**TASK ORDER**

**Task Order No. 25-WM**

In accordance with Section 2 of the Agreement between the Village of Oak Park (hereinafter referred to as the "Village") and Baxter & Woodman, Inc. (hereinafter referred to as the "Consultant") for Professional Engineering Services, dated September 21, 2021 and the Renewal of Master Agreement dated December 9, 2024 (collectively referred to as the "Agreement"), the Village and Consultant agree as follows:

1. **Project**:

Design Engineering Services for updating a hydraulic water model, evaluating water distribution system performance, and developing long-term recommendations.

2. **Services of Consultant**:

A. Basic Services: Engineering services to develop an updated hydraulic water model using the Village's water system GIS.

B. Additional Services: See Attachment A for detailed Scope of Services.

3. **Approvals and Authorizations:**

Consultant shall prepare permit applications for the following approvals and authorizations:

N/A.

4. **Commencement Date:**

The services described in this Task Order shall commence in May 2025.

5. **Task Order No. 25-WM Completion Date**:

The completion date of this Task Order shall be **270 days** following the Commencement Date plus extensions, if any, authorized by a change order issued pursuant to Section 3.2 of the Agreement.

6. **Submittal Schedule**

The schedule is contingent on availability of data from the Village.

7. **Key Project Personnel**:

| Names: | Telephone and Email: |
|---|---|
| Sean O'Dell | 815-444-4438<br>sodell@baxterwoodman.com |
| Lauren Schuld | 815-444-3306<br>lschuld@baxterwoodman.com |

8. **Contract Price**.

For providing, performing, and completing all Services, an amount equal to Consultant's Direct Labor Costs for all Services rendered by principals and employees engaged directly on the Project, plus an amount equal to the actual costs of all Reimbursable Expenses.

Notwithstanding the foregoing, the total Contract Price shall be a total lump sum amount of **Sixty-Six Thousand Eight Hundred Dollars ($66,800),** except as adjusted by a change order issued pursuant to Section 3.2 of the Agreement.

9. **Payments:**

For purposes of payments to Consultant, the value of the Services shall be determined as follows:

Direct Labor Costs shall mean the billing rates assigned to all Consultant personnel as set forth in the Agreement, including all professionals whether owners or employees, engaged directly on the Project.

Reimbursable Expenses shall mean the actual expenses incurred by Consultant directly or indirectly in connection with the Project, including expenses for transportation, telephone, postage, subconsultants, computer time and other highly specialized equipment, reproduction and similar Project related items.

10. **Modifications to Contract**:

None

11. **Attachments:**

Attachment A – Detailed Scope of Services

12. **Designated Representative for Task Order:**

| If to the Village: | If to the Consultant: |
|---|---|
| Village Engineer | Sean E. O'Dell, PE |
| Village of Oak Park | Baxter & Woodman, Inc. |
| 201 South Boulevard | 8678 Ridgefield Road |
| Oak Park, Illinois 60302 | Crystal Lake, IL 60012 |
| Email: mckenna@oak-park.us | Email: sodell@baxterwoodman.com |

**[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK - SIGNATURE PAGE FOLLOWS]**

**IN WITNESS WHEREOF**, the parties hereto have caused this Task Order to be signed by their duly authorized representatives on the dates set forth below. Acceptance and approval of this Task Order, including the attachments listed above, shall incorporate this Task Order as part of the Agreement.

| **VILLAGE OF OAK PARK** | **BAXTER & WOODMAN, INC.** |
|---|---|
| _____ | _____ |
| By: | By: Sean E. O'Dell, PE |
| Its: | Its: Executive Vice President |
| Date: _____, 2025 | Date: _____, 2025 |
| **ATTEST:** | **ATTEST:** |
| _____ | _____ |
| By: | By: KJ Townson |
| Its: | Its: Deputy Secretary |
| Date: _____, 2025 | Date: _____, 2025 |

# Attachment A

## Water Model Scope of Services

1. PROJECT MANAGEMENT
   A. Plan, schedule, and control activities to complete the Project. These activities include, budgeting, scheduling, and monitoring the scope of services.
   B. Submit a regular status report via email describing tasks completed and future goals.

2. MEETINGS
   A. *Kickoff Workshop Meeting* – A Project Workshop meeting with Owner's staff and the Project team will be held for the Water Model Analysis. The purposes of the meeting are to establish clear lines of communication, introduce the Owner's staff to the team members, and establish the Owner's detailed needs, objectives, and goals for the Project. Provide a brief presentation on the computer modeling program, including its capabilities, so the Owner can become familiar with the potential use of this information for other purposes in the future. The meeting will also be utilized to obtain information, plans, atlases, and other data to be supplied by the Owner, and set schedules and guidelines for future design meetings.
   B. *Status Meetings* – Conduct up to three meetings with Owner's staff at times during the Project to clarify system layout and operations questions, model results, and distribution system recommendations. Status meetings are typically held to review the calibrated model, review recommendations, and review the draft report.

