

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed the day and year hereinabove written.

Witnesses:

CITY OF POMPANO BEACH

By: _____
LAMAR FISHER, MAYOR

By: _____
GREGORY P. HARRISON, CITY MANAGER

Attest:

ASCELETA HAMMOND, CITY CLERK

(SEAL)

APPROVED AS TO FORM:

MARK E. BERMAN, CITY ATTORNEY

STATE OF FLORIDA
COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this _____ day of _____, 20__ by **LAMAR FISHER** as Mayor, **GREGORY P. HARRISON** as City Manager, and **ASCELETA HAMMOND** as City Clerk of the City of Pompano Beach, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

NOTARY'S SEAL:

NOTARY PUBLIC, STATE OF FLORIDA

(Name of Acknowledger Typed, Printed or Stamped)

Commission Number

"CONTRACTOR"

Tetra Tech, Inc.

Witnesses:

Melissa Aguero

(Print or Type Name)

Jenny McClair

(Print or Type Name)

By:

Lawrence Jenkins, Vice President

STATE OF FLORIDA

COUNTY OF ORANGE

The foregoing instrument was acknowledged before me this 25th day of June, 2018, by Lawrence Jenkins as Vice President of Tetra Tech, Inc., a Delaware corporation authorized to conduct business in Florida on behalf of the corporation. He/~~she~~ is personally known to me or who has produced _____ (type of identification) as identification.

NOTARY'S SEAL:



Anke Backer

NOTARY PUBLIC, STATE OF FLORIDA

ANKE BACKER

(Name of Acknowledger Typed, Printed or Stamped)

FF 957240

Commission Number



CITY OF POMPANO BEACH CONTINUING CONTRACT FOR ENGINEERING SERVICES FOR WATER AND REUSE TREATMENT PLANT PROJECTS

Work Authorization No. 6 Reuse Water System Master Plan Update

The services rendered pursuant to this Work Authorization No. 6 are in accordance with the terms and conditions of the Agreement for Consulting / Professional Services between the City of Pompano Beach and Tetra Tech, Inc., dated January 19, 2016 and approved by City Ordinance No. 2016-26.

I. PROJECT DESCRIPTION

Tetra Tech, Inc. (Tetra Tech) is pleased to present this proposal for engineering services to prepare update to the City's Reuse Water Master Plan. The City of Pompano Beach (City) is a coastal, South Florida urban area of Broward County, Florida. The City was originally incorporated in 1908 as the "Town of Pompano". It is the second oldest city in Broward County, and the fifth oldest city in all of South Florida. In 1947, the City merged with the newly-formed municipality on the beach and became the "City of Pompano Beach". The City consists of approximately 25 square miles of land area, including three (3) annexation areas added in 2000 and 2004.

The City began offering reuse water in 1989 for irrigation use at the City's golf courses, parks, play fields, and road medians. Since that time, the City's reuse system has expanded to serve commercial properties, single-family residential and multi-family residential properties. The City owns and operates a 7.5 MGD Water Reclamation Facility and distribution system that supplies its customers with reuse water. The City's Water Reclamation Facility is located on Federal Highway just south of E. Copans Road. Since its startup in 1989, the reuse system has grown and is comprised of approximately 32 miles of pipe ranging from 4-inch to 30-inch in diameter.

The City previously completed a Master Plan in 2014. To assist with identifying the existing system deficiencies, prioritizing improvements, estimating costs and identifying financing options, a Master Plan update is recommended. The Master Plan will evaluate the existing system, estimate demand projections using current growth assumptions, update the existing hydraulic model to assist in identifying system sizing deficiencies and develop a capital improvement program to accommodate future demands.

II. SCOPE OF WORK

Phase 1 – Projections/Existing Systems

The Projections/Existing System Phase will describe and evaluate the existing systems, and identify the quantity of service projected at the five (5), ten (10), and twenty (20)/Buildout (whichever occurs first) planning horizons. Deliverables will be billed under subtasks as follows:

Subtask 1.01 - Project Kickoff Meeting. A kickoff meeting will be held within two weeks of award to introduce the team members, identify points of contact, and define roles and responsibilities. Prior to the meeting Tetra Tech will prepare a data request for information not already provided but necessary for the project. The status of the data request will be discussed at the kick off meeting as well as the project schedule.

Subtask 1.02 - Project Management Services. Tetra Tech will provide project management services throughout the project to facilitate project meetings, flow of information, client contact, etc.

