments received from the FDEP.

BIDDING SERVICES

Task 4.0- Pre-bid Meeting and Bidding Assistance

McKim & Creed will provide bidding services inclusive of the following items:

- Attend a Pre-Bid meeting that will be conducted by the City; agenda shall be prepared by the City.
- Provide responses to Contractors' questions during bidding and aid the City in the preparation of addenda. The City will issue all addenda.

- Review bids received by the City and provide recommendation of award.
- Prepare conformed construction documents, and issue as required, addressing changes made by addendum.

CONSTRUCTION PHASE

Task 5.1- Limited Construction Phase Services

Pre-Construction Meeting: Prior to the start of construction, the City will prepare agenda and arrange for a pre-construction meeting to include the contractor, key subcontractors and engineer. Suggested items for discussion at the meeting are:

- Contact list for the project
- Project Overview
- Project Construction Meetings
- Submittal Format, Tracking and Schedule
- Overall Construction Schedule
- Shutdown Procedures and Notifications
- RFI Procedures
- Payment and Requisition Procedures
- Discussion of other job specific details relative to the project
- Discussion of the required project permits.
- Safety Discussion and Emergency Procedures

Submittals: McKim & Creed will track and review Contractor submittals for conformance with the Contract Documents and will provide submittal review comments within 14 calendar days as required. Submittals and submittals logs will be distributed to the City and the Contractor. Review is to be limited to general conformance with the design concept of the project and compliance with the information given in the Contract Documents. Such reviews or other action shall not extend to the approval of the means, methods, techniques, sequences, or procedures of construction or safety program of the Contractor. Under this Task, the review of only one resubmittal of any initial submittal shall be included. It is anticipated that approximately 30 shop drawings will be submitted for this project.

Request for Information (RFI): Requests for information from the Contractor will be tracked, reviewed by McKim & Creed, and if needed, forwarded to the City for additional information. McKim & Creed will provide responses to the Contractor and copy the City within ten (10) working days of receipt of each RFI. McKim & Creed will maintain a RFI log and distribute the log to the City and the Contractor.

Contractor Pay Request Review: McKim & Creed, within ten (10) days after receipt of each application for payment from the Contractor, will provide written notice to the City recommending payment to the Contractor, or return the request to the Contractor providing written notice of McKim & Creed's reason for returning the pay request. As part of the review process, McKim & Creed shall review the progress of record drawings and that appropriate releases of liens are submitted with the pay request. Upon receipt of the Contractor's request

for final payment, McKim & Creed shall observe and, if acceptable, submit to the City a recommendation as to acceptance of the work and as to the final payment request of the Contractor.

Change Order Request (COR): McKim & Creed will review and comment on Change Order Requests from the Contractor based on the Contract Documents. McKim & Creed will also provide review of pricing and content, as well as providing a recommendation of approval or disapproval to the City. A log of Change Order requests will be kept for review by the City.

Record Drawings and FDEP Certification: The Contractor will be responsible for developing the As-Built Drawings in accordance with Specification 01782. McKim & Creed will review and provide comments on the As-Built Drawings supplied by the Contractor prior to their submittal to the City. McKim & Creed will use the completed As-Built Drawings to prepare Record Drawings needed for the *Certification of Construction Completion and Request for Clearance to Place Permitted PWS Components into Operation*.

Substantial and Final Walkthrough: McKim & Creed shall conduct a substantial site walkthrough for substantial completion, followed by a final walkthrough. The substantial walkthrough shall be subsequent to the Contractor's preparation of a punch list. McKim & Creed shall modify the list accordingly pending the results of the substantial walkthrough. McKim & Creed shall issue a recommendation of substantial completion for the purpose of establishing the starting date for specific equipment warranties, and to establish the date that the CITY shall assume responsibility and the cost of operating such equipment. Subsequent to the completion of all punch list items as notified by the Contractor, McKim & Creed shall complete the final walkthrough. Subsequent to an acceptable final walkthrough, McKim & Creed shall recommend, in writing, final payment to the Contractor. Substantial and Final Walkthroughs will be attended by the Contractor, key subcontractors and key staff from the City.

Startup Services: McKim & Creed will provide qualified professional staff for up to four (4) hours to observe and assist with startup and testing.

