

**#19023-6**  
**AGREEMENT FOR PROFESSIONAL SERVICES**  
**For LAKE COUNTY**

This AGREEMENT is entered into by and between Lake County ("County") and Baxter & Woodman, Inc. ("Consultant"), 8678 Ridgely Road, Crystal Lake, IL 60012.

**RECITALS**

WHEREAS, Lake County is seeking a Consultant to provide Engineering services for Water System Modelling and Capacity Analysis; and

WHEREAS, the Consultant is a professional provider of Engineering services; and

WHEREAS, Lake County Purchasing Division issued Statement of Interest Number 19023 in connection with this procurement; and

WHEREAS, the Purchasing Agent and the selection committee have determined that the Proposals submitted by the Consultant on February 14, 2019 is the most advantageous proposal received, and best serves the interests of Lake County; and

WHEREAS, the Lake County Board has passed a resolution at its regular meeting on November 12, 2019 authorizing the Purchasing Agent to execute this Agreement;

**SECTION 1. AGREEMENT DOCUMENTS**

The Agreement Documents that constitute the entire Agreement between Lake County and Consultant are in order of precedence:

- A. This Agreement
- B. Consultant's Scope of Work Proposal dated September 23, 2019 and noted herein as Exhibit A
- C. Statement of Interest (SOI) Number 19023 noted herein as Exhibit B
- D. Task Order A (Task Order 19023-6A), Vernon Hills – Knollwood Roundout Water System Modeling, dated October 18, 2019, noted herein as Exhibit C

In the event of conflict between or among the above Documents, the Documents listed above are in the order of precedence.

**SECTION 2. SCOPE OF WORK**

Perform hydraulic modelling and capacity analysis for portions of the Lake County Public Works Department (LCPWD) water systems. Create a report recommending strategic actions to optimize the LCPWD water systems to support a successful and sustainable facilities, capable of accommodating economic development. Provide resulting analysis in a software or database to be managed by the LCPWD after creation, allowing for in-house analysis of the effectiveness of solutions, evaluation of future land use decisions, and monitoring of long-term system performance. All deliverables should be compatible with

ESRI Geographic Information Systems (GIS) software.

For each project the consultant shall provide a detailed scope of work with specific deliverables, as well as an estimate of hours and timeframe for completion for each task order that will be mutually agreed upon by the Parties. Exhibit A identifies the first such project, and additional projects be assigned at the direction of the Director of Public Works, or their designee. The Consultant shall provide an estimate of hours and timeframe for completion for each additional project that will be mutually agreed upon by the Parties.

### **SECTION 3. DURATION**

This contract shall be in effect for a two (2) years period from the date of award. Lake County reserves the right to renew this contract for three (3) additional one (1) year period(s), subject to acceptable performance by the Consultant. At the end of any contract term, Lake County reserves the right to extend this contract for a period up to sixty (60) days for the purpose of getting a new contract in place.

### **SECTION 4. AGREEMENT PRICE**

The County will pay the Consultant based on an hourly rate and multiplier for services as noted in the Consultant's proposal based on the following schedule and identified in Exhibit A. The total value of task orders shall not exceed \$200,000 in a fiscal year. Subject to the appropriation of sufficient funds.

<b><i>Employee Classification</i></b>	<b><i>Hourly Billing Rate</i></b>
Principal	\$195
Senior Engineer IV	\$180
Senior Engineer III	\$160
Senior Engineer II	\$145
Senior Engineer I	\$130
Engineer IV	\$120
Engineer III	\$110
Engineer II	\$100
Engineer I	\$95
Engineer Technician V	\$145
Engineer Technician IV	\$130
Engineer Technician III	\$125
Engineer Technician II	\$110
Engineer Technician I	\$90
Professional Surveyor I	\$150
Administrative Support III	\$85
Administrative Support II	\$80
Administrative Support I	\$75
Marketing Professional III	\$85
Marketing Professional II	\$80
Marketing Professional I	\$80
Control Systems Integrator IV	\$175
Control Systems Integrator III	\$150
Control Systems Integrator II	\$140

<b><i>Employee Classification</i></b>	<b><i>Hourly Billing Rate</i></b>
Control Systems Integrator I	\$115
IT Consultant IV	\$175
IT Consultant III	\$145
IT Consultant II	\$120
IT Consultant I	\$100
IT Professional IV	\$130
IT Professional III	\$100
IT Professional II	\$90
IT Professional I	\$85

Hourly rates for services in the optional years 3 through 5 and as noted in the Consultant's proposal dated February 15, 2019 based on the following schedule and identified in Exhibit A.

Lake County shall make periodic payments to Consultant based upon actual progress within 30 days after receipt and approval of invoice. Said payments shall not exceed the hourly rates identified in the Agreement, and full payments for each task shall not be made until the task is completed and accepted by Lake County.

#### **SECTION 5. PRICE ESCALATOR**

Prices throughout the twelve months initial term of the contract shall remain firm/fixed. Written requests for price revisions after the first twelve months shall be submitted at least sixty (60) days in advance of the annual contract period. Requests must be based upon and include documentation of the actual change in the costs of the components involved in the contract and shall not include overhead and profit. Changes in the contract price shall be made in the amount of the actual change in cost or the percentage increase in the U.S. Average Consumer Price Index for the Midwest Urban - per category "All Items," or 3 percent whichever is less. Surcharges for fuel and/or other costs shall not be allowed. The County reserves the right to reject any price increase and to terminate the contract.

#### **SECTION 6. INVOICES & PAYMENT**

- A. An invoice will be submitted for each project task order and Consultant shall submit invoice(s) detailing the products and services provided and identify the purchase order number on all invoices. For tasks designated as "general duties, as assigned," a brief summary of project description will be included.
- B. Invoices may be submitted for work performed on a monthly basis based on actual time performed in the amount not-to-exceed in Section 6. The County's fiscal year begins December 1st of each year. Prior to December 7th of any year, an invoice shall be submitted for all work completed prior to November 30th of the completed fiscal year. Submit invoice(s) detailing the services provided. Invoices shall clearly identify the work completed during the invoice period, the overall work completed to-date, as well as the percentage completion for each task identified in Appendix A. Payments shall be made in accordance with the Local Government Prompt Payment Act.
- C. Consultant shall maintain records showing actual time devoted and cost incurred. The County will reimburse consultant's other direct costs incurred, without mark-up which have been approved by the County. Consultant shall permit a representative from Lake County to inspect and audit all data and records of Consultant for work and/or services provided under this Agreement. Consultant

shall make these records available at reasonable times during the Agreement period and for one year after the termination of this Agreement.

- D. All payments shall be made in accordance with the Illinois Local Government Prompt Payment Act (50 ILCS 505/1 et seq.).

## **SECTION 7. CHANGE ORDERS**

In the event changes to the Scope of the project and/or additional work become necessary or desirable to the parties, the parties shall follow the procedures set forth in this Section. A Change shall be effective only when documented by a written, dated agreement executed by both parties which expressly references this Agreement (a "Change Order"). The Change Order shall set forth in detail: (i) the Change requested, (ii) the reason for the proposed Change; (iii) the cost of the Change; and (iv) the impact of the Change on time for completion of the project.

In the event either party desires a Change, the Project Manager for such party shall submit to the other party's Project Manager a proposed Change Order. If the receiving party does not accept the Change Order in writing within ten (10) days, the receiving party shall be deemed to have rejected the Change Order. If the parties cannot reach agreement on a proposed Change, Consultant shall nevertheless continue to render performance under this Agreement in accordance with its (unchanged) terms and conditions.

