

ERIE COUNTY WATER AUTHORITY
 AUTHORIZATION FORM
 For Approval/Execution of Documents
 (check which apply)

Contract: GHD-009-2001 **Project No.:** 202000133
Project Description: Powdered Activated Carbon System Improvements – Van de Water and Sturgeon Point WTPs

Item Description:

Agreement Professional Service Contract Amendment Change Order
 BCD NYSDOT Agreement Contract Documents Addendum
 Recommendation for Award of Contract Recommendation to Reject Bids
 Request for Proposals
 Other _____

Action Requested:

Board Authorization to Execute Legal Approval
 Board Authorization to Award Execution by the Chairman
 Board Authorization to Advertise for Bids Execution by the Secretary to the Authority
 Board Authorization to Solicit Request for Proposals
 Other _____

Approvals Needed:

APPROVED AS TO CONTENT:

<input checked="" type="checkbox"/> Other (if Applicable)	<u><i>Michael Deane</i></u>	Date: <u>5/12/2020</u>
<input checked="" type="checkbox"/> Chief Operating Officer	<u><i>Joseph J. Stolt</i></u>	Date: <u>5/13/2020</u>
<input checked="" type="checkbox"/> Executive Engineer	<u><i>Jeanne F. Bonaliti</i></u>	Date: <u>5/12/2020</u>
<input checked="" type="checkbox"/> Director of Administration	<u><i>Laronya Lutes</i></u>	Date: <u>5/12/2020</u>
<input checked="" type="checkbox"/> Risk Manager	<u><i>Molly J. Musarra</i></u>	Date: <u>05/13/2020</u>
<input checked="" type="checkbox"/> Chief Financial Officer	<u><i>Karen A. Prudenquest</i></u>	Date: <u>05/13/2020</u>
<input checked="" type="checkbox"/> Legal	<u><i>Margaret A. Murphy</i></u>	Date: <u>05/13/2020</u>

APPROVED FOR BOARD RESOLUTION:

<input checked="" type="checkbox"/> Secretary to the Authority	<u><i>[Signature]</i></u>	Date: <u>05/13/2020</u>
--	---------------------------	-------------------------

Remarks: _____

Resolution Date: _____ **Item No:** _____



ERIE COUNTY WATER AUTHORITY

INTEROFFICE MEMORANDUM

May 12, 2020

To: Terrence D. McCracken, Secretary to the Authority

From: Leonard F. Kowalski, Executive Engineer *LFK*

Subject: Contract GHD-009-2001
Powdered Activated Carbon System Improvements
Van de Water and Sturgeon Point Water Treatment Plants
ECWA Project No. 202000133

The following material is attached:

- Blue Authorization Form indicating the requested Board action and approvals needed.
- Professional Service Contract for the above referenced project (2 copies) with GHD, for execution by the Chairman.
- Copy of Interoffice Memorandum from Leonard F. Kowalski, Executive Engineer, dated March 4, 2020, detailing recommendations for the contract assignment after review of Request for Proposals (PN 202000021).

Powdered activated carbon (PAC) is added to the raw water at the Van de Water and Sturgeon Point Water Treatment Plants to control seasonal taste and odor. PAC will also be an important tool in the removal of cyanotoxins associated with potential algal blooms in the source water. It is imperative that ECWA is prepared with a reliable PAC treatment system at each plant and therefore it is proposed to replace the existing PAC equipment under this project to provide greater reliability, operational flexibility, automation/control and redundancy.

Funds for this project are included in the 2020 Capital Budget under 2510 Engineering and Construction - Sturgeon Point, Item 101503 and 2515 Engineering and Construction – Van de Water, Item 101507.

Work on the Powdered Activated Carbon Improvements will start immediately. Construction is anticipated to conclude in the Fall of 2021.

