**WORK ASSIGNMENT NO. 2016-02 PURSUANT TO**

**THE JUNE 28, 2016 AGREEMENT BETWEEN THE**

**CITY OF VENICE, FLORIDA AND BLACK & VEATCH**

WHEREAS, on June 28, 2016, the City of Venice, Florida ("OWNER") and **Black & Veatch Corporation** ("CONSULTANT"), entered into an Agreement whereby the CONSULTANT would perform professional services for the OWNER pursuant to an executed Work Assignment; and

WHEREAS, the OWNER wishes to authorize the CONSULTANT to perform professional services concerning **Water System Master Plan Update** as more particularly described in the Scope of Services herein; and

WHEREAS, the CONSULTANT wishes to perform such professional services,

NOW THEREFORE, in consideration of the premises and mutual covenants contained in the June 28, 2016, Agreement and this Work Assignment, the parties agree as follows:

1. General description of the project: **The Water System Master Plan Update project involves hydraulic modeling, system planning, and condition assessment of the City's potable water distribution system infrastructure.**
2. Scope of services to be performed. CONSULTANT shall perform the services described in the Scope of Services attached hereto as Attachment "A".
3. Compensation to be paid. OWNER shall pay the CONSULTANT the sum of ***Two hundred ninety-four thousand, four hundred forty-six*** (**$ 294,446**) for performance of the professional services specified in this work assignment.
4. Time for completion. CONSULTANT shall complete the professional design services specified in this work assignment within **fourteen** (***14***) ***months*** from the date of this Work Assignment, and will provide the bidding and construction phase services in accordance with the construction schedule to be determined by OWNER.
5. The terms and conditions of the June 28, 2016 Agreement shall remain in full force and effect until the completion of this Work Assignment; and

**IN WITNESS WHEREOF**, the parties have executed this Work Assignment on the ___ day of ____, 20___.

**BLACK & VEATCH CORPORATION**

_____

**ATTEST:**

**CITY OF VENICE, FLORIDA**

**By:** _____
**Lori Stelzer, City Clerk**

**By**: _____
**John Holic, Mayor**

**Attachment A – Scope of Services**
**Water System Master Plan Update**

## PROJECT OVERVIEW

The City of Venice's Utilities Department treats groundwater and distributes the treated water to service a population of approximately 22,000 people in the City of Venice/South Sarasota County area. The Water Supply Master Plan developed in 2013 needs to be updated to plan infrastructure improvements and effectively manage the distribution system moving forward. The goal and objective of the Water Supply Master Plan (Project) is to assist City staff in providing a reliable and robust water system with adequate capacity to accommodate future growth within the City's water service area.

The City of Venice (OWNER) has selected Black & Veatch Corporation (CONSULTANT) to provide professional services to support the development of an updated Water Supply Master Plan. The CONSULTANT services provided will generally consist of the following:

- Task 1: Project Management, Administration and QA/QC
- Task 2: Initiate Project and Data Collection
- Task 3: Update Existing Water System Summary
- Task 4: Population and Demand Projections
- Task5: Water Supply and Treatment Capacity Evaluation
- Task 6: Update and Calibrate Hydraulic Model
- Task 7: Distribution System Hydraulic Analyses
- Task 8: Water Quality Evaluation
- Task 9: Survival Curve (Remaining Life) Analysis
- Task 10: Capital Improvement Planning
- Task 11: Document Master Plan

## SCOPE OF SERVICES

### Task 1 – Project Management, Administration and QA/QC Plan

1.1 Project Management and Administration:

CONSULTANT will perform general administrative duties associated with the Project, including project set-up, resource and sub-consultant management, progress monitoring, scheduling, QA/QC plan development and updating, general correspondence, office administration, and invoicing.

CONSULTANT will maintain an accurate project documentation and project cost accounting system throughout the project to include the following:

- Maintain a project filing system throughout duration of Project to use for storage and retrieval of Project documents.
- Prepare monthly status reports and invoices for engineering services in the format required by the contract. Status reports will include a summary of work completed during the previous month.