Changes that involve or increase in the amounts payable by the County may require execution by the County Purchasing Agent. Some increases may also require approval by the County Board. In those cases where the County Purchasing Agent's signature is required, or County Board approval is needed, the Change Order shall not be deemed rejected by County after ten (10) days provided the Project Manager has indicated in writing within the ten (10) day period of his intent to present the Change Order for appropriate signature or approval.

## **SECTION 8. KEY PERSONNEL**

Consultant shall not replace any Key Personnel without the County's prior written consent, which shall not be unreasonably withheld. Should one of the Key Personnel be reassigned, become incapacitated, cease employment by Consultant, and/or be unable to perform the functions or responsibilities assigned to him or her, Consultant shall (i) within ten (10) business days, temporarily replace them with another properly qualified employee and (ii) within thirty (30) calendar days, permanently replace the contact. Lake County reserves the right with advance notice, and Consultant having the opportunity to remedy, to request the dismissal and removal of Consultant staff from the project for reasonable cause. Any decision to substitute or replace Key Staff for the implementation of proposed solution, will need a prior written consent from the County.

- Provide a summary organizational chart. Identify the primary contact and describe the roles of each key person.
- Provide detailed resumes for all key professionals who will be directly responsible for providing services to the County. Include the following information; title, number of years at your firm, total number of years of experience, professional designations or licenses.

## **SECTION 9. STATEMENT OF OWNERSHIP**

The drawings, specifications and other documents prepared by the Consultant for this Project are the property of the County, and Consultant may not use the drawings and specifications for any purpose not

relating to the Project without the County's consent, except for the Consultant's services related to this Project. All such documents shall be the property of the County who may use them without Consultant's permission for any current or future Lake County project; provided, however, any use except for the specific purpose intended by this Agreement will be at the County's sole risk and without liability or legal exposure to the Consultant.

The Consultant shall retain its copyright and ownership rights in its design, drawing details, specifications, data bases, computer software, and other proprietary property. Intellectual property developed, utilized, or modified in the performance of the services shall remain the property of the Consultant.

#### **SECTION 10. INDEMNIFICATION**

Consultant agrees to indemnify, save harmless, and defend Lake County, its agents, servants, and employees, and each of them against and hold it and them harmless from any and all lawsuits, claims, demands, liabilities, losses, and expenses, including court costs and attorney's fees, for or on account of any injury to any person, or any death at any time resulting from such injury, or any damage to property, which may arise or which may be alleged to have arisen out of or in connection with the work covered by this Agreement caused directly by the negligence or willful or wanton conduct of Consultant. The foregoing indemnity shall apply except if such injury, death, or damage is caused directly by the gross negligence or willful or wanton conduct of Lake County, its agents, servants, or employees or any other person indemnified hereunder.

#### **SECTION 11. INSURANCE**

The Consultant must obtain, for the Contract term and any extension of it, insurance issued by a company or companies qualified to do business in the State of Illinois with an A.M. Best Rating of at least A-and provide the County with a Certificate of Insurance 15 days before the start of the project, and thereafter annually for contracts/ projects that will last more than one year. Insurance in the following types and amounts is necessary and/or where applicable:

##### Commercial General Liability Insurance

In a broad form on an occurrence basis shall be maintained, to include, but not be limited to, coverage for property damage, bodily injury (including death), personal injury and advertising injury in the following coverage forms where exposure exists:

- Premises and Operations
- Independent Contractors
- Products/Completed Operations
- Liability assumed under an Insured Contract/ Contractual Liability
- Personal Injury and Advertising Injury

With limits of liability not less than:

\$ 1,000,000 Each Occurrence

\$ 1,000,000 Products-Completed Operations

\$ 1,000,000 Personal and Advertising injury limit

\$ 2,000,000 General aggregate; the CGL policy shall be endorsed to provide that the General Aggregate limit applies separately to each of the contractor's projects away from premises owned or rented to contractor.

#### Automobile Liability Insurance (if applicable)

Automobile liability insurance shall be maintained to respond to claims for damages because of bodily injury, death of a person, or property damage arising out of ownership, maintenance, or use of a motor vehicle. This policy shall be written to cover any auto whether owned, leased, hired, or borrowed.

The Contractor's auto liability insurance, as required above, shall be written with limits of insurance not less than the following:

\$ 1,000,000 Combined single Limit (Each Accident)

#### Excess/ Umbrella Liability (if applicable)

The Contractor's Excess/ Umbrella liability insurance shall be written with the umbrella follow form and outline the underlying coverage, limits of insurance will be based on size of project:

\$ 2,000,000 per occurrence limit (*minimum, and may be higher depending on the project*)

#### Workers Compensation (Coverage A) and Employers Liability (Coverage B)

Workers Compensation Insurance covering all liability of the Contractor arising under the Worker's Compensation Act and Worker's Occupational Disease Act at limits in accordance with the laws of the State of Illinois. Employers' Liability Insurance shall be maintained to respond to claims for damages because of bodily injury, occupational sickness, or disease or death of the Contractor's employees, with limits listed below:

##### Employers Liability

- a) Each Accident \$1,000,000
- b) Disease-Policy Limit \$1,000,000
- c) Disease-Each Employee \$1,000,000

Such Insurance shall contain a waiver of subrogation in favor of Lake County.

#### Technology Errors and Omissions (if applicable)

The Contractor's Software Developer and/or IT Architect for the plans, including developing and implementing technology for Lake County, or of the project, shall be written with limits of insurance not less than the following:

\$ 1,000,000 per occurrence limit

#### Liability Insurance Conditions

Contractor agrees that with respect to the above required insurance:

- a) The CGL policy shall be endorsed for the general aggregate to apply on a "per Project" basis;
- b) The Contractor's insurance shall be primary & non-contributory over Lake County's insurance in the event of a claim.
- c) Contractor agrees that with respect to the above required insurance, except for Workers Compensation coverage and Technology Errors and Omissions coverage, Lake County shall be named as additional insured, including its agents, officers, and employees and volunteers and be provided with thirty (30) days' notice, in writing by endorsement, of cancellation or material change. A blanket additional insured ISO endorsement is preferred for Contractors who have multiple projects with the County.

- d) Lake County shall be provided with Certificates of Insurance and the appropriate corresponding ISO form endorsements evidencing the above required insurance, prior to commencement of this Contract and thereafter with certificates evidencing renewals or replacements of said policies of insurance at least thirty (30) days prior to the expiration or cancellation of any such policies. No manuscript endorsements will be accepted. Any hard copies of said Notices and Certificates of Insurance and Endorsements shall be provided to:

**Lake County  
Purchasing Division  
18 N. County 9th Floor  
Waukegan, Illinois 60085  
Attn: RuthAnne Hall, Lake County Purchasing Agent**

- e) **Electronic copies of Notices, Certificates of Insurance and Endorsements can be emailed to [Purchasing@lakecountyil.gov](mailto:Purchasing@lakecountyil.gov) in place of hard copies.**

Failure to Comply: In the event the Contractor fails to obtain or maintain any insurance coverage required under this agreement, Lake County may purchase such insurance coverage and charge the expense to the Contractor.

#### **SECTION 12. INDEPENDENT CONTRACTOR**

Consultant is defined and identified as an independent contractor, not an employee or agent of Lake County and the County has no right to control or direct Consultant's manner, detail, or means by which Consultant accomplishes tasks under this Agreement.