LFK:MWW:jmf
cc: K.Prendergast
R.Stoll
M.Wymer
L.Lester

**PROFESSIONAL SERVICES AGREEMENT
FOR ENGINEERING SERVICES**

This is an Agreement effective as of May 21, 2020 (“Effective Date”) by and between

ERIE COUNTY WATER AUTHORITY
295 Main Street, Room 350
Buffalo, New York 14203

hereinafter referred to as the “Authority,” and

GHD CONSULTING SERVICES, INC.
285 Delaware Avenue, Suite 500
Buffalo, New York 14202

hereinafter referred to as the “Engineer.”

The Authority project, for which engineering services are to be provided under this Agreement, relates to upgrades and improvements to the existing powdered activate carbon (“PAC”) system at the Van de Water Treatment Plant and the Sturgeon Point Water Treatment Plant (the “Project”).

In consideration of the mutual promises set forth in this Agreement, the Authority and the Engineer agrees as follows:

ARTICLE 1 – THE PROJECT

1.01 The existing PAC systems at each treatment plant consist of the original equipment installed when each plant was constructed. The systems at each plant are operational, however due to the age and increasing maintenance, the Authority would like to replace the existing equipment to provide greater reliability, operational flexibility, automation/control and redundancy.

- A. **Van de Water Treatment Plant.** The PAC system at the Van de Water Treatment Plant is in a dedicated room of the Raw Water Pumping Station. Primary components of the system include an 80,000-gallon epoxy-lined concrete bulk carbon slurry storage tank with dust collector and mixer, two slurry transfer pumps, one carbon slurry day tank, and two carbon slurry feed pumps (one duty, one standby). The PAC application point is the 48-inch raw water line in the chemical feed chamber.

- B. **Sturgeon Point Water Treatment Plant.** The PAC system at the Sturgeon Point Water Treatment Plant is in the treatment plant building. Primary components of the system include a 60,000-gallon epoxy-lined concrete bulk carbon slurry storage tank with dust collector and mixer, and two slurry transfer pumps all located on the lower level of the south end of the treatment building. A carbon slurry day tank

and two carbon slurry feed pumps (one duty, one standby) are located on the second level in the chemical feed room. The PAC application point is either to the flash mixers or the two settled water lines leading to the filters.

1.02 Both treatment plants receive 20 to 40-ton bulk shipments of dry PAC. Water is mixed with the carbon upon delivery to form the slurry at an approximate ratio of one pound of dry PAC to one gallon of water. When in use, the operator selects a desired feed rate based on raw water conditions and flowrate. The feed rate is automatically maintained in proportion to a signal from the raw water flowmeter.

ARTICLE 2 – COMPLIANCE STANDARDS

2.01 Standard of Performance

- A. ***Standard of Care:*** The standard of care for all professional engineering and related services performed or furnished by the Engineer under this Agreement will be the care and skill ordinarily used by members of the subject profession practicing under similar circumstances at the time and in the same locality.
- B. ***Technical Accuracy:*** The Authority shall not be responsible for discovering deficiencies in the technical accuracy of the Engineer's services. The Engineer shall correct deficiencies in technical accuracy without additional compensation, unless such corrective action is directly attributable to deficiencies in Authority-furnished information.

2.02 Compliance with Laws and Regulations, and Policies and Procedures

- A. The Authority and the Engineer shall comply with all applicable federal, state or local laws and regulations and all applicable Authority policies and procedures.
- B. The Engineer shall comply with the provisions set forth in Public Authorities Law §§ 2875, 2876, and 2878 of the laws of the State of New York. In response to the Authority's Request for Proposals, the Engineer submitted and signed Forms A, B, and C, a copy of which is attached to, and incorporated in, this Agreement as Appendix D.
- C. By executing this Agreement, the Engineer affirms under the penalties of perjury that there was no collusion in the proposal submitted to the Authority, upon which forms the basis of this Agreement.
- D. The Engineer shall comply with the provisions of State Finance Law § 138-L of the laws of the State of New York. In response to the Authority's Request for Proposals, the Engineer submitted and signed the Sexual Harassment Bidding Certification, a copy of which is attached to, and incorporated in, this Agreement, as Appendix D.
- E. The Engineer shall comply with the provisions of the Shield Act, codified at General Business Law § 899-aa of the laws of the State of New York.