CONSULTANT will update the project execution schedule based upon the OWNER NTP date and distribute the updated schedule at the project initiation meeting. The project schedule will identify the following information:

- Key project tasks and deliverables.
- Critical dates for data submission, deliverable reviews, and decisions by the OWNER.
- Meetings and workshops.

CONSULTANT will review, update and submit to OWNER updated Project schedule periodically upon completion of major project elements. Each updated schedule will track original target completion dates.

Our Fee for Project Management and Administration services is based on the estimated project duration of 12 months.

1.2 Quality Assurance / Quality Control Plan :

CONSULTANT will prepare a QC-Verification plan and monitoring checklist and maintain continuous control over the quality of all its work efforts. This will include oversight and review by the lead technical engineer(s), project manager, senior technical staff and managerial staff. This task includes time for development and management of the QA/QA plan / program. Hours for actual QC reviews have been included in other tasks.

**Task 2 – Initiate Project and Data Collection**

2.1 Project Initiation Meeting :

CONSULTANT will schedule and facilitate a Project Initiation Meeting. The meeting will be held at OWNER's offices. The objectives of the meeting include:

- Identify and meet key team members from the OWNER and CONSULTANT.
- Establish the project roles and communication channels.
- Identify and discuss the project objectives and scope.
- Review planned activities.
- Review data provided by the OWNER to date and identify additional requirements.
- Distribute an updated Project schedule.
- Conduct technical discussions to facilitate key project tasks.

CONSULTANT will a) Prepare the Project Initiation Meeting agenda and b) Prepare meeting notes and distribute to meeting attendees after the workshop. CONSULTANT will also follow up on action points from the meeting.

2.2 Performance Criteria Workshop & Selection :

CONSULTANT and the OWNER will meet in conjunction with the project initiation meeting to develop the water system assessment and performance criteria as well as the desired level of service (LOS) to be provided by the system, which will set the system performance goals for the distribution system evaluation and improvement alternatives identification. Collectively, the group will establish the basic

assumptions and performance criteria that will be used to evaluate the system and develop system improvements. Criteria will take items such as existing and proposed regulations into consideration. The outcome of the meeting will be the development of evaluation criteria and ranking of importance of these criteria. This workshop will be scheduled in conjunction with the Project Initiation Meeting.

CONSULTANT will a) Prepare initial recommended performance criteria with background rationale before the workshop and b) Prepare meeting minutes with the selected performance criteria and distribute to meeting attendees after the workshop.

2.3 Data Request and Collection :

A copy of the preliminary Data Request will be submitted prior to the Project Initiation Meeting. This request will be refined and resubmitted based on Project Initiation Meeting discussion. The status of data transmittals will be tracked by CONSULTANT until all available items are received.

2.4 Field Data Collection :

Field data collection will be focused on data required for the calibration of the hydraulic model.

2.4.1 Calibration Plan and Goals Workshop : CONSULTANT will develop a model calibration plan including identification of needed system operations data (i.e., SCADA, hydrant flow testing and hydrant pressure monitoring locations) and timing/duration of data collection. The model calibration plan will include identification of strategic pressure monitoring locations based on a) Available AWWA guidance, b) Previous pressure monitoring locations used for the 2013 master plan project and c) Input from CITY staff. The CONSULTANT will conduct a workshop with the OWNER to review the calibration plan and identify calibration goals.

2.4.2 Field Data Collection : The CONSULTANT will provide required hydrant flow equipment and be responsible for collecting the required system data. The OWNER will provide the hydrant pressure loggers. It is proposed that the calibration plan will include up to (10) hydrant pressure monitoring locations and up to ten (10) hydrant flow test locations. CONSULTANT-owned flow-test equipment will be provided to the project for use during calibration and will be retained by the CONSULTANT following use on the project. Field data collection work to be performed by the OWNER will be limited to operation of system appurtenances (i.e fire hydrants), and collection of data from OWNER's SCADA System and previously collected water quality sampling data. The CONSULTANT will compile the SCADA and field data and use the data for model calibration. The field data will be applicable to hydraulic calibration; pressures, flows, tanks levels. Calibration of water quality (i.e. age and chlorine residual) modeling is not included in this scope of work. If the need for additional water quality sampling and/or additional system monitoring and field testing is identified after the field data collection and model calibration tasks are completed, this would be covered by the OWNER's ALLOWANCE or a Work Assignment amendment if approved by the OWNER.