Task 5.2 – Limited Construction Observation Services:

Construction Site Visits/Progress Meetings: McKim & Creed will provide limited onsite construction observation and will attend monthly construction progress meetings during active construction. The observation services will average 2 hours per week for the anticipated 16 week active construction duration. If additional onsite services are required, McKim & Creed will negotiate with the City for additional services.

PROGRAMMING

Task 6.1- SCADA Software Modifications

McKim & Creed will provide SCADA system software modifications for the following:

1. Configure VFD and PLC communications for the four (4) new transfer pump VFDs to allow connection to the SCADA system network as a remote I/O device over Ethernet to CP-400 (High Service Pump) PLC.
2. Implement PLC to PLC communications to operate the transfer pump VFDs from the CP 200 SLC 5/05 PLC.
3. Modify the manual pump controls to provide manual start/stop with manual pump speed control.
4. Modify the automatic pump controls to provide lead/lag1/lag2/lag3 operation with manual alternation and automatic pump failover. Automatic pump control will be changed from tank level to suction pressure with operator adjustable alarms and pump sequencing.
5. Monitor and modify the caustic metering pump operation based on injection to a static mixer and pH monitoring through an in-line sensor instead of the original tank insertion sensor.
6. Review and modify plant operation sequencing for such items as interlocking the ground storage tank levels with RO systems, dual media filters and/or well pump operation along with operator adjustable settings.
7. Software modifications will include PLC logic and communication modifications as well as HMI graphic screen changes, database additions, alarm and trend database additions and local trend screen updates.
8. SCADA software applications at WTP2 and WTP3 will be updated to reflect these modifications through the use of 'include projects'.
9. Services will also include two (2) days of SCADA system startup and testing. This will include:
 - a. Testing of VFD communications to the PLC.
 - b. System signal testing with the contractor to verify field signal connections through the local control panel PLC.
 - c. HMI and PLC application software testing to confirm system operation.
 - d. Tuning of transfer pump and caustic pump control loops.
10. Services will include one (1) day of operator training on the software modifications, with a morning and afternoon session. It is anticipated the training sessions will be conducted on the same day, with scheduling coordinated with the plant chief operator to support shift operations. The training format will be hands-on, utilizing the plant SCADA system to demonstrate new/modified screens and functionality.
11. Services do not include modifications or additions to the WIN-911 or RACO autodialer remote alarm notification systems, modifications or additions to the historian server and/or collection of any VFD information beyond In Remote, Run Status, Failure, Speed Indication, VFD Amps and Power, Pump Start/Stop command and speed command.

ASSUMPTIONS AND ADDITIONAL INFORMATION:

- Design will be in general accordance with the Blend Tank Removal Evaluation Final Technical Memorandum, dated 11/21/2016.
- Environmental permitting and survey work is not anticipated and is not included in this scope of work.

- City will provide construction administration and on-site observation sufficient to observe the work completed is in conformance with the Contract Documents.
- City will issue payment for all permitting.
- The new VFDs will be located in the existing MCC room.
- The existing transfer pumps will be reused and each pump will be fitted with new higher speed motors.
- Pump motors and related equipment may need to be sole-sourced to utilize the existing pumps.

3. **PROJECT GOALS:**

The main project goal is to remove the blend tanks and improve the transfer pumps to simplify plant operations and maintenance.

4. **BUDGET:**

See Attachment "B".

This price includes all labor and expenses anticipated to be incurred by McKim & Creed, Inc. for the completion of these tasks in accordance with Professional Services Method "B" – Lump Sum – Percentage of Completion by Task, **for a fee not to exceed Seventy-Six Thousand Nine Hundred Twenty-Six Dollars (\$76,926.00).**

5. **SCHEDULE:**

Project schedule will commence upon receipt of written authorization from the City. The total project with construction is to be completed within 330 **calendar days** from issuance of notice-to-proceed. The project shall be phased as follows:

Kickoff Meeting	7 calendar days
75% Submittal	45 calendar days
FDEP Permit Modification Application	75 calendar days
Issue for Bid Documents Submittal	100 calendar days
Construction Substantial Completion	300 calendar days
Final Completion/Close-out	330 calendar days

6. **STAFF ASSIGNMENT (Consultant):**

Phil Locke, PE – Project Manager / Lead Engineer

Aubrey Haudricourt, PE – Senior Electrical Engineer

Mitch Chiavaroli, PE – Senior Engineer (QA/QC review)

Nicole Smith, EI – Staff Engineer

7. CORRESPONDENCE/REPORTING PROCEDURES:

Engineer's project correspondence shall be directed to:

Phil Locke, PE

All City project correspondence shall be directed to:

Jeff Walker, PE with copies to others as may be appropriate.