- F. The Authority shall provide the Engineer in writing any and all Authority policies and procedures applicable to the Engineer's performance of services under this Agreement. The Engineer agrees to comply with such policies and procedures to the extent compliance is not inconsistent with professional practice requirements.
- G. While on Authority property, the Engineer's employees, representatives and engineers shall comply with the specific applicable security and access rules established by the Authority's Security Officer.

2.03 ***Unknown Conditions.*** The Engineer shall not be required to sign any documents, no matter by whom requested, that would result in the Engineer having to certify, guarantee, or warrant the existence of conditions whose existence the Engineer cannot ascertain. The Authority agrees not to make resolution of any dispute with the Engineer for payment on any amount due to the Engineer in any way contingent upon the Engineer signing any such documents.

ARTICLE 3 – SCOPE OF SERVICE

3.01 ***Kick-off Meeting.*** Prior to rendering any professional services, the Engineer will conduct a kickoff meeting with Authority personnel.

3.02 ***Preliminary Investigation and Due Diligence.*** The Engineer shall provide all engineering services necessary to design and install the Project improvements including, but not limited to, the following:

A. *Basis of Design (“BOD”):*

- 1. In contemplation of the basis of design, the Engineer shall:
 - a. Review reports, drawings, specifications, and other records furnished by the Authority.
 - b. Verify site conditions at each location.
 - i. Complete a site walkthrough and conduct meetings with operating staff to discuss current operational strategies and challenges.
 - ii. Review applicable operating records.
 - iii. Determine the condition of critical assets and document the need for rehabilitation, remaining life, and required replacement.
 - iv. Specifically note the condition of the existing concrete bulk carbon slurry storage tanks (to remain) and the condition of all piping that conveys carbon slurry.

- c. Identify locations of suspected hazardous materials (e.g., lead paint, asbestos, etc.) or concerning environmental conditions, based on known/assumed age and type of construction for each PAC system.
 - i. If material sampling and testing becomes necessary, such sampling and testing would be considered a Special Service, subject to the provisions of paragraph B of this section.
- d. Prepare preliminary design documents for the new PAC systems at each plant. Preliminary design documents should:
 - i. Include final design criteria including but not limited to equipment selection, component capacity, hydraulic requirements for PAC delivery, mixing, and application, and compliance with applicable regulatory/code requirements and industry best practices.
 - ii. Identify the anticipated dosage of PAC at each plant based on current and future flow rates and consultant experience/industry best practices for treating harmful algal blooms.
 - iii. Determine size of feed pumps based on anticipated dosage.
 - iv. Determine capacity of bulk/day tanks to provide adequate storage and reduce delivery frequency.
 - v. Conduct inspection of epoxy coating system in the existing bulk carbon slurry tanks at each plant and make recommendations for repair or replacement of the coating system.
 - vi. Review existing dust collection system and make recommendations for repair or replacement.
 - vii. Include preliminary design drawings including:
 - (a) Process Flow Diagram.
 - (b) Plan view of Carbon Room showing general layout and sizing of equipment, pumps and piping.
 - (c) Elevations/Sections/Details required to relay the design intent.
 - (d) Process and Instrumentation Drawing.

- viii. Include an equipment/motor list for all electrical equipment and identify code compliance requirements for electrical components including requirements for explosion proof outlets, switches, lighting, and motors.
 - ix. Process control narrative for operation and monitoring of the system.
 - x. List the required technical specifications for final design.
 - xi. Describe the construction sequencing in conjunction with the continuation of plant operations.
 - xii. State an opinion of probable project costs.
 - xiii. Set forth a Project schedule identifying the duration of final design, bid, and construction phases.
2. The Engineer shall prepare a draft BOD Report, setting the factors considered by the Engineer including, but not limited to, those specifically identified in paragraph A, subparagraph 1 of this section. The Engineer shall supply the Authority with ten (10) copies of the draft BOD Report with supporting documentation, along with a digital .pdf file of the draft BOD Report with supporting documentation.
 3. The Engineer shall meet with the Authority to review the draft BOD Report and will incorporate all comments into a final version. The Engineer shall supply the Authority with ten (10) copies of the final BOD Report with supporting documentation, along with a digital .pdf file of the final BOD Report with supporting documentation.
 4. The Engineer will prepare a Project schedule identifying the duration of final design, bid, and construction phases.
 5. The Engineer will conduct at least three (3) review meetings with the Authority and at least two (2) review meetings with appropriate regulatory agencies.