**Task 3 – Update Existing Water System Summary**

The CONSULTANT will update the Existing System Summary from the 2013 Water Supply Master Plan to include water supply, treatment and distribution system updates recently installed or planned for the near future.

3.1 Existing System Workshop :

The CONSULTANT will summarize the data provided by the OWNER under Task 2.3 and conduct a workshop to discuss the existing system status and near term planned improvements. Topics will include, but are not limited to the following:

- Water Supply Sources / Capacity
- WTP Capacity / Efficiency
- SCADA Data Points
- Pumping and Storage Capacity
- System Control Logic
- Distribution System Configuration

CONSULTANT will a) Prepare an Existing System Workshop agenda and b) Prepare a summary of existing system data collection prior to the workshop.

**Task 4 – Population and Demand Projections**

The CONSULTANT will review and summarize the population and demand data provided by the OWNER and other appropriate sources (CITY Planning Department, University of Florida's BEBR data and Southwest Florida Water Management District (SWFWMD)).

4.1 Historic Population Estimates :

The CONSULTANT will review data from the OWNER's previous planning documents, current planning documents, and population estimates from BEBR for the service area for the last 5 years building upon the information in the 2013 Master Plan.

4.2 Historic Demand Use and Patterns :

4.2.1 Water Production Data : The CONSUTLANT will review available water production records and system operating logs to determine historical average day demand (ADD), maximum month demand (MMD), maximum day demand (MDD) and peak hour demand (PHD) ratios for the entire system for the last 5 years building upon the information in the 2013 Master Plan.

4.2.2 Historic Customer Demand Data (Per Capita/Account Demands) : The CONSULTANT will review 5 years of metered water sales records (building upon the information in the 2013 Master Plan) to determine historic ADD and MMD per meter and unit water consumption by customer classification (residential, commercial-industrial and wholesale). The recent years' water use characteristics such as residential per capita consumption, irrigation use, proportion of commercial-industrial and wholesale usage, and unmetered water ratio will then be determined.

4.2.3 Non-Revenue Water (NRW) : The CONSULTANT will calculate historic NRW from the production and customer consumption data as well as any NRW reports prepared by the OWNER.

4.2.4 Peaking Factors : The CONSULTANT will calculate the demand peaking factor ratios (MMD/ADD, MDD/MMD, MDD/ADD, PHD/MDD, and PHD/ADD), as well as the MMD/ADD peaking factor. Those peaking factors along with the percent of total system demand for each customer type will be used to peak system demands, on a customer type basis, from ADD to MDD.

4.2.5 Diurnal Demand Patterns : CONSULTANT will use 5-minute archived SCADA data for flow and tank level data from SCADA and/or other system operational records collected by the OWNER. The data will be analyzed to calculate diurnal demand patterns for the system under MDD and ADD system demand conditions to be used during system capacity analyses and water quality/age simulations, respectively.

4.3 Population and Demand Projections :

The CONSULTANT will use information available from the CITY's Planning Department, SWFWMD and BEBR to estimate the population projection for the following planning years: 2020, 2025, 2030, 2035 and 2040. The CONSULTANT will work with the OWNER to compare any differences between the three sources of data and select population estimates to be used for the demand projections. The CONSULTANT will then apply the per capita/account demands and NRW water allocation determined in Task 4.2 to calculate the projected water demands for the same planning years.