#### **SECTION 13. DISPUTE RESOLUTION**

All issues, claims, or disputes arising out of this Agreement shall be resolved in accordance with the Appeals and Remedies Provisions in Article 9 of the Lake County Purchasing Ordinance.

#### **SECTION 14. NO IMPLIED WAIVERS**

The failure of either party at any time to require performance by the other party of any provision of this Agreement shall not affect in any way the full right to require such performance at any time thereafter. Nor shall the waiver by either party of a breach of any provision of this Agreement be taken or held to be a waiver of the provision itself.

#### **SECTION 15. SEVERABILITY**

If any part of this Agreement shall be held to be invalid for any reason, the remainder of this Agreement shall be valid to the fullest extent permitted by law.

#### **SECTION 16. JURISDICTION, VENUE, CHOICE OF LAW AND PROFESSIONAL STANDARDS**

This Agreement shall be governed by and construed according to the laws of the State of Illinois. Jurisdiction and venue shall be exclusively found in the 19th Judicial Circuit Court, State of Illinois.

## **SECTION 17. NOTICES AND COMMUNICATIONS**

All notices and communications which may be given by Lake County to Consultant relative to this Agreement shall be addressed to the Consultant at the address shown herein below:

Baxter & Woodman, Inc.  
8678 Ridgefield Road  
Crystal Lake, IL 60012  
Attn: Carolyn Grieves

Copies of any notices and communications which propose to alter, amend, terminate, interpret, or otherwise change this Agreement shall be provided to: Lake County Purchasing Division, 18 North County Street, Waukegan, Illinois 60085-4350; Attention: Purchasing Agent.

## **SECTION 18. ASSIGNMENT**

Neither the Consultant nor the County shall assign any duties of performance under this Agreement without the express prior written consent of the other.

## **SECTION 19. MODIFICATION**

This Agreement may be amended or supplemented only by an instrument in writing executed by the party against whom enforcement is sought.

## **SECTION 20. TERMINATION**

The County reserves the right to terminate this Agreement, or any part of this Agreement, upon thirty (30) days written notice. In case of such termination, the Consultant shall be entitled to receive payment from the County for work completed to date in accordance with terms and conditions of this Agreement. In the event that this Agreement is terminated due to Consultant's default, the County shall be entitled to contract for consulting services elsewhere and charge the Consultant with any or all losses incurred, including attorney's fees and expenses.

## **SECTION 21. CONFIDENTIALITY**

Both parties acknowledge that Consultant's documents and dealings related to this Agreement are subject to the Illinois Open Meetings Act (5 ILCS 120/1 et seq.) and the Illinois Freedom of Information Act (5 ILCS 140/1 et seq.).

## **SECTION 22. NEWS RELEASES**


Consultant may not issue any news releases regarding this Agreement without prior approval from Lake County.

IN WITNESS HEREOF, the undersigned have caused this Agreement to be executed in their respective names on the dates hereinafter enumerated.

Lake County:

Baxter & Woodman, Inc.

\_\_\_\_\_  
Purchasing Agent  
Lake County

  
\_\_\_\_\_  
John V. Ambrose, P.E.,  
President/CEO

Date \_\_\_\_\_

Date October 18, 2019

## EXHIBIT A

September 23, 2019

Lake County Purchasing Division  
Purchasing Agent  
18 North County Street  
Waukegan, IL 60085-4350

***Subject: Water System Modeling and Capacity Analysis - Lake County SOI Number 19023-6  
Scope and Fee Proposal***

Dear Purchasing Agent,

Baxter & Woodman, Inc. is pleased to provide the following scope and fee proposal for Water System Modeling and Capacity Analysis Services. The services will include performing hydraulic modelling and capacity analysis for portions of the Lake County Public Works Department (LCPWD) water systems. Creating a report recommending strategic actions to optimize the LCPWD water systems to support successful and sustainable facilities, capable of accommodating economic development. Providing resulting analysis in a software or database to be managed by the LCPWD after creation, allowing for in-house analysis of the effectiveness of solutions, evaluation of future land use decisions, and monitoring of long-term system performance. All deliverables will be compatible with ESRI Geographic Information Systems (GIS) software.

The key team members that will provide these services are listed below:

John V. Ambrose, PE	Principal in Charge
Carolyn Grieves, PE	Project Manager
Philip Perna, PE	Quality Management
Lauren Schuld, PE	
Andy Zaletel, GISP	
Peter Kozak, PE	
Connie Kilgore	
Joe Bappert	
Brian Katamay	
Peter Ferretti, GISP	

Baxter & Woodman, Inc. will be responsible for comprehensive coordination of the project portfolio, including overall relationship management, and will assist the County with specific projects identified with an individual task order. Project services to be identified in the scope development of each task order proposals will include, but will not be limited to, the following considerations:

- **Joint Scope Meeting:** Baxter & Woodman, Inc. will conduct a scope meeting with relevant LCPWD staff, including internal and external stakeholders, such as LCPWD Operations and Maintenance personnel.

- **Develop Detailed Scope of Work:** Baxter & Woodman, Inc. will develop project proposals for each independent task order, working closely with Lake County Public Works Department (LCPWD) staff. The scope of work will identify specific deliverables and tasks, as well as a proposed value of staff time for the project. The following considerations will be given to scope development:
  - Communications services, including community outreach
  - Coordination convention and milestones
  - Timeline for each project deliverable
  - All permitting requirements

Baxter & Woodman, Inc. will provide Water System Modeling and Capacity Analysis Services per the following rates. Hourly rates, unit rates, and expenses will be evaluated and adjusted on or about January 1 of each year, with updated rates provided to the County.

BAXTER & WOODMAN, INC  
2019 STAFF RATES

<i><b>Employee Classification</b></i>	<i><b>Hourly Billing Rate</b></i>
Principal	\$195
Senior Engineer IV	\$180
Senior Engineer III	\$160
Senior Engineer II	\$145
Senior Engineer I	\$130
Engineer IV	\$120
Engineer III	\$110
Engineer II	\$100
Engineer I	\$95
Engineer Technician V	\$145
Engineer Technician IV	\$130
Engineer Technician III	\$125
Engineer Technician II	\$110
Engineer Technician I	\$90
Professional Surveyor I	\$150
Administrative Support III	\$85
Administrative Support II	\$80
Administrative Support I	\$75
Marketing Professional III	\$85
Marketing Professional II	\$80
Marketing Professional I	\$80
Control Systems Integrator IV	\$175
Control Systems Integrator III	\$150
Control Systems Integrator II	\$140
Control Systems Integrator I	\$115
IT Consultant IV	\$175

<b><i>Employee Classification</i></b>	<b><i>Hourly Billing Rate</i></b>
IT Consultant III	\$145
IT Consultant II	\$120
IT Consultant I	\$100
IT Professional IV	\$130
IT Professional III	\$100
IT Professional II	\$90
IT Professional I	\$85

Please contact Carolyn Grieves with any questions related to contract development, the scope of services, or the presented hourly and unit rates. She may be contacted directly at 815-444-3230 or [cgrieves@baxterwoodman.com](mailto:cgrieves@baxterwoodman.com).