B. *Special Services:*

1. The Engineer may employ one or more of the following special services in carrying out the Project, subject to the Authority's approval:
 - a. Soils investigations including test borings, pavement cores, and the related analysis;

- b. Detailed mill, shop and/or laboratory inspection of materials and equipment;
- c. Land surveys, maps, plates, descriptions and title investigations which may be required to acquire lands, easements, and rights-of-way for the proposed facilities;
- d. Air, water, and/or soil sampling, testing, and/or analysis;
- e. Hazardous material testing and assessment;
- f. Wetlands investigations, delineation, and mitigation;
- g. Technical assistance with operation and maintenance manuals;
- h. Start-up services relating to equipment to be installed by the contractor;
- i. Technical assistance with preparing any necessary documents if required by the New York State Environmental Quality Review Act (SEQRA) for Type I or Unlisted actions
- j. Technical assistance with preparing with Storm Water Pollution Prevention Plans (SWPPP), if required;
- k. Assistance with permit and other applications with the New York State Department of Environmental Conservation (DEC);
- l. Assistance with grant research, completion of grant applications, and reporting/documentation after award;
- m. Laboratory testing, jar testing, and pilot testing;
- n. Extra travel and subsistence for the Engineer and its staff beyond that normally required under ordinary circumstances, when authorized by the Authority;
- o. Legal services, as deemed necessary and approved by the Authority's General Counsel, for acquiring lands, easements and rights-of-ways or other Project-related services; or
- p. Other services, as deemed necessary by the Authority's Chief Operating Officer and Chief Financial Officers.

2. **Reliance on Others.** Subject to the standard of care set forth in § 2.01, paragraph A, the Engineer and its special services consultants may use or

rely upon design elements and information ordinarily or customarily furnished by others including, but not limited to, specialty contractors, manufacturers, suppliers and the publishers of technical standards.

3. **Expert Witness Assistance.** The Engineer agrees to assist the Authority as an expert witness in litigation arising from the project development and construction, even if such assistance is requested by the Authority after the expiration or termination of this Agreement.

3.03 Design Phase: The Engineer will complete design documents for the improvements of the PAC systems at each water treatment plant. It is anticipated the work at each plant will be designed and bid together as a single project.

A. ***Detailed Design Drawings, Specifications and Contract Documents:*** Upon authorization from the Authority, the Engineer shall complete the following design services:

1. Prepare detailed design drawings and specifications at 60%, 90%, and 100% design stages including, but not limited to:
 - a. Preparing engineering calculations to support the design of the improvements, including related civil, mechanical, electrical/instrumentation, structural, and architectural features of the project;
 - b. Preparing draft and final plans, profiles, and job specific detail drawings that include editing of the Authority's standard detail drawings where appropriate;
 - c. Using the quantity take-off method, provide detailed measurements of a Project's components, materials, and construction labor to determine a scope of work required and a cost estimate of the construction project;
 - d. Submitting plans to various utility companies and regulatory agencies to incorporate all existing utilities within the project limits;
 - e. Preparing engineering data, where necessary, for regulatory permit applications as required to obtain local, state, federal and public utility approval for the initiation and construction of the work;
 - f. Submitting the BOD Report with contract specifications, drawings, application forms and fees to Erie County Health Department for approval;
 - g. Preparing any necessary and applicable documentation for compliance with New York State SEQRA, including Type II declaration;