4.4 Spatial Distribution of System Demands :

The CONSULTANT will use the demand projections from Task 4.3 and the population/parcel shapefiles created by SWFWMD to create figures illustrating the spatial allocation of the future demands. CONSULTANT will prepare and submit to the OWNER a system map for the base year of 2016 and each planning year (2020, 2025 and 2040) summarizing the spatial distribution of projected potable water demand. These figures, once approved by the OWNER, will be the basis for allocating projected future demand to the hydraulic model and the distribution system capacity assessment.

4.5 Demand Projection Technical Memorandum :

The CONSULTANT will prepare and submit to the OWNER a Draft Demand Projection Technical Memorandum for review and comment. The CONSULTANT will then address OWNER comments and submit a Final Demand Projection Technical Memorandum.

**Task 5 – Water Supply and Treatment Capacity Evaluation**

5.1 Water Supply and Treatment Assessment :

CONSULTANT will conduct a spreadsheet capacity assessment of the potable water supply and treatment capacities for the base year of 2016 and each planning year (2020, 2025 and 2040) to evaluate the adequacy of existing facilities taking into account near term planning improvements and to identify any deficiencies in capacity based on the performance criteria.

**Task 6 – Update and Calibrate Hydraulic Model**

6.1 Update Hydraulic Model :

6.1.1 Update the Hydraulic Model System Map : The CONSULTANT will update the existing hydraulic model using the OWNER's distribution system maps (GIS) and inventory data to add water mains and facilities constructed since the most recent model update and to delete any mains or facilities which have been permanently removed from service.

6.1.2 Demand Allocation : The CONSULTANT will update the existing system demands based on 2016 meter data and NRW percentages evenly distributed across the system. It is anticipated approximately 100% of the billing meter accounts already have x-y coordinate locations.

6.2 Model Calibration :

Following the calibration plan and agreed upon calibration goals, the hydraulic model will be calibrated using a 24-hour extended period simulation (EPS) with 5-min increments. The model results will be compared to the field data and appropriate adjustments to model input parameters will be made to ensure the model simulates actual system conditions within reasonable accuracy tolerances for system planning purposes. The calibration period will be limited to the availability and time of the field data collection. If any model calibration points do not meet model calibration goals, appropriate explanations for these discrepancies will be documented and, if appropriate, recommendations for additional field testing/monitoring will be provided to the OWNER.

6.3 Model Calibration Workshop :

A workshop will be conducted by the CONSULTANT with the OWNER to review the draft results of the hydraulic model calibration. The purpose of the work shop will be to review the draft results and determine if additional field testing/monitoring and model calibration work is needed before proceeding with subsequent project tasks.

CONSULTANT will a) Prepare an agenda before the workshop and b) Prepare meeting minutes to distribute to meeting attendees after the workshop.

6.4 Model Calibration Technical Memorandum :

Prepare a draft technical memorandum to document the calibration process, collected field data, adjustments made to model input parameters to better correlate the model results with the field data, field data to final model output data comparisons, and any needed explanations for calibration discrepancies for review and comment by OWNER's staff. CONSULTANT will finalize the draft technical

memorandum addressing questions and incorporating the resolution of OWNER comments into a final technical memorandum.

**Task 7 – Distribution System Hydraulic Analyses**

CONSULTANT will conduct assessments of the distribution system for the purposes of identifying capacity needs and operational improvements.

7.1 Storage and Pumping Facilities Capacity Assessment :

CONSULTANT will conduct spreadsheet capacity assessments of the storage and pumping facilities for each planning year (2020, 2025 and 2040) to evaluate the adequacy of existing facilities and to identify any deficiencies in capacity based on the performance criteria. Additional assessments will be completed under Task 7.2 and 7.3 to identify any sub-regions of the system that may not have sufficient supply, storage or pumping capacity available due to hydraulic limitations in the distribution system.

7.2 Distribution System Capacity Assessment and Improvements :

Using the calibrated hydraulic model, CONSULTANT will perform a hydraulic system analyses to evaluate the distribution system performance and identify potential improvements under MDD system conditions using 24-hour EPS for each planning year (2020, 2025 and 2040). Demand allocation for each planning year (2020, 2025, and 2040) will be based on the spatial distribution determined in Task 4. The EPS analyses will encompass and assess the peak hour and minimum hour (storage replenishment) within the MDD scenario. The system analyses will evaluate the effectiveness and adequacy of the distribution system to meet the level of service criteria established in conjunction with the OWNER.