Sincerely,

BAXTER & WOODMAN, INC.  
CONSULTING ENGINEERS



John V. Ambrose, P.E.  
President/CEO

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## EXHIBIT B



# Lake County

## Purchasing Division

<http://doingbusiness.lakecountyil.gov/>

Please note the submission location is:

**Lake County**  
**Attn: Purchasing Division**  
 18 N. County Street – 9<sup>th</sup> Floor  
 Waukegan, IL 60085

Contact information for Lake County Purchasing is:

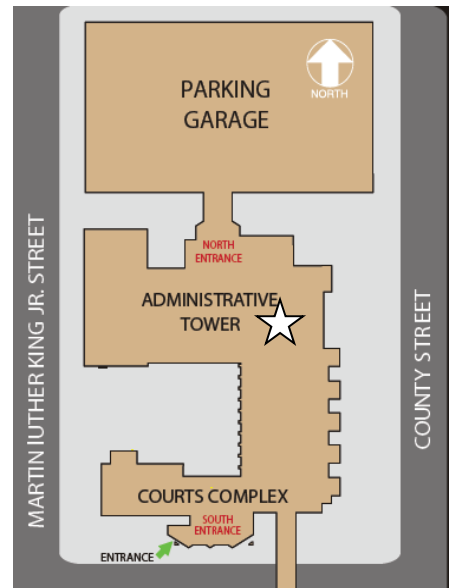
**Purchasing Division**

Phone 847-377-2992

Fax 847-984-5889

Email: [purchasing@lakecountyil.gov](mailto:purchasing@lakecountyil.gov)

Waukegan Campus



ALL SUBMITTALS SHOULD BE LABELED ACCORDINGLY. PLEASE USE BELOW LABEL FOR YOUR CONVENIENCE.

✂-----✂

SOI No. 19023	Deliver to:  Lake County <b>ATTN: PURCHASING DIVISION</b> 18 N. County Street – 9 <sup>th</sup> Floor Waukegan, IL 60085
Buyer: Yvette Albarran	
<u>SOI Description</u> Professional Consulting, Surveying and Engineering Services for Lake County Public Works	
<u>SOI Due Date*</u> February 14, 2019 at 2:00 p.m.	

\*Please note: Responses are due at the 9<sup>th</sup> floor reception desk and shall be time stamped by 2:00 p.m. local time on the required due date. Please allow sufficient time for parking, passing through security and arriving at the 9<sup>th</sup> floor.

**STATEMENT OF INTEREST # 19023**  
**STATE OF ILLINOIS**  
**Professional Architectural and Engineering Services**  
**for Lake County**

Notice is hereby given that Statements of Interest (SOI) (one original and one electronic unprotected copy) will be received from qualified, professional architectural and engineering firms interested in providing the services, as described herein. Firms are encouraged to submit the minimum amount of information as necessary to indicate their interest, experience, and qualifications to perform the work described for any project, service, or combination thereof. Proposals do not need to cover the entire scope of the project types listed in this SOI; firms may submit for as many or as few services as desired. **To Lake County Purchasing, 18 N. County St., 9th Floor, Waukegan, IL 60085 until February 14, 2019 at 2:00 p.m.**

CONTACT / QUESTIONS: Please submit questions on our website at <http://lakecountypurchasingportal.com> by selecting the SOI number and addendum link. Questions may also be submitted via email to [purchasing@lakecountyil.gov](mailto:purchasing@lakecountyil.gov). All questions shall be submitted no less than seven (7) days prior to the SOI opening date. No interpretation of the meaning of the Statement of Interest will be made orally. Failure to request an interpretation constitutes a waiver to later claim that ambiguities or misunderstandings caused a firm to improperly submit a proposal. Lake County will review submissions and conduct negotiations in accordance with the Local Government Professional Services Selection Act (50 ILCS 510/).

**LAKE COUNTY**

Lake County is located in northeast Illinois, between the Chicago and Milwaukee metropolitan areas. Lake County is home to more than 700,000 residents. Lake County is committed to open government and transparency, and the County board's conservative fiscal policies have allowed the County to maintain fiscal stability and achieve AAA bond rating from Standard & Poor's and Moody's. Lake County is governed by a 21-member board and managed by a County Administrator.

**PROJECT BACKGROUND**

The Lake County Public Works Department (LCPWD) provides essential water and wastewater services to over 40% of the County's residents, and the LCPWD owns and operates three water reclamation facilities, twelve water distribution systems, 345 miles of sewer main, 300 miles of water main, and all associated infrastructure. Additionally, the LCPWD ownership portfolio includes many buildings, including administrative offices, maintenance facilities, and operational buildings (pump houses, treatment processes housing). The LCPWD has undertaken a strategic prioritization process to identify critical capital improvement projects. Major capital projects are anticipated for the foreseeable future, with an estimated annual value of \$10 million.

**GENERAL QUALIFICATIONS**

The statement of interest must provide your firm's qualifications, including ability of professional staff, its past record and experience, performance data on file, willingness to meet time and budget requirements, location, workload of the firm, work on similar projects, past performance on similar projects and financial stability related to design, bidding, and construction inspection for the following projects. Please indicate, by project type, the project type(S) listed for which your firm is interested in providing Professional Consulting Services.

**1. Project and Construction Management Services**

Manage and oversee consultant capital improvement projects on behalf of the Lake County Public Works Department (LCPWD). Act as the principal agent of the LCPWD in the management of administrative duties of project management, providing resident engineering services, reviewing design and bid documents. Maintain mission alignment, ensure quality, oversee project timeline, track processes and procedures, perform issue

resolution, arrange and attend regular coordination meetings with County staff, manage pay requests, review and negotiate change orders, and address contract issues in partnership with Lake County staff. Oversee field construction and resolve issues. Projects are often highly complex infrastructure improvements including complex coordination sequencing with stakeholders to maintain operational needs throughout the rehabilitation project. Engage with stakeholders and the public, as necessary.

## **2. Facility Master Plan/Risk Assessments for Capital Planning**

Perform risk assessments of infrastructure owned, operated and/or maintained by the Lake County Public Works Department, which includes 72 lift stations, seven pump houses, 29 well houses, 10 reservoirs, seven water towers, and three water reclamation facilities. At a minimum, the firm will perform an assessment of these assets and will prioritize repair/replacement by risk of failure; establish a multi-year replacement program utilizing a risk-based asset ranking approach and provide an estimated schedule to prepare the preliminary engineering report. Additionally, the repair/replacement program will account for proposed capital projects by other public agencies that may impact the scheduling and completion of water and sewer main replacement projects. Engage with stakeholders, as necessary, and coordinate with villages, the Illinois Department of Transportation, the Lake County Division of Transportation, and Townships to consider their upcoming capital plans that may affect projects planned for the Lake County Public Works Department. A similar assessment has been performed for underground sewer and water mains.

## **3. Building Facility Improvement Design, Technical Analysis and Construction Oversight**

Prepare plans, specifications and cost estimates for various facility improvements at Lake County Public Works Department facilities including, but not limited to:

- Mechanical improvements, including, but not limited to, the replacement of air handling units, variable air volume boxes, ductwork, chillers, piping and appurtenances, independent temperature control systems, motorized control valves, flow meters and direct digital controls.
- Electrical improvements including, but not limited to, the replacement of electrical switchgears, automatic transfer switches, transformers, main distribution panels, local panels, motor control centers, stand-by generators and direct digital controls.
- Elevator modernizations improvements including, but not limited to, traction elevators, hydraulic elevators, screw lifts, escalators and direct digital controls.
- Various security improvements including, but not limited to, IP-wireless duress alarm systems, access control systems, high definition security camera systems, and enterprise security automation systems.
- Various fire alarm improvements including, but not limited to, control panels, initiating devices, notification devices, networking and integration.
- Various fire protection systems improvements including, but not limited to, fire suppression systems, fire barriers, smoke barriers, smoke control, smoke evacuation, space planning and risk analysis.
- Various building automation improvements including, but not limited to, geographical representation of mechanical equipment, geographical representation of electrical equipment, HVAC controls and monitoring, electrical system monitoring, lighting system controls and monitoring, fire alarm system monitoring, life safety controls and monitoring, equipment run conditions, energy usages, and e-mail alarming.