- h. Revising the Authority's Standard Operating Procedures (SOPs), Arc Flash, and Lock-out Tag-out (LOTO) program documentation for the new PAC systems for each plant, in accordance with the Authority's existing format;
 - i. Preparing and updating, as needed, a schedule for the Project utilizing the Authority's standard format; and
 - j. Preparing base drawings in AutoCAD version 2018 from the available records furnished by the Authority and other agencies.
2. Prepare contract documents including, but not limited to:
- a. Preparing contract specifications with edited Authority's standard "front end" specifications and standard technical specifications where appropriate;
 - b. Preparing additional technical specifications as required;
 - c. Obtaining New York State Prevailing Wage Rates and inserting such rates into the specifications;
 - d. Assisting the Authority with assembling known reports and drawings of existing conditions, and identifying the technical data contained in such reports and drawings upon which bidders may rely; and
 - e. Using the "Standard General Conditions of the Construction Contract" as prepared by the Engineers Joint Contract Documents Committee (EJCDC C-700, 1996 Edition) or other general conditions mutually agreed to by the Authority and the Engineer and setting forth the exceptions to these general conditions, specific to this Project.

B. *Design Phase Meetings and Reports.* The Engineer shall:

- 1. Conference with the Authority and other related Project stakeholders, as necessary and as required;
- 2. Report to the Authority bi-weekly on the progress of the design work via email, with the following information:
 - a. Design work performed during the previous two weeks;
 - b. Design work scheduled for the next two weeks;

- c. Schedule status/deliverable status, attaching an updated project schedule in Microsoft Project format, identifying all project milestones and current project status;
 - d. Budget status/percent completed;
 - e. Input needed from the Authority or others;
 - f. Requests for scope changes; and
 - g. Other issues or concerns;
3. Furnishing the Authority with five (5) hardcopy sets of review copies of the drawings, specifications and other contract documents, to the Authority during 60%, 90%, and 100% design and providing digital .pdf file version of each set of documents;
 4. Conduct at least three meetings with the Authority engineers and operators to discuss and/or review detailed design drawings, specifications and contract documents; and
 5. Attend a final design meeting with the Authority.

3.04 Construction Phase

h. **Construction Bids.** Upon authorization from the Authority, the Engineer shall:

1. Assist Authority personnel in preparing bid invitation and contract documents;
2. Refrain from discussing the Project or the bid process with anyone outside of the Authority prior to the advertisement of bids and during the restricted period for the submission and award of bids;
3. Furnish twenty (20) sets of contract drawings, final specifications, and other documents required for bidding and construction purposes for each contract;
4. Conduct, at the appropriate time, a pre-bid meeting:
 - a. Prepare and distribute addenda for pre-bid meeting;
 - b. Record, publish, and distribute minutes from the pre-bid meeting; and
 - c. Prepare, if necessary, publish, and distribute any addendum to the bid invitation and contract documents; and

5. Evaluate and determine whether substituted materials and equipment proposed in a bid submission of a prospective contractor is acceptable and at least equal to the materials and equipment set forth in bid and contract documents; and
 6. Assist the Authority in securing bids, bid results, analyzing bid results, and making recommendations on the award of each construction contract;
- i. **Pre-Construction.** Prior to construction, the Engineer shall:
1. Provide pre-construction meeting notice to all municipalities, utility companies, fire districts, and all other interested stakeholders;
 2. Conduct a pre-construction meeting:
 - a. Prepare and distribute agenda for pre-bid meeting; and
 - b. Record, publish, and distribute minutes from the pre-bid meeting.

C. Construction.

1. The Engineer is not responsible for the construction means, methods, techniques, sequences or procedures, time of performance, programs or for any safety precautions in connection with the construction work (the “Work”). The Engineer shall not be held liable to the Authority for the failure of the construction contractor (the “Contractor”) to execute the Work in accordance with the contract documents (the “Contract Documents”).
2. The Engineer shall notify the Authority of all permanent Work which does not conform to the result required in the Contract Documents, prepare a written report describing any apparent non-conforming permanent Work and make recommendations to the Authority for its correction and when requested by the Authority, have recommendations implemented by the Contractor.
3. The Engineer shall have responsibility over the following:
 - a. Defective Work:
 - i. Based on the Engineer’s observations, if the Engineer believes that the Work is defective under the terms and standards set forth in the Contract Documents, the Engineer shall reject the Work and provide the Authority with its recommendations regarding whether the Contractor should correct such Work or remove and replace such Work, or whether the Authority should consider accepting such Work as provided in the Contract Documents.