7.3 Distribution System Fire Flow Capacity Assessment and Improvements :

Using the calibrated hydraulic model, CONSULTANT will perform hydraulic analyses to evaluate the distribution system performance and identify potential improvements under MDD plus fire flow (FF) conditions using a steady state (SS) simulation for the planning year 2040. The system analyses will evaluate the effectiveness and adequacy of the distribution system to meet the fire flow level of service criteria established in conjunction with the OWNER.

7.4 Distribution System Assessment, Water Quality and Project Needs Workshop :

A workshop will be conducted by the CONSULTANT with the OWNER to review the draft results of the distribution system analysis, water quality optimization (Task 8) and preliminary improvements. The purpose of the work shop will be to review the modeling results and achieve consensus on recommended improvements.

CONSULTANT will a) Prepare an agenda before the workshop and b) Prepare meeting minutes to distribute to meeting attendees after the workshop.

7.5 Distribution System Assessment Technical Memorandum :

The CONSULTANT will prepare and submit to the OWNER a Draft Distribution System Assessment and Improvements Technical Memorandum for review and comment. The CONSULTANT will then address

OWNER comments and submit a Final Distribution System Assessment and Improvements Technical Memorandum.

**Task 8 – Water Quality Evaluation**

8.1 Water Quality Data Review and Water Age Goal :

The CONSULTANT will review and profile the water quality sampling data (primarily chlorine residual, THM concentration, temperature and pH) provided by the OWNER and water quality-related customer complaints, both spatially across the distribution system and temporally over time to assess water quality performance in the system and identify and characterize any reoccurring problem areas in the distribution system. The CONSULTANT will use the water quality data review in conjunction with the water ager results in Task 8.2 to establish a maximum water age goal to be used during the water quality optimization task. It is anticipated that there are no existing water quality concerns and the maximum water age will be based on the existing water ages.

8.2 Develop Water Age Simulations :

The CONSULTANT will update the hydraulic model operational controls based on current control setting information provided by the OWNER to reflect typical system conditions during 2016. This information will be used to create new EPS scenarios for conducting water age analyses. Appropriate mixing models (i.e. completely mixed, last in – first out, etc.) will be assigned to model storage facilities based on inlet/outlet configuration and any static or dynamic mixing system information provided by the OWNER. The CONSULTANT will also develop a water age scenario for the high DBP period of the year.

The CONSULTANT will conduct EPS water age analysis of the distribution system for 2016 average demand conditions and the high DBP period. The water age analyses will be validated by performing the following:

- Identify highest water age storage facility and verify the model simulation time is long enough to ensure a consistent, repeating pattern of water age is eventually reached
- Conduct sensitivity analysis on the water quality time step to ensure that reducing the time step does not significantly change the water age predictions
- Calculate 24-hour average water age throughout the distribution system for the last 24-hours of the simulation (first 24-hours that show a stable, repeating pattern in the storage tank with the highest water age)

8.3 Water Quality Optimization (Auto Flushers) :

The CONSULTANT will use the correlated water quality/age model to identify potential system operation modifications and to optimize utilization (placement and operation) of automatic flushers to improve water quality in the distribution system for the planning years 2020 and 2040.

8.4 Water Quality Optimization Technical Memorandum :

The CONSULTANT will prepare and submit to the OWNER a Draft Water Quality Optimization Technical Memorandum for review and comment. The CONSULTANT will then address OWNER comments and submit a Final Water Quality Optimization Technical Memorandum.

