Attachment A
Scope of Services
Town of Belleair, FL
Potable Water System Hydraulic Modeling – Phase II
December 5, 2019

PROJECT DESCRIPTION

The Town of Belleair (Town) currently owns and operates a potable water system that includes groundwater supply wells/transmission mains, a water treatment facility and a potable water transmission and distribution system to serve the Town's water utility customers. The Town is currently planning several infrastructure improvement projects that need to consider existing potable water system hydraulic conditions along with replacement of existing galvanized piping. As part of this effort, the Town has identified the need to develop a hydraulic model of the potable water system and to perform hydraulic modeling that will help with pipe sizing for new/modified water mains, identify potential areas of concern with respect to meeting required fire flow supplies, and identify and address potential water age issues.

The Town has requested McKim & Creed, Inc. (M&C) to provide professional engineering services needed to perform this work, which includes the following tasks:

SCOPE OF SERVICES

This Scope of Service to be completed by M&C for Phase II of the Potable Water System Modeling is identified as follows:

A. PROJECT ADMINISTRATION

M&C will:

1. Develop project setup, perform general project management and administration, provide monthly status reports and invoicing.

B. DEVELOP FUTURE HYDRAULIC MODEL AND CALIBRATE MODEL

M&C will:

1. Utilize information and the existing system hydraulic model (from Phase I) to develop a future model that will focus on eliminating existing galvanized piping and replacing, as needed, to meet hydraulic requirements.

2. Coordinate with Town staff to determine strategic locations for field testing (e.g., fire hydrant flow tests) to obtain data that will be used to compare with hydraulic model simulations.
3. Confirm results from field testing with modeling calculations.
4. Identify areas for additional field testing and/or confirmation of valve positioning to refine model calibration. Provide information to Town that the Town will use to perform additional field testing. Update model with additional field data.

C. HYDRAULIC MODELING

M&C will:

1. Develop demand scenarios, using both the current and future model, for the following:

a) Average day demands (24-hour EPS)
b) Maximum day demands (24-hour EPS)
c) Maximum day + fire flow demands (steady-state)

2. Perform hydraulic modeling for the referenced scenarios. Parameters to be analyzed will include:
    a. Minimum pressures
    b. Maximum pressures
    c. Maximum velocities
    d. Maximum headloss gradients
    e. Fire flow availability
    f. Storage capacity
    g. Pumping capacity

D. WATER AGE ANALYSIS

M&C will:

1. Utilize the hydraulic model to perform a water age analysis for the Town's existing and future potable water system. The analysis will use average day demands and a multi-day EPS.
2. Using the results of the water age analysis, M&C will develop up to two (2) additional modeling scenarios that will be used, if needed, to provide recommendations to the Town to improve (reduce) water age, where possible. It should be noted that water age analyses will consider fire flow requirements that take precedence over water age.

E.. HYDRAULIC MODELING SUMMARY MEMORANDUM

M&C will:

1. Develop the draft Technical Memorandum based upon findings, results, alternatives and recommendations regarding hydraulic and water age conditions. Submit five (5) hard copies and an electronic PDF copy (via e-mail) of Technical Memorandum.

2. Attend a review meeting with Town staff to discuss findings and recommendations. Prepare and distribute meeting minutes to attendees.

3. Incorporate comments from the review meeting and finalize the Technical Memorandum to include an updated cost estimate. Submit five (5) signed & sealed hard copies and an electronic PDF copy of memo (via e-mail).

OTHER INFORMATION

1. Work included in this scope of services will follow the Phase I work.
2. It is anticipated that the Town will authorize this scope of services in early January 2020, such that the final memorandum schedule goal is to be completed by May 1, 2020.
3. Fire flows will be based on information provided by the Town and from the Insurance Services Office (ISO) Fire Suppression Rating Schedule (FSRS).
4. Town will perform all field work and testing (e.g., fire flow and pressure), as needed. This may include locating closed valves in the system.

SCHEDULE

The tasks identified herein will be completed within 120 calendar days of receiving written authorization from the Town.

COMPENSATION

McKim & Creed will perform the scope of services identified herein for the lump sum amount of $63,554.00. A Fee Matrix showing the tasks and budgeted hours is attached as Exhibit A.

PREPARED BY:	**APPROVED BY:**
_____	_____
Phillip J. Locke	**JP Murphy**
Senior Project Manager	**Town Manager**
McKim & Creed	**Town of Belleair**
_____	_____
Date	**Date**

Exhibit A

Town of Belleair - Potable Water System Hydraulic Modeling - Phase II
McKim & Creed, Inc.

Task	Description	Labor	ODCs	Total	Project Principal	Project Manager II	Project Engineer II	Engineer Intern	Project Administrator	Total Hours	ODCs
					$ 290.00	$ 195.00	$ 157.00	$ 130.00	$ 86.00		
A.	**Project Administration**										
1	Project Setup, Status Reports and Invoicing	$ 849.00	$ 10.00	$ 859.00		2	1	1	2	6	$ 10.00
	Task Subtotal	$ 849.00	$ 10.00	$ 859.00	0	2	1	1	2	6	$ 10.00
B.	**Develop Future Model and Calibrate Model**										
1	Develop Future Hydraulic Model	$ 10,300.00	$ 10.00	$ 10,310.00		2	30	40		72	$ 10.00
2	Determine Locations for Field Testing	$ 2,556.00	$ 10.00	$ 2,566.00		4	8	4		16	$ 10.00
3	Meeting with Town to Review Field Test Results	$ 1,484.00	$ 10.00	$ 1,494.00		2	2	6		10	$ 10.00
4	Update Model with Field Data	$ 5,318.00	$ 5.00	$ 5,323.00		4	14	18		36	$ 5.00
	Task Subtotal	$ 19,658.00	$ 35.00	$ 19,693.00	0	12	54	68	0	134	$ 35.00
C.	**Hydraulic Modeling**										
1	Develop Demand Scenarios	$ 5,232.00	$ 5.00	$ 5,237.00		2	6	30		38	$ 5.00
2	Perform Modeling for Demand Scenarios	$ 5,112.00	$ 5.00	$ 5,117.00		4	16	14		34	$ 5.00
	Task Subtotal	$ 10,344.00	$ 10.00	$ 10,354.00	0	6	22	44	0	72	$ 10.00
D.	**Water Age Analysis**										
1	Perform Initial Water Age Modeling	$ 5,870.00	$ 10.00	$ 5,880.00		6	20	12		38	$ 10.00
2	Develop Recommendations and Update Water Age Model	$ 8,534.00	$ 15.00	$ 8,549.00		6	32	18		56	$ 15.00
	Task Subtotal	$ 14,404.00	$ 25.00	$ 14,429.00	0	12	52	30	0	94	$ 25.00
E.	**Hydraulic Modeling Summary Memo**										
1	Draft Technical Memo	$ 10,486.00	$ 125.00	$ 10,611.00	3	8	16	40	4	71	$ 125.00
2	Review Meeting with Town	$ 979.00	$ 10.00	$ 989.00		2	1	2	2	7	$ 10.00
3	Final Technical Memo	$ 6,494.00	$ 125.00	$ 6,619.00	1	6	10	24	4	45	$ 125.00
	Task Subtotal	$ 17,959.00	$ 260.00	$ 18,219.00	4	16	27	66	10	123	$ 260.00
	TOTAL	**$ 63,214.00**	**$ 340.00**	**$ 63,554.00**	**4**	**48**	**156**	**209**	**12**	**429**	**$ 340.00**