Subtask 1.03 - Data Collection. Tetra Tech will collect, coordinate and organize data and various documents to develop the background information needed for the planning effort. To the extent Tetra Tech has already received this data additional copies will not be necessary. Data sources are expected to include:

- Minimum five (5) years of daily monitoring reports.
- Operational protocols, reports, and maintenance records.
- Existing reuse system hydraulic model.
- Existing geospatial information system (GIS) shapefiles and/or geodatabase of the reuse water system and include at a minimum water main diameters and materials.
- Description of all major equipment that comprises the reuse system including storage facilities, and pump information (including pump curves).
- Record drawings for recent projects not incorporated in the City's current GIS database and hydraulic model.
- Design reports and permitting documents pertaining to the reuse system , storage and pumping facilities.
- Comprehensive plans for City of Pompano Beach.
- Existing and future land use maps for City of Pompano Beach.
- Current permits associated with the system.
- Reuse water customer billing data, identifying each customer's class and meter size, for a minimum period of 12 months.
- Service area boundary maps.

Subtask 1.04 - Reuse Water Projections. Tetra Tech will rely upon future expansion projections developed for the City's 2014 Master Plan as well as information from City Staff as the basis for the Master Plan. Tetra Tech will work with the City to identify areas where reclaimed water is projected to be extended for each planning horizon. The projections will be adjusted if necessary to reflect any recent changes in development trends in the service area.

Subtask 1.05 - Capacity Analysis. Tetra Tech will review the existing reuse water treatment and pumping facilities and evaluate the ability of the system to meet the projected demands. The evaluation criteria will be a combination of the requirements of FDEP, industry standards and other criteria developed uniquely for the City service area. Tetra Tech will review plant expansion options with regards to current treatment techniques being used compared to other available techniques and include a review of the ability to meet current and known future water quality standards and which techniques may improve water quality currently being provided to the CITY'S customers. Tetra Tech will include an opinion of costs using recent local pricing for expansion of the current technology being used for treatment to current plant build out of 12.5 MGD. Additionally, Tetra Tech will include an opinion of cost for expansion to 12.5 MGD using recent local pricing, for different treatment techniques with retrofit in existing foot print of north and south filters or if additional structure would be required. Tetra Tech will meet with the City to discuss options and move forward with a treatment technique for future plant expansion and conduct a cost benefit analysis with the selected treatment technique.

Subtask 1.06 - Draft Submittal and Review. Tetra Tech will prepare a Technical Memorandum that presents the data analysis, maps, and projections and submit five (5) copies of the documents to the City for review and comment. The memorandum will take the form of sections that will ultimately be included in the Master Plan. This review will be used by the City to verify the completeness of the data and maps and to review the projections prior to any planning work.

Subtask 1.07 - Review Meeting. Tetra Tech will attend a review meeting addressing the draft submittal and will record and distribute meeting minutes of said meeting. Tetra Tech will incorporate the CITY's review comments into the maps and projections.

Phase 2 – Hydraulic Modeling

Subtask 2.01 - Data Collection and Hydraulic Model Review. Tetra Tech will provide a list of data required for hydraulic model update that will include (at a minimum) the most recent data listed above in Phase 1.03. Tetra Tech will utilize the City's GIS reuse water main data for existing pipelines, review construction plans for planned infrastructure, as-builts for storage facilities or the best available information to update the model. Where GIS data is not available, Tetra Tech will recreate data using PDF files from available system maps. It is assumed that Tetra Tech has the required licenses based on the City's model software.

Subtask 2.02 - Hydraulic Model Update. Tetra Tech will incorporate infrastructure data such as new reuse mains, tanks, pumps, valves and interconnects into the model. The model will consist of all reuse water distribution system piping identified in the City's GIS data including piping recently constructed or currently under construction, which are not included in the City's GIS data. Tetra Tech will perform quality control activities to check model input such as diameters, elevations, pump curves and controls as proper model inputs.

Subtask 2.03 - Demand Development, Allocation and Scenario Management. Tetra Tech will develop and allocate historical reuse water meter demands to model nodes, using the City reuse water meter billing data, to simulate typical flow and pressure throughout the system. Demands will be based on the most recent year of reuse water meter records. Allocation will be performed in a simple, fluid process using the demand allocator module.

Tetra Tech will develop model evaluation criteria based on the City's and engineering and design standards for its systems. Tetra Tech will create two (2) steady state scenarios to represent the CITY's existing system.