## **4. Design Standards and Details**

Develop design standards and details language for the Lake County Public Works Department (LCPWD). The standards and details will be applied to all construction projects related to LCPWD infrastructure, including new construction, repair, and replacement of the following: water main, gravity sanitary sewer main, sanitary force main, pump stations, lift stations, valves, hydrants, air release valves, manholes, record drawing standards etc. The LCPWD has published standard details, which will be used as the starting point for this document, along with the most recent version of the Standard Specifications for Water and Sewer Construction in Illinois. Coordinate with LCPWD staff to gather input from internal stakeholders, including engineers, field inspectors,

maintenance staff, operations personnel, and leadership. Provide a final draft in Microsoft Word, Adobe PDF, and AutoCAD format to be shared online.

#### **5. Annual Inflow and Infiltration (I&I) Monitoring and Sanitary Sewer Evaluation Survey (SSES) Services**

Review the sanitary sewer systems owned and operated by the Lake County Public Works Department and recommend a strategic, long-term approach to comprehensively address inflow and infiltration to ensure the systems operate at optimal conditions, reducing stress on infrastructure, including interceptor sewers, lift stations, pump stations, and water reclamation facilities. Perform flow monitoring activities and provide data via an easy to use portal. Complete sanitary sewer evaluation services, including, but not limited to, manhole inspections, smoke testing, dye flooding, and televising. Monitor and assess the success of I&I reduction measures. Provide annual program reports focused on overall strategy, meter basin performance, results achieved, and recommended next steps. Data should be compatible with ESRI Geographic Information Systems (GIS) software. Engage with stakeholders, including outside jurisdictions with competing priorities and limited resources.

#### **6. Water System Modelling and Capacity Analysis**

Perform hydraulic modelling and capacity analysis for portions of the Lake County Public Works Department (LCPWD) water systems. Create a report recommending strategic actions to optimize the LCPWD water systems to support a successful and sustainable facilities, capable of accommodating economic development. Provide resulting analysis in a software or database to be managed by the LCPWD after creation, allowing for in-house analysis of the effectiveness of solutions, evaluation of future land use decisions, and monitoring of long-term system performance. All deliverables should be compatible with ESRI Geographic Information Systems (GIS) software.

#### **7. Sanitary Sewer System Modelling and Capacity Analysis**

Perform hydraulic modelling and capacity analysis for portions of the Lake County Public Works Department (LCPWD) sanitary sewer system. Create a report recommending strategic actions to optimize the LCPWD sanitary sewer networks to support a successful and sustainable system, capable of accommodating economic development. Provide resulting analysis in a software or database to be managed by the LCPWD after creation, allowing for in-house analysis of the effectiveness of solutions, evaluation of future land use decisions, and monitoring of long-term system performance. All deliverables should be compatible with ESRI Geographic Information Systems (GIS) software.

#### **8. General Engineering Consulting Services**

Provide general engineering consulting services, including, but not limited to, sewer and water investigations, preliminary studies, preliminary design, final studies, and final design for unplanned needs, such as time-sensitive repair/improvement project design/review and analysis of complex development proposals. Monitor construction and assist with issue resolution. In addition to civil engineering expertise, electrical engineering, mechanical engineering, structural engineering and automation engineering services may be required. Complete other related work, as assigned. Engage with stakeholders and the public, as necessary.

#### **9. Underground Utility Design Engineering Consulting Services**

Provide engineering consulting services for utility relocation design projects, including, but not limited to, preliminary review, survey, preliminary design, final design, permitting, bidding and construction services. Example projects include, but are not limited to, relocation as a result of a roadway project. Coordinate with roadway or utility authority and their consultant. Essential skills include understanding complex roadway and utility projects, including, but not limited to, understanding complex construction phasing, obtaining variances to allow utilities to remain under the pavement, experience coordinating permitting with roadway authorities, experience coordinating relocation in cooperation with utility companies, negotiating agreements with the transportation authority to perform work as a shared service, securing grant funds where possible, interpreting

conditions of existing easements, and securing new easements. Oversee field construction and resolve issues. Review the history of easements and aid in obtaining necessary easements. Engage with stakeholders and the public, as necessary.

#### **10. General Surveying Consulting Services**

Provide general survey consulting services, including, but not limited to, producing map exhibits based on legal descriptions, Parcel Index Number (PIN) lists, and surveyed boundary descriptions, locating and staking property lines and construction improvements, preparing topographic survey exhibits and plats of survey. Locate all easement documents associated with specific properties and projects. Visual renderings of legal descriptions and surveyed boundary descriptions must be provided within five business days. Complete other related work, as assigned.

#### **11. Sewer Facilities Analysis, Design and Construction Oversight**

Investigate sanitary sewer system issues and improvement options, prepare all necessary surveys, preliminary and final engineering studies, design documents, and bid documents. Flow monitoring data and reports are available for areas of the system. Provide bidding services, including, but not limited to, addressing all addendum. Conduct construction-related services, including, but not limited to, evaluating shop drawings, monitoring construction, preparing change orders, and reviewing contractor pay requests. Obtain all permit approvals and provide as-built record drawings and related documents. Engage with stakeholders and the public, as necessary. Example projects include miscellaneous investigations, sewer lining, and force main rehabilitation.

#### **12. Water Facilities Analysis, Design and Construction Oversight**

Investigate water system issues and improvement options, prepare all necessary surveys, preliminary and final engineering studies, design documents, and bid documents. Provide bidding services, including, but not limited to, addressing all addendum. Conduct construction-related services, including, but not limited to, evaluating shop drawings, monitoring construction, preparing change orders, and reviewing contractor pay requests. Obtain all permit approvals and provide as-built record drawings and related documents. Engage with stakeholders and the public, as necessary. Example projects include miscellaneous investigations, watermain replacement design, and lined watermain construction.

#### **13. Drainage Improvement Analysis, Design and Construction Oversight: North Libertyville Estates Levee**

The North Libertyville Estates levy is approximately 5,700 feet in length and protects roughly 200 homes from Des Plaines River flooding. Presently stormwater ponds upstream of the levy, and the Lake County Public Works Department desires to improve the drainage and install an automatic pumping system. Prepare all necessary surveys, preliminary and final engineering studies, design documents, and bid documents. Provide bidding services, including, but not limited to, addressing all addendum. Conduct construction-related services, including, but not limited to, evaluating shop drawings, monitoring construction, preparing change orders, and reviewing contractor pay requests. Obtain all permit approvals and provide as-built record drawings and related documents. Coordinate utility service (electric) to the site. Review and compile an emergency evacuation plan, including graphic exhibits and an executive summary. Prepare educational information materials for local area residents; topics include, but are not limited to, description of the levee and its purpose, improvement notices, explanation of evacuation plans. Engage with stakeholders and the public, as necessary, including attendance at community meetings.