b. Compatibility with Design Concept:

- i. If the Engineer has actual knowledge a specific part of the Work, although not defective under the terms and standards set forth in the Contract Documents, but nonetheless is not compatible with the design concept of the completed Project as a functioning whole, the Engineer will inform the Authority of such incompatibility, and provide recommendations for addressing such Work.

c. Clarifications and Interpretations:

- i. When the Contractor and the Authority submits to the Engineer any question concerning the requirements of the Contract Documents, including any requests for information (RFIs), or relating to the acceptability of the Work under the Contract Documents, the Engineer shall, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents.

d. Differing Site Conditions:

- i. When the Contractor notifies the Engineer of differing site conditions, including conditions relating to underground facilities such as utilities, and hazardous environmental conditions, the Engineer shall promptly review the condition and prepare findings, conclusions, and recommendations to the Authority as to how to address the condition.

e. Substitutes and “Or-equal”:

- i. The Engineer shall evaluate and determine the acceptability of substitute or “or-equal” materials and equipment proposed by Contractor.

f. Change Orders:

- i. The Engineer shall notify the Authority when a change in the Work is proposed, which will cause an adjustment in the contract cost.
- ii. The Engineer will evaluate whether the proposed change is justified and reasonable, and if necessary, prepare change

orders, field directives, and make recommendations for approval by the Authority's Board of Commissioners.

- iii. The Engineer shall discuss changes in the plans or procedures recommended by the Engineer with the Authority prior to implementation.
 - iv. The Engineer must obtain approval for all change orders from the Board of Commissioners prior to implementation.
- g. Change Proposals and Claims:
- i. Review and respond to Change Proposals.
 - (a) The Engineer shall review each submitted Change Proposal from Contractor and either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part.
 - (b) Such actions shall be in writing, with a copy provided to the Authority and Contractor.
 - (c) If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, the Engineer will notify the parties that the Engineer will not resolve the Change Proposal.
 - ii. Reporting of Claims
 - (a) When the Engineer becomes aware of a situation from which a legal dispute or claim ("Claim") could be filed by a contractor, subcontractor, property owner or other third party against the Authority, the Engineer will promptly report the situation to the Authority.
 - (b) Upon request, the Engineer will assist the Authority's Legal Department in its investigation and examination of any Claim. The Engineer will provide the names and, if available, addresses and phone numbers of individuals involved or having knowledge of the Claim.

(c) The Engineer will also gather information or data to the Authority regarding engineering or technical matters pertaining to the Claim.

4. The Engineer shall consult, report and advise appropriate Authority personnel as to all relevant and pertinent matters relating or affecting the progress of construction.
5. The Engineer shall review and determine the acceptability of any and all schedules that the Contractor is required to submit to the Engineer, including a Progress Schedule, Schedule of Submittals, and Schedule of Values.
6. The Engineer shall supply the Authority with a construction schedule, which has been submitted by the Contractor and approved by the Engineer.
7. The Engineer will prepare elementary sketches and supplementary sketches, when necessary or required, to resolve issues with actual field conditions encountered.
8. The Engineer shall interpret Contract Documents and resolve problems as to amount, quality, acceptability, and fitness.
9. The Engineer will review the Contractor's submittals of material and/or equipment for compliance with the design concept and take appropriate action such as but not limited to: "approved", "approved as corrected", "revise and resubmit"; or "not approved".
10. The Engineer will provide the Contractor and the Authority with detailed stakeout information, including benchmarks, reference and axis lines along the routes of the construction or wherever necessary.
11. The Engineer shall check installation for preparation of record drawings.