1. Maximum Day Demand (MDD)
2. Peak Hour Demand (PHD)

Model scenarios define the set of input conditions under which model runs are executed. Existing operational procedures and protocols will be determined based on City staff and incorporated into the model to represent the System conditions. City staff will be interviewed to gather specific information used for input into the model including pressure, level and time-based controls and control points. The existing operational procedures and protocols will be incorporated into the model via logical controls (as required). The result of these efforts will be a structurally verified model ready for output comparison to field data (calibration).

Subtask 2.04 - Hydraulic Model Calibration. Tetra Tech will develop a calibration protocol which will define calibration locations, summarize field data collection, and conduct a pre- and post-calibration meeting with CITY staff. Pressure recording devices (to be provided and installed by CITY) will be installed and removed, for up to nine (9) locations at three (3) different time periods to measure and record the system pressure in the system at blowoff locations. TT will summarize, analyze, and compare the data to the model output. TT will adjust model inputs to within established hydraulic criteria as reasonable, and document results in a calibration memorandum. Field checking of valves or additional data collection (by CITY staff) will be recommended as necessary. This Task will be completed only if it is determined that the City's existing model requires calibration.

Subtask 2.05 - Planning Horizon Scenario Evaluations. With a calibrated Model, TT will utilize the steady state scenarios listed in Phase 2.04 to determine the system's ability to supply the projected demands at each planning horizon (5-year, 10-year and 20-year/Buildout). The steady state scenarios will effectively and efficiently size infrastructure to meet the City's engineering and design standards throughout the System. These standards will be utilized to identify facility improvements needed within the reuse water distribution system to supply projected demands. TT will provide the City with an electronic copy of the updated model as a deliverable for this task.

Subtask 2.06 - Draft Submittal and Review. Tetra Tech will prepare a draft Technical Memorandum that presents the data analysis, maps, and projections and submit five (5) copies of the documents to the City for review and comment. The memoranda will take the form of sections that will ultimately be included in the Master Plan.

Subtask 2.07 - Review Meeting. Tetra Tech will attend a review meeting addressing the draft submittal and will record and distribute meeting minutes of said meeting. Tetra Tech will incorporate the City's review comments into the draft Technical Memorandum.

Phase 3 – Capital Program

The Capital Program will identify the projects required to meet the goals of the Master Plan. Tasks included in the Capital Program Phase include:

Subtask 3.01 - Identify Facility Requirements. Facility requirements will include a detailed list of storage, pumping, transmission, and distribution facilities with consultant's recommendation based on discussions with the City, regarding cost benefit analysis of future plant expansion with which treatment technique required to effectively convey service to end users previously identified as well as any requirements for interconnects with neighboring utilities. Consultant will include costs for an emergency plant generator sized for future expansions. The facility requirements will be based on the results from the hydraulic modeling and the capacity evaluation. The requirements will be developed for the 5-year, 10-year, and 20-year/Buildout planning horizons and will include a description of each project and opinion of probable cost.

Subtask 3.02 - Prioritization of Improvements. TT will prioritize the identified improvements for both new and existing facilities with consultant's recommendation based on discussions with the City, regarding cost benefit analysis of future plant expansion, including emergency plant generator, sized for future expansions, with which treatment technique and provide dates for improvements as necessary to meet system demand. The prioritization will develop a CIP for the 5-year, 10-year, and 20-year/Buildout planning horizons. The prioritization will also include a ranking of projects based on identifying projects that will meet system demands and correct deficiencies for the least amount of capital expenditure while also considering non-cost factors. The CIP for the planning horizons will also include a set of events that will trigger the initiation of the projects.

Subtask 3.03 - Draft Submittal and Review. Tetra Tech will prepare a draft Technical Memorandum summarizing the Capital Program and submit five (5) copies of the document to the City for review and comment. The memorandum will take the form of the sections that will ultimately be included in the Master Plan.

Subtask 3.04 - Review Meeting. TT will attend a review meeting addressing the draft submittal and will record and distribute meeting minutes of said meeting. TT will incorporate the City's review comments into the draft Technical Memoranda.

Phase 4 – Report Preparation

Subtask 4.01 - Report Preparation. TT will submit five (5) copies of a report combining the final Technical Memoranda for each Phase for review by the City and will subsequently meet with the Staff to discuss the document. The report will be revised pursuant to the City's comments and five (5) copies of each of the final report will be submitted to the City along with electronic versions of the various models and documents.