3. EXISTING SYSTEM REVIEW
   A. Review the following information to be provided by the Owner:
      1. Existing water system GIS (geodatabase).
      2. Existing water distribution system maps and subdivision plans and as-builts, including any recent changes and improvements, with pipe diameters, ages, and typical materials.
      3. Engineering reports previously completed on the water system.
      4. Water pumping and consumption records.
      5. Water consumption records from individual service accounts, in Excel or another acceptable electronic format.
      6. Descriptions of existing storage facilities.
      7. Description of standard operating procedures for the water system, including setpoints.
      8. List of known problem areas (low pressure, high pressure, poor water quality, low fire flow, etc.).
      9. Existing capital improvement plan.

4. GIS DATA ADJUSTMENTS
   A. The existing pipe segmentation within the GIS will be reviewed and revised as necessary to conform to conventions used within the modeling software.
   B. Data will be reviewed for connectivity and cohesiveness to simplify integration with WaterGEMS® software.

C. Unique IDs will be maintained if Owner's data has Unique IDs established for all segments and structures. If Unique IDs are not already established, Unique IDs will be created to develop an identification system. This will establish a link with the WaterGEMS® model, allowing model results to be incorporated within the GIS.

D. Missing data necessary for model construction will be identified. Atlases of applicable areas will be provided for markup by Village staff. Markup data will be incorporated in the GIS prior to WaterGEMS® model construction.

E. At the completion of the modeling project, WaterGEMS® network model data will be exported back into the existing GIS. This one-to-one relationship will allow any alterations that have been made to the water network within the modeling software to be maintained and incorporated into the existing geodatabase. This strategy will allow WaterGEMS® model output to be incorporated within the GIS data for Owner use and permits future updates to be migrated into and out of the geodatabase utilized by WaterGEMS®.

F. Provide a digital copy of the revised ArcGIS dataset in a format as specified by Owner's staff.

5. MODEL PREPARATION

A. *Prepare Model* – Prepare a water model in WaterGEMS® for the Owner's water system using existing atlas and GIS information. Work directly with Owner's staff to concur on design information, including control elevations, system pressures, and system constraints. Confirm with Owner's staff the resulting system in the modeling software accurately represents the actual distribution system.

B. *Field Hydrant Testing* – Perform "distribution stress tests" by flowing fire hydrants in specific areas to determine the existing pipe roughness ("C" Coefficient) and assist in the model calibration. The fire hydrant flow tests involve measuring flows from selected fire hydrants throughout the water system. An estimated 15 fire hydrants tests will be conducted with the Owner's assistance.

C. *Model Calibration* – Calibrate the model by using fire hydrant test and SCADA data for all facilities during the testing time period and adjust the model until the field and model data match within certain limits. Typically, the accuracy will be 1 psi (+/-) during average static conditions and 5 psi (+/-) during high flow testing.

1. In the event attempts to calibrate the model reveal unexpected and unknown field conditions, it may be necessary to make a field investigation into why the model will not calibrate, e.g., locate closed valves in the system, and conduct additional flow tests. This additional work will be performed on a "Cost-Plus" basis in addition to the original Engineering Fee.

6. DISTRIBUTION SYSTEM ANALYSIS – The following is a list of recommended scenarios that will provide the information most critical to the current needs. Scenarios will be evaluated under varying demand conditions, including Average Day Demand, Maximum Day Demand, and Peak Hour Demand.

A. *Pressure Characteristics throughout the System* – Pressures will be determined at each node in the model. Low pressures during peak demand may be caused by excessive head loss in the supply mains or high ground elevation. A determination of unacceptable variations in service pressure will be completed.

B. *Areas of excessive head loss or high velocities* – Pipes with excessive head loss or high velocities may require replacement of pipes or paralleling with larger diameter pipes. Excessive head loss under maximum day conditions may indicate that additional looping or water main upsizing is required.

C. *Areas with inadequate fire flows* – Utilizing the fire flow analysis portion of the software, fire hydrants will be simulated and the available fire flow capacity of each will be estimated. Test how the system reacts to simulations of fire flows at all fire hydrants in the system at maximum day demand. The results produced by the model will provide the Owner with the predicted fire flows and the location and pressure of the lowest pressure nodes in the model for each hydrant. These results will be compared against ISO requirements. Particular attention will be paid to areas of critical need, such as schools, commercial and business zones, and dense residential areas.

D. *Evaluate Water Storage Capacity* – Engineering and model data will be used to evaluate the total volume of storage currently available in the distribution system and compare this to current and future maximum day and peak hourly water demands. Provide recommendations for future water system storage, if necessary. Recommendations will include a review of water storage tank style, such as ground storage versus elevated storage. Review the impact of storage on water turnover in the distribution system.

E. *Water Main Break Analysis* – Develop a water main replacement rank for each pipe that has a history of main breaks based on water main break data and water model data such as pipe velocities and friction losses. Import the results from the water main rank spreadsheet into the GIS so that a graphical representation of the water main rank is generated.

F. *Model Exhibits* – Prepare water system exhibits showing pressure and available fire flows for average day and maximum day water demands; areas with inadequate fire flows; and available fire flows with recommended improvements. Confirm with Owner's staff the exhibits accurately represent water system.

G. *Recommendations For Distribution System Improvements* – Prepare a technical memorandum summarizing the results of the existing system analysis, evaluation of alternatives, recommendations, and opinions of probable cost estimates.