#### **14. Annual Water Tower and Reservoir Repair/Rehabilitation**

The Lake County Public Works Department owns seven water towers and 10 water reservoirs and conducts an annual repair/rehabilitation program. Perform all necessary inspections and investigations to prepare bid documents for this work. Engage with stakeholders, as necessary.

### **15. Supervisory Control and Data Acquisition (SCADA) Engineering Consulting Services**

Perform field telemetry survey relative to sites within the Southeast Operational Region of Lake County water and sewer systems. Design a telemetry network based on the results of the field survey, existing SCADA network information and historian. Prepare design documents and bid documents. Provide bidding services, including, but not limited to, addressing all addendum conduct construction-related services, including, but not limited to, evaluating shop drawings, monitoring construction, preparing change orders, and reviewing contractor pay requests. Obtain all permit approvals and provide as-built record drawings and related documents. Engage with stakeholders and the public, as necessary. Due to the geographic distance between sites communication between sites using cellular radios and a private network set up by Verizon Wireless has been configured. Panels will be built to house the cellular modem, Programmable Logic Controllers (PLCs) and other necessary equipment. Previous phases of this project installed 900 MHz unlicensed radio and cellular radio communication in other operational areas of the County.

### **SUBMISSION REQUIREMENTS**

Respondents shall include in their SOI a prioritized listing of the above design projects (1 through 15) which are best suited to the capabilities and qualifications of their firm. The SOI shall include a brief description of why they should be chosen for a project(s). The SOQ should be concise and directly relate to the project(s) of interest. The SOI shall be limited to 1 page and each SOQ shall be limited to 10 pages per project.

The County, in accordance with the laws of the State of Illinois, hereby notifies all firms expressing statements of interest that it will affirmatively insure that the contract entered into pursuant to this advertisement will be awarded without discrimination on the grounds of race, color or national origin.

Where appropriate, the responses provided under this section shall include a brief description of examples of outcome based accomplishments that have measurable success factors to demonstrate a firm's qualifications and expertise. All examples should include owner name and contact information.

#### **Section 1.0 – Executive Summary**

Provide a brief summary, which describes and highlights your interest, experience and qualifications for these projects. Submit documentation to establish the professional licensing necessary to be eligible for these projects.

#### **Section 2.0 – Relevant Experience**

Relevant Experience shall clearly indicate the firm and which member on the project team participated in all relevant experience submitted. All experience submitted for a team member while in the employment of a different firm shall include their title and role on the project as well as the firm name that held the contract for all work submitted for relevant experience.

#### **Section 3.0 – Project Management Team**

Describe your approach relative to the delegation of responsibility and assignment of authority and interaction points with the County. Include a listing of key personnel and/or sub consultants proposed for the project team. Include a resume and/or relevant experience of each key team member and a brief description of the tenure or work history among team members.

Provide an organization chart graphically illustrating how your firm would staff and structure your proposed team to perform these projects. Include delegation of responsibility and assignment of authority and interaction points with the County.

List specific personnel (including sub consultants) proposed for the project team, including the project assignment and role or area of responsibility of each individual. Identify the staff team and each members' availability capacity throughout project stages. Provide a resume for each proposed team member, specifically stating tenure or experience with your firm, experience and qualifications of each individual. The above list represents a minimum submittal for key personnel from the Owner's Representative and Project Manager Team.

#### **Section 4.0 – Budget**

Describe your firm's methods to maximize and maintain quality project management and project image while maintaining tight budget constraints. Cite examples of specific things that you have done on other projects to meet this objective.

Describe your firm's approach to value engineering and what contribution does the firm typically provide during each phase of design and construction. Value engineering should include the ability of the proposer to evaluate cost saving opportunities in the construction project and add value to the project by applying a creative approach to optimize lifecycle, energy consumption and operational costs resulting from the design.

#### **Section 5.0 - Quality of Documents**

List the steps and describe the quality control processes we can expect from the firm during each phase of the design process to assure careful coordination of all disciplines and a high quality of design and contract documents.

### **EVALUATION PROCESS**

Lake County will review submissions and conduct negotiations in accordance with the Local Government Professional Services Selection Act (50 ILCS 510/). The following qualifications will be considered by the County:

- A. Proven experience in design and successful implementation of similar projects.
- B. The strength of value engineering approach, and the proposed engineering approach.
- C. The evaluation of examples of outcome-based accomplishments that have measurable success factors to demonstrate a firm's qualifications and expertise including the testimonials of owners or owner's agents.
- D. The depth of talent and staffing experienced in the execution of similar projects.
- E. The ability of the proposer to work with other consultants to maximize a design solution while maintaining budgetary discipline.
- F. Design quality control and the ability to understand and translate the client's design goals.
- G. Quality and time availability of key project team members.
- H. A proven consistent engineer team leader that listens to the client and appropriately manages and directs the team's efforts.
- I. Experience and capability presenting to policymakers, stakeholders and the public.

As part of its evaluation process the County may seek additional information from firms found to have resources and methodologies best suited to any one of these projects.

### **TERM OF AWARDED CONTRACTS**

The term of awarded contracts shall be in effect for a two (2) year period from the date of award (initial term) or other period as indicated in each Project Description. Lake County reserves the right to renew the contract for three (3) additional one (1) year periods, or as indicated in each project description, subject to acceptable performance by the Contractor. At the end of any contract term, Lake County reserves the right to extend the contract for a period of up to sixty (60) days for the purpose of getting a new contract in place. For any year beyond the initial year, the contract is contingent on the appropriation of sufficient funds. No charges shall be assessed for failure of the County to appropriate funds in future contract years.

**General Information Sheet**

**AUTHORIZED NEGOTIATORS:**

Name: \_\_\_\_\_ Phone # \_\_\_\_\_ Email: \_\_\_\_\_

Name: \_\_\_\_\_ Phone # \_\_\_\_\_ Email: \_\_\_\_\_

**RECEIPT OF ADDENDA:** The receipt of the following addenda is hereby acknowledged:

Addendum No. \_\_\_\_\_, Dated \_\_\_\_\_

Addendum No. \_\_\_\_\_, Dated \_\_\_\_\_

In submitting this statement of interest, it is understood that the County reserves the right to reject any or all submittals, to accept any alternate submittals, and to waive any informalities in any submittal.

**BUSINESS ORGANIZATION: (check one only)**

\_\_\_\_ Sole Proprietor: An individual whose signature is affixed to this proposal.

\_\_\_\_ Partnership: State full names, titles, and addresses of all responsible principals and/or partners on attached sheet.

\_\_\_\_ Corporation: State of Incorporation: \_\_\_\_\_

\_\_\_\_ Non-profit Corporation

\_\_\_\_ 501c3-- U.S. Internal Revenue Code

By signing this proposal document, the proposer hereby certifies that it is not barred from bidding on a contract as a result of a violation of either Section 33E-3 or 33E-4 of the Illinois Criminal Code of 1961, as amended.