**Task 9 – Survival Curve (Remaining Life) Analysis**

9.1 Survival Curve Analysis : CONSULTANT will develop survival curves for each water main material type identified in the OWNER'S distribution network to estimate the average life expectancies (in years) for the water mains to support the desktop condition assessment. The survival curve analysis will be performed using a spreadsheet template and will follow the Kaplan-Meier methodology which incorporates the total observed population of water mains for each pipe material, the age of each water main as of the current year, and available break occurrences within an agreed upon time frame to develop a hazard curve and survival curve. The Weibull function will be used to represent the survival probability for each pipe material. The Weibull function is a straight-forward approach to develop a distribution curve in a spreadsheet format. Survival curves will be developed using the first (earliest) pipe break record and a total count of breaks within a given year per material type. Survival curves will be developed using all pipe records and associated breaks. Pipe records including any associated break data with missing or possible incorrect data will be excluded from the analysis. Average life expectancies will be based on the 50th percentile (or agreed upon percentile with the OWNER) of the Weibull estimated survival probability. The survival curve spreadsheet will be developed as a template for the OWNER'S use for future updates. Instructions for updating the spreadsheet and the pipe attributes will be documented and provided to the OWNER.

9.2 Survival Curve Technical Memorandum : CONSULTANT will document the survival curve analysis methodology and results in a draft technical memorandum. CONSULTANT will incorporate comments received from the OWNER. The final technical memorandum will be included in the final Pipeline Condition Assessment Report.

**Task 10 – Capital Improvement Planning**

During this phase, the water system improvement needs identified during Tasks 7 and 8 will be presented in a capital projects list. Planning-level estimates of probable project cost will be prepared for each project (capital costs and annual O&M cost impacts). Projects will be prioritized by planning year (2020, 2025 or 2040).

10.1 Opinions of Probable Project Costs :

CONSULTANT will prepare unit cost information and assumptions for the variety of types of improvements that will be identified as part of the potable water system master planning efforts. This unit cost information will be used to develop planning-level opinions of probable project costs. The unit cost information will be added to the CIP Spreadsheet Tool to support the calculation and organization of CIP project costs. Tables will be prepared to summarize cost information for the proposed improvement projects. Estimated annual O&M cost impacts associated with the projects will also be provided, where applicable.

10.2 CIP Project Prioritization and Scheduling of CIP :

The CONSULTANT will develop a CIP Spreadsheet Tool to help prioritize and manage the OWNER's CIP. The tool will document project ID, size, location, description, and other project information including project costs and schedules, and projects identified under other contract will be included in the spreadsheet. The Tool will be used during the Project Validation and Prioritization Workshop to refine the scheduling of projects with each planning year (2020, 2025 and 2040).

The Spreadsheet Tool with final CIP will be delivered to the OWNER at the end of the project for their use in updating and managing the water system CIP in subsequent years after the Water Supply Master Plan project is completed.

10.3 Project Validation and Prioritization Workshop :

A workshop will be conducted with the OWNER's staff to review the projects list. The justification for each project will be reviewed and discussed, as well as the priority ranking for each project as compared to previously identified evaluation criteria. Opinions of probable project cost and the proposed implementation schedule will also be reviewed. The CONSULTANT will also train the OWNER in use of the Spreadsheet Tool.

CONSULTANT will a) Prepare an agenda before the workshop and b) Prepare a final CIP Spreadsheet Tool to distribute to meeting attendees after the workshop.

**Task 11 – Document Master Plan**

11.1 Draft Master Plan Report :

The CONSULTANT will document the Water Supply Master Plan Update project in a draft report. The report will incorporate the final versions of the various technical memoranda prepared and outcomes of the various workshops during previous phases of work. The report will describe the evaluations performed and the resulting recommendations. The report will provide year by year recommendations for system and facility improvements between 2017 and 2025; and also define longer term improvements recommended through 2040. System maps and figures to support the recommendations and summarize the proposed improvements will be provided. Seven (7) hard copies and one electronic copy of the draft Water Master Plan Report will be provided. The updated hydraulic model and CIP planning tools will also be provided with the draft report.

11.2 Draft Master Plan Report Workshop :

The CONSULTANT will facilitate a workshop with the OWNER's staff to present the draft report and receive comments.