8. INVOICING/FUNDING PROCEDURES:

For work performed, invoices shall be submitted monthly to the City of Clearwater, Engineering Department, Attn.: Veronica Josef, Senior Staff Assistant, PO Box 4748, Clearwater, Florida 33758-4748.

City Invoicing Code: 0315-96764-561300-533-000-0000

9. INVOICING PROCEDURES

At a minimum, in addition to the invoice amount(s) the following information shall be provided on all invoices submitted on the Work Order:

- A. Purchase Order Number and Contract Amount.
- B. The time period (begin and end date) covered by the invoice.
- C. A short narrative summary of activities completed in the time period
- D. Contract billing method – Lump Sum or Cost Times Multiplier
- E. If Lump Sum, the percent completion, amount due, previous amount earned and total earned to date for all tasks (direct costs, if any, shall be included in lump sum amount).
- F. If Cost Times Multiplier, hours, hourly rates, names of individuals being billed, amount due, previous amount earned, total earned to date for each task and other direct costs (receipts will be required for any single item with a cost of \$50 or greater or cumulative monthly expenses greater than \$100).
- G. If the Work Order is funded by multiple funding codes, an itemization of tasks and invoice amounts by funding code.

10. SPECIAL CONSIDERATIONS:

The consultant named above is required to comply with Section 119.0701, Florida Statutes (2013) where applicable.

PREPARED BY:

**A. Street Lee, PE
Senior Vice President
McKim & Creed, Inc.**

Date

APPROVED BY:

**Michael D. Quillen, PE
City Engineer
City of Clearwater**

Date



CITY OF CLEARWATER ENGINEERING DEPARTMENT

WORK ORDER INITIATION FORM CITY DELIVERABLES

1. FORMAT

The design plans shall be compiled utilizing the following methods:

1. City of Clearwater CAD standards.
2. Datum: Horizontal and Vertical datum shall be referenced to North American Vertical Datum of 1988 (vertical) and North American Datum of 1983/90 (horizontal). The unit of measurement shall be the United States Foot. Any deviation from this datum will not be accepted unless reviewed by City of Clearwater Engineering/Geographic Technology Division.

2. DELIVERABLES

The design plans shall be produced on bond material, 24" x 36" at a scale of 1" = 20' unless approved otherwise. Upon completion the consultant shall deliver all drawing files in digital format with all project data in Autodesk Civil 3D file format. If not available Land Desktop files are still acceptable, however the City or Clearwater is currently phasing out Land Desktop.

NOTE: If approved deviation from Clearwater CAD standards are used the Consultant shall include all necessary information to aid in manipulating the drawings including either PCP, CTB file or pen schedule for plotting. The drawing file shall include only authorized fonts, shapes, line types or other attributes contained in the standard release of Autodesk, Inc. software. All block references and references contained within the drawing file shall be included. Please address any questions regarding format to Mr. Tom Mahony, at (727) 562 4762 or email address Tom.Mahony@myClearwater.com.

All electronic files (CAD and Specification files) must be delivered upon completion of project or with 100% plan submittal to City of Clearwater.

Reverse Osmosis WTP#1 Blend Tank Removal Project McKim & Creed, Inc.

WORK ORDER INITIATION FORM PROJECT BUDGET

Task	Description	Sub-consultant Services	Labor	Total
3.0	Final Design Plans and Specifications			
3.1	75% Design Drawings and Specifications		\$29,468	\$29,468
3.2	Issue for Bid Drawings and Specifications		\$9,727	\$9,727
3.3	FDEP Permit Modification		\$1,285	\$1,285
				\$40,480
4.0	Bidding Services			
4.1	Pre-bid Meeting and Bidding Assistance		\$2,827	\$2,827
				\$2,827
5.0	Limited Construction Services			
5.1	Limited Construction Phase Services		\$14,613	\$14,613
5.2	Limited Construction Observation		\$4,309	\$4,309
				\$18,922
6.0	Programming			
6.1	Programming/ SCADA Software Modifications		\$14,697	\$14,697
				\$14,697
Grand Total				\$76,926