\_\_\_\_\_  
Business Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Print or Type Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

### **References**

Provide FIVE (5) references for projects. Governmental references are preferred over others. (Attach additional pages as needed)

Entity: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, Zip Code: \_\_\_\_\_

Name of Contact Person \_\_\_\_\_

Email Address: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

Description of Services Provided: \_\_\_\_\_

Date of Service: \_\_\_\_/\_\_\_\_/\_\_\_\_ To \_\_\_\_/\_\_\_\_/\_\_\_\_

Entity: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, Zip Code: \_\_\_\_\_

Name of Contact Person \_\_\_\_\_

Email Address: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

Description of Services Provided: \_\_\_\_\_

Date of Service: \_\_\_\_/\_\_\_\_/\_\_\_\_ To \_\_\_\_/\_\_\_\_/\_\_\_\_

Entity: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, Zip Code: \_\_\_\_\_

Name of Contact Person \_\_\_\_\_

Email Address: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

Description of Services Provided: \_\_\_\_\_

Date of Service: \_\_\_\_/\_\_\_\_/\_\_\_\_ To \_\_\_\_/\_\_\_\_/\_\_\_\_

Entity: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, Zip Code: \_\_\_\_\_

Name of Contact Person \_\_\_\_\_

Email Address: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

Description of Services Provided: \_\_\_\_\_

Date of Service: \_\_\_\_/\_\_\_\_/\_\_\_\_ To \_\_\_\_/\_\_\_\_/\_\_\_\_

Entity: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, Zip Code: \_\_\_\_\_

Name of Contact Person \_\_\_\_\_

Email Address: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

Description of Services Provided: \_\_\_\_\_

Date of Service: \_\_\_\_/\_\_\_\_/\_\_\_\_ To \_\_\_\_/\_\_\_\_/\_\_\_\_

COMPANY NAME \_\_\_\_\_

AUTHORIZED SIGNATURE \_\_\_\_\_

TITLE \_\_\_\_\_

DATE \_\_\_\_\_

## **FIRM QUALIFICATIONS**

**Name and Address of Office from which this contract will be administered**  
(ATTACH ADDITIONAL PAGES AS NEEDED)

Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Email Address \_\_\_\_\_

Project Manager: \_\_\_\_\_

**# Years in Business:** \_\_\_\_\_ **Number of Employees:** \_\_\_\_\_

**Annual Sales: \$** \_\_\_\_\_ **Dunn & Bradstreet #:** \_\_\_\_\_

**Indicate if firm is a certified M/W/DBE and attach certification:** \_\_\_\_\_

**List employees who will be dedicated to the Project:** (Attach additional pages as necessary)

NAME	POSITION TITLE	NUMBER OF YEARS	AREA OF RESPONSIBILITY/TASK EXPERIENCE
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

## EXHIBIT C

**PROJECT SCOPE FOR ENGINEERING SERVICES PER CONTRACT NUMBER #19023-6  
TASK ORDER A – VERNON HILLS AND KNOLLWOOD RONDOUT WATER MODELS**

This AGREEMENT is entered into by and between Lake County (“County”) and Baxter & Woodman, Inc. (“Consultant”), 8678 Ridgefield Road, Crystal Lake, IL 60012.

**RECITALS**

WHEREAS, Lake County has entered into an agreement with the Consultant to provide Engineering services for Vernon Hills and Knollwood Rondout Water Models; and

WHEREAS, Lake County requires such Engineering services for:

Vernon Hills and Knollwood Rondout Water Models as described in Attachment A.

**NOW, THEREFORE, Lake County and the Engineer AGREE AS FOLLOWS:**

**SECTION 1. AGREEMENT DOCUMENTS**

This AGREEMENT constitutes the agreement for an individual task order subordinate to the overall agreement for Engineering services.

**SECTION 2. SCOPE OF SERVICES**

The Engineer shall provide engineering services described in Attachment A.

**SECTION 3. DURATION**

The work shall be completed within 270 days after execution of this Agreement.

**SECTION 4. AGREEMENT PRICE**

Lake County will pay to the Engineer the amount not to exceed \$150,670 per the Fee Estimate Summary provided in Attachment A.

**SECTION 5. DELIVERABLES**

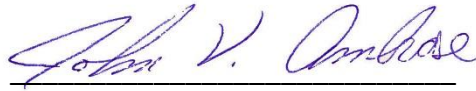
The Engineer shall provide deliverables as identified in Attachment A.

IN WITNESS HEREOF, the undersigned have caused this Agreement to be executed in their respective names on the dates hereinafter enumerated.

Lake County:

Baxter & Woodman, Inc.

\_\_\_\_\_

  
\_\_\_\_\_

Purchasing Agent  
Lake County

John V. Ambrose, P.E.  
President/CEO

Date: \_\_\_\_\_

Date: October 18, 2019 \_\_\_\_\_

## **PROJECT SCOPE FOR ENGINEERING SERVICES PER CONTRACT NUMBER #19023-6**

### **TASK ORDER A**

#### **VERNON HILLS AND KNOLLWOOD RONDOUT WATER MODELS**

Project Description: Update the County's GIS and build a WaterGEMS Water Model for the Villages of Vernon Hills and Knollwood Rondout. The Water models will include the creation of an Extended Period Simulation Model to be used to evaluate Operational Efficiencies for both systems. Provide a summary of water system recommendations for both systems.

The Engineer shall provide the following engineering services for each water model.

1. PROJECT MANAGEMENT
  - A. Plan, schedule, and control activities to complete the Project. These activities include, but are not limited to, budgeting, scheduling, and monitoring the scope of services.
  - B. Submit a monthly status report via email describing tasks completed the previous month and outlining goals for the subsequent month.
  - C. Establish milestone dates and task completion.
2. PROJECT MEETINGS
  - A. KICKOFF MEETING – A Project Workshop meeting with County staff and the Project team will be held for the Water Distribution Model. The purposes of the meeting are to establish clear lines of communication, introduce the County staff to the team members, and establish the County's detailed needs, objectives, and goals for the Project. The meeting will also be utilized to obtain information, plans, atlases, and other data to be supplied by the County, and set schedules and guidelines for future design meetings.
  - B. GIS DATA COORDINATION – Coordination with water department staff to review GIS updates and provide input on missing water system data (age, pipe material, diameter, connectivity, and location.)
  - C. MEETINGS – Conduct up to six (6) meetings with County staff at times during the Project to clarify system layout and operations questions, model results, and distribution system recommendations.
3. EXISTING CONDITIONS/HISTORY REVIEW
  - A. Existing water system GIS.
  - B. Existing water distribution system maps and subdivision plans and as-builts, including any recent changes and improvements, with pipe ages and typical materials.
  - C. Engineering reports previously completed on the water system.
  - D. Water consumption records and water billing data.
  - E. Pumping records.

- F. List of known problem areas (low pressure, high pressure, poor water quality, low fire flow, etc.).
- G. Descriptions of existing storage facilities.
- H. Description of standard operating procedures for the water system including pump control logic and setpoints.
- I. Current population estimates or densities by quarter section, census tract, or other small geographic area.
- J. Copies of any available topographic maps.
- K. Existing water consumption records from individual service accounts, if available in acceptable electronic format.

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. Data will be reviewed for connectivity and cohesiveness to simplify integration with WaterGEMS® software. Hydrants, booster stations, and storage facilities must all be connected to the system.
- B. Unique Model Structure IDs will be created to link with the Public Works ID Numbers. Public Works ID Numbers will not be modified. This will establish a link with the WaterGEMS® model, allowing model results to be incorporated within the GIS.
- C. Missing data necessary for model construction will be identified and populated. This missing data includes pipe size, material, and installation date.
  - 1) Atlases of applicable areas will be provided to County staff to review and mark up. Markup data will be incorporated in the GIS prior to WaterGEMS® model construction.
- D. 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 County use, and permits future updates to be migrated into and out of the geodatabase utilized by WaterGEMS®.
- E. Provide a digital copy of the revised ArcGIS dataset in a format specified by County staff.