III. ASSUMPTIONS AND EXCLUSIONS

We have determined the following assumptions and exclusions as being critical to our proposed scope and compensation:

- Preparation of grant or loan applications.
- Preparation of ordinances or resolutions and attendance at meetings or hearings other than those specifically described herein.
- Evaluation of alternative water sources.
- Expert witness testimony.

- Land use planning and annexation analysis.
- Budget preparation assistance.
- Extended period simulations of the hydraulic models.
- Review of Current Management Structure and Education Programs
- Tetra Tech has the current license for the hydraulic model software and will not need to be purchased.

IV. COMPENSATION

The total compensation for the Scope of Work described in Section II is \$82,834 and will be invoiced monthly on a percentage complete for Task Nos. 1 – 4. The compensation for the Scope of Work by task is summarized below.

Task	Description	Fee
1	Projections/Existing Systems	\$29,610
2	Hydraulic Modeling	\$27,210
3	Capital Program	\$20,270
4	Report Preparation	\$4,880
	Other Direct Costs	\$864
Lump Sum		\$82,834

- The fees shown are estimated assuming the complete Scope of Work described in Section II of this proposal will be approved as one Work Authorization. The fees per each task do not stand alone.

V. SCHEDULE

Task	Description	Days After Notice to Proceed
1	Projections/Existing Systems Tech Memo	60
2	Hydraulic Modeling Tech Memo	120
3	Capital Program Tech Memo	180
4	Submit Draft Report	210
5	Submit Final Report	240

TT Price Proposal							Revision Date: May 18, 2018		Labor Plan							Price Summary / Totals							
Reuse Water Master Plan Update							Bill Rate >		6 Resource						Task Pricing Totals						82,834		
															Specify Add'l Fees on Setup						0		
							Reuse Water 20-Year Planning Period Evaluation						Proj Area >								Technology Use Fee		
Submitted to: City of Pompano Beach															Total Price						82,834		
Contract Type: T&M															Pricing by Resource							Task Pricing Totals	
Project Phases / Tasks		Schedule			Work Days Off	Work Days	Total Labor Hrs	Program Manager	Sr Engineer I	Project Manager I	Engineer II	GIS Application Manager	Project Administrator	Labor Rate Esc.	Labor	Subs	Travel	Mat'l's & Equip	ODCs				
		From	Thru	Months																	82,834		
100 Projections/Existing Systems							200	4	50	32	84	22	8		29,610	-	-	-	-	-	29,610		
101 Project Kickoff							14		4	4			2		2,630						2,630		
102 Project Management Services							24			24					3,840						3,840		
103 Data Collection							14		4		8	2			2,000						2,000		
104 Reuse Water Projections							28		4		16	8			3,660						3,660		
105 Capacity Analysis							72		24		40	8			10,600						10,600		
106 Draft Submittal and Review							42		12		20	4	6		5,810						5,810		
107 Review Meeting							6		2	4					1,070						1,070		
200 Hydraulic Modeling							212	-	24	4	112	66	6		27,210	-	-	-	-	-	27,210		
201 Data Collection and Hydraulic Model Review							34		2		16	16			4,270						4,270		
202 Hydraulic Model Update							38		2		20	16			4,710						4,710		
203 Demand Development, Allocation and Scenario Management							44		4		24	16			5,580						5,580		
204 Hydraulic Model Calibration							14		2		12				1,750						1,750		
205 Planning Horizon Scenario Evaluations							40		4		24	12			5,060						5,060		
206 Draft Submittal and Review							36		8		16	6	6		4,770						4,770		
207 Review Meeting							6		2	4					1,070						1,070		
300 Capital Program							136	-	46	8	60	14	8		20,270	-	-	-	-	-	20,270		
301 CIP Development							46		16		24	6			6,860						6,860		
302 Prioritization of Improvements							32		16		16				5,200						5,200		
303 Draft Submittal and Review							52		12	4	20	8	8		7,140						7,140		
304 Review Meeting							6		2	4					1,070						1,070		
400 Report Preparation							36	-	8	4	12	4	8		4,880	-	-	-	-	-	4,880		
401 Report Submittal and Review							36		8	4	12	4	8		4,880						4,880		
500 Direct Costs							-	-	-	-	-	-	-		-	-	864	-	-	-	864		
501 Travel (20 trips at 80 miles each \$0.54/mi)							-								-	-	864				864		
Totals							584	4	128	48	268	106	30	0.00%	81,970	-	864	-	-	-	82,834		