11.3 Final Master Plan Report :

The CONSULTANT will incorporate comments from the review workshop and update the Water Supply Master Plan Report to address these comments. Seven (7) hard copies and one electronic copy of the final report will be provided.

**Owner's Allowance**

This Work Assignment includes an Owner's Allowance of **$25,000** for unforeseen tasks required to complete the project, which will only be used with the written approval of the OWNER. A scope description and fee breakdown will be provided to the OWNER for any proposed use of the Owner's Allowance. Such tasks may include, but are not limited to:

- Additional water quality sampling
- Additional system monitoring and/or field testing
- Master Plan Mobile App

## PARTICIPATION BY THE OWNER

The following participation by the OWNER will be needed to support execution of work under this Work Assignment:

- Provide CONSULTANT available relevant data to support the assessments within 2 weeks of a request.
- Provide CONSULTANT water system hydraulic model electronic files.
- Provide CONSULTANT Staff with access to the water system facilities as necessary for information gathering purposes.
- Assist CONSULTANT staff with operation of the fire hydrants during calibration data collection.
- Review and comment on draft submittals within 2 weeks of submittal dates.
- Participate in meetings, interviews, calls and workshops with CONSULTANT as identified herein.

## PROPOSED IMPLEMENTATION SCHEDULE

The proposed implementation schedule for the **Water System Master Plan Update** is outlined below. The Notice to Proceed shall be the date of approval of the Work Assignment by the City (City Council or Mayor). The following schedule assumes that OWNER's reviews will be completed within 2 weeks and that the OWNER's staff can be available for participation in meetings and interviews in the timeframes indicated.

| **Proposed Implementation Schedule** | |
|---|---|
| **Deliverable or Activity** | **Target Completion Following NTP** |
| Submit Data Request | One week |
| Project Initiation / Performance Criteria / Existing Systems Workshop | Two weeks |
| Calibration Plan / Goals Workshop | 1 month |
| Model Calibration Data Collection | 1 – 2 months |
| Final Demand Projection Technical Memorandum | 3 months |
| Model Calibration Workshop | 3 months |
| Final Model Calibration Technical Memorandum | 4 months |
| Distribution System Assessment and Project Needs Workshop | 6 months |
| Final Distribution System Assessment Technical Memorandum | 7 months |
| Water Quality Optimization Technical Memorandum | 10 months |
| Final Survival Curve Technical Memorandum | 5 months |
| Project Validation and Prioritization Workshop | 11 months |
| Draft Master Plan Report | 12 months |
| Draft Master Plan Report Workshop | 13 months |
| Final Master Plan Report & App | 14 months |

## COMPENSATION

For the Scope of Services described in this Work Assignment, CONSULTANT shall be compensated on a Lump Sum basis in the amount of $269,446. An Owner's Allowance has also been including in the amount of $25,000. The resulting Work Assignment total is $294,446. Compensation shall be in accordance with the terms of the Agreement. The following table summarizes the fee by scope task:

| **Proposed Fee Breakdown** | |
|---|---|
| **Task** | **Lump Sum Compensation** |
| Task 1 – Project Management, Administration and QA/QC Plan | $ 26,618 |
| Task 2 – Initiate Project and Data Collection | $ 27,250 |
| Task 3 – Update Existing Water System Summary | $ 2,248 |
| Task 4 – Population and Demand Projections | $ 28,027 |
| Task 5 – Water Supply and Treatment Capacity Evaluation | $ 2,588 |
| Task 6 – Update and Calibrate Hydraulic Model | $ 32,256 |
| Task 7 – Distribution System Hydraulic Analyses | $ 37,867 |
| Task 8 – Water Quality Evaluation | $ 35,222 |
| Task 9 – Survival Curve (Remaining Life) Analysis | $ 18,324 |
| Task 10 – Capital Improvement Planning | $ 27,832 |
| Task 11 – Document Master Plan | $31,214 |
| **Lump Sum Subtotal** | **$269,446** |
| Owners Allowance | $ 25,000 |
| **Work Assignment Total** | **$294,446** |