5. MODEL PREPARATION – Prepare a water model in WaterGEMS® for the County water system using existing atlas and GIS information. Work directly with County staff to concur on design information, including control elevations, system pressures, and system constraints. Confirm with County staff that the resulting system in the modeling software accurately represents the actual distribution system.

6. MODEL CALIBRATION
  - A. Calibrate the model by using hydrant test data previously completed and additional testing 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 stress testing.
  - B. In the event that 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, i.e., locate closed valves in the system and conduct additional flow tests. (This additional work will be performed on an hourly rate analysis basis based on the 2019 staff rates table in addition to the original Engineering Fee).
7. EXTENDED PERIOD SIMULATION (EPS) – Develop an EPS model that will be used to identify problem areas in the existing system during a variety of flow conditions. Enter diurnal demand curves, pump curves, estimated starting water ages within the tanks and reservoirs, and tower control levels into the model to simulate actual system operation. The EPS model will be used to evaluate operational efficiency and determine the adequacy of elevated tanks, water mains, pumps, valves, and connection points over a 24-96 hour period.
8. DISTRIBUTION SYSTEM ANALYSIS SCENARIOS – The following is a list of recommended scenarios that will provide the information most critical to the current needs. Exhibits will be prepared to clarify the scenario analysis.
  - 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 program, 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 today's maximum day demand and future demand conditions. The results produced by the model will provide the County 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. *Existing Operations* – The water model will be used to evaluate the operations of your existing facilities and help determine an optimal flow balance for your system.
  - E. *Water Main Break Analysis* - The County compiled break data to be provided. Develop a water main replacement rank for each pipe that has a history of main breaks based on water main break data, remaining pipe age, 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. *Chlorine Residual Analysis* – Estimated chlorine residual levels will be determined at each node in the EPS model. The model will use data collected by the County and will be used to evaluate the system's target chlorine levels and make operational recommendations, if necessary. The model will be used to identify if any looping or interconnects will help improve chlorine residuals. This project does not include the development of a unidirectional flushing program or the evaluation of potential DBPs.
  - G. *Valve Isolation* – Use Esri's Utility Network Analyst toolset to identify assets affected by outages and main breaks.
  - H. *Planned Capital Improvements* – Review and evaluate the County's planned capital improvement program and proposed interconnects and make recommendations, if necessary.
9. 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; available fire flows with recommended improvements; and water age. Confirm with County staff that exhibits accurately represent water system.
10. RECOMMENDATIONS FOR DISTRIBUTION SYSTEM IMPROVEMENTS – A digital and hard copy report outlining the results of the existing system analysis, a prioritized list of recommendations, and opinions of probable costs estimates will be prepared. An electronic copy of the final water model and ArcGIS dataset with model results will be delivered to the County.

LAKE COUNTY DEPARTMENT OF PUBLIC WORKS

TASK ORDER A

VERNON HILLS AND KNOLLWOOD RONDOUT WATER MODELS

DETAILED FEE BREAKDOWN

Task Order A - Water Models		Sr. Eng. IV \$ 175	Sr. Eng. I \$ 135	GIS \$ 120	Admin Sup. \$ 85	Total Hours	Labor	Direct Costs	Task Total
TASK	SUBTASK								
1. Project Management						12	\$ 2,100	\$ -	\$ 2,100
Project Managment		12				12	\$ 2,100	\$	2,100
2. Project Meetings						76	\$ 11,780	\$ 480	\$ 12,260
Kickoff meeting		6	6			12	\$ 1,860	\$ 60	\$ 1,920
GIS Roundtable		8	8			16	\$ 2,480	\$ 60	\$ 2,540
Meetings (6)		24	24			48	\$ 7,440	\$ 360	\$ 7,800
3. Vernon Hills System						470	\$ 64,020	\$	\$ 64,020
3a. Existing Conditions Review						34	\$ 4,540	\$	\$ 4,540
	Collect and Review Data	4	16	4		24	\$ 3,340	\$	3,340
	Water Demands			10		10	\$ 1,200	\$	1,200
3b. GIS Data Adjustments						80	\$ 10,180	\$	\$ 10,180
	GIS Updates/Layout revisions	4	20	40		64	\$ 8,200	\$	8,200
	Attributes		4	6		10	\$ 1,260	\$	1,260
	Create maps and exhibits			6		6	\$ 720	\$	720
3c. Water Model						160	\$ 22,000	\$	\$ 22,000
	Build model	2	40			42	\$ 5,750	\$	5,750
	Calibration	2	50			52	\$ 7,100	\$	7,100
	Extended Period Simulation	6	60			66	\$ 9,150	\$	9,150
3d. Distribution System Analysis						196	\$ 27,300	\$	\$ 27,300
	Existing Conditions Analysis	4	16			20	\$ 2,860	\$	2,860
	Water Main Break Ranking	4	14	4		22	\$ 3,070	\$	3,070
	Operations Assessment	4	16			20	\$ 2,860	\$	2,860
	Chlorine Residual Analysis	4	30			34	\$ 4,750	\$	4,750
	Valve Isolation	4	14	20		38	\$ 4,990	\$	4,990
	Review Planned CIP	4	12			16	\$ 2,320	\$	2,320
	Model Recommended Improvements	6	40			46	\$ 6,450	\$	6,450
4. Knollwood/Rondout System						528	\$ 48,980	\$	\$ 48,980
4a. Existing Conditions Review						28	\$ 3,760	\$	3,760
	Collect and Review Data	4	12	4		20	\$ 2,800	\$	2,800
	Water Demands			8		8	\$ 960	\$	960
4b. GIS Data Adjustments						70	\$ 8,980	\$	8,980
	GIS Updates/Layout revisions	4	20	30		54	\$ 7,000	\$	7,000
	Attributes		4	6		10	\$ 1,260	\$	1,260
	Create maps and exhibits			6		6	\$ 720	\$	720
4c. Water Model						118	\$ 16,250	\$	\$ 16,250
	Build model	2	30			32	\$ 4,400	\$	4,400
	Calibration	2	40			42	\$ 5,750	\$	5,750
	Extended Period Simulation	4	40			44	\$ 6,100	\$	6,100
4d. Distribution System Analysis						142	\$ 19,990	\$	\$ 19,990
	Existing Conditions Analysis	4	12			16	\$ 2,320	\$	2,320
	Water Main Break Ranking	4	12	4		20	\$ 2,800	\$	2,800
	Operations Assessment	4	12			16	\$ 2,320	\$	2,320
	Chlorine Residual Analysis	4	20			24	\$ 3,400	\$	3,400
	Valve Isolation	4	6	16		26	\$ 3,430	\$	3,430
	Review Planned CIP	2	8			10	\$ 1,430	\$	1,430
	Model Recommended Improvements	6	24			30	\$ 4,290	\$	4,290
Vernon Hills and Knollwood/Rondout									
5. Final Report						170	\$ 23,310	\$	\$ 23,310
	Draft Techncial Report	20	60	20	6	106	\$ 14,510	\$	14,510
	Final Technical Report	12	40	8	4	64	\$ 8,800	\$	8,800
Total		174	710	192	10	1,256	\$ 150,190	\$ 480	\$ 150,670
							Total	\$	150,670

DELIVERABLES

1. Water System Report (Digital and Hardcopy)
2. GIS Geodatabase including Updated GIS, Average Day Pressure, Maximum Day Fireflow, Recommendations
3. Digital Water Model File