D. Construction Meetings and Reports.

1. The Engineer will schedule and attend progress meetings with the pertinent Authority personnel, the Contractor, subcontractors and other interested stakeholders at a minimum every two (2) weeks.
2. The Engineer will report to the Authority monthly on the progress of the Work with a written monthly summary including daily inspector reports.

3. The Engineer will report, via email, to the Authority bi-weekly on the progress of the Work with the following information:
 - a. Summary of the Work performed in the previous two-week period;
 - b. Updated project schedule, attached and in Microsoft Project format, identifying all project milestones and current project status;
 - c. Forecast of all upcoming work and project costs expected for the project, including the identification of any contract items which may exceed bid quantities; and
 - d. Copies of final inspection reports attached in .pdf format for reports in the previous two-week period.
4. As previously stated in paragraph C, subparagraphs 3f and 3g of this section, the Engineer shall notify the Authority when a change in the work is proposed which will cause an adjustment in the contract cost and will:
 - a. Evaluate whether the proposed change is justified and reasonable, and if necessary, prepare change orders, field directives, and make recommendations for approval.
 - b. Discuss changes in the plans or procedures authorized by the Engineer with the Authority prior to implementation.
 - c. Obtain approval for all change orders from the Authority's Board of Commissioners prior to implementation.
5. The Engineer will make a final inspection, furnish a report on project completion, and make recommendations for final payments to contractors and for the release of retained amounts, if any.

3.05 Resident Inspections:

- A. Upon authorization from the Authority, the Engineer shall furnish a full-time Resident Project Inspector (RPI) who will conduct technical inspection of the Work relating to the Project;
 1. *Inspector's duties and responsibilities:* The Engineer, through the RPI's observations, shall protect the Authority against defects and deficiencies in the Work.

2. *RPI's duties and responsibilities:*

a. The RPI shall not:

- i. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items), without written approval by the Authority and the Engineer;
- ii. Exceed limitations of the Engineer's authority as set forth in this Agreement;
- iii. Undertake any of the responsibilities of the Contractors, subcontractors, or suppliers;
- iv. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of the Contractor's work;
- v. Advise on, issue relating, or assume control over security or safety practices, precautions, and programs in connection with the activities of the Authority or its Contractors;
- vi. Participate in specialized field or laboratory tests or inspections conducted off-site by others; or
- vii. Accept shop drawings or sample submittals from anyone other than the Contractor.

2. The RPI shall:

- i. Review the progress schedule, schedule of Shop Drawing and Sample submittals, schedule of values prepared by the Contractor and consult with the Engineer concerning acceptability;
- ii. Attend meetings with Contractor and subcontractors, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings;
- iii. Provide email updates to the Engineer and the Authority regarding meetings with Contractor and subcontractors;
- iv. Conduct daily on-site inspections of all Work in progress;
- v. Prepare daily inspection reports to determine if the Work is progressing in accordance with Contract Documents;

- vi. Report to the Authority and the Engineer whenever the RPI believes any portion of the Work will not produce a completed Project, conforming with the Contract Documents, or will imperil the integrity of the Project design as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made;
- vii. Advise the Authority and the Engineer whether any part of the Work in progress should be corrected or rejected or should be uncovered for observations, or requires special testing, inspection, or approval;
- viii. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Authority personnel, and that the Contractor maintains adequate records relating to the same;
- ix. Observe, record, and report to the Engineer appropriate details relative to the test procedures and systems start-ups;
- x. Report to the Engineer and the Authority when clarifications and interpretations of the contract documents are needed and transmit to the Contractor clarifications and interpretations as issued by the Engineer;
- xi. Advise the Engineer and the Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which RPI believes that the submittal has not been approved by the Engineer; and
- xii. Submit, via email, bi-weekly updates to the Authority summarizing the resident inspection costs and projecting further resident inspection costs for the duration of the Work.

3.06 General Services:

A. *Contractor's Request for Payment:*

1. As a general service to the Authority, the Engineer will review applications for payment with the Contractor for compliance with the established procedure for their submission and forward recommendation to the Authority, noting particularly the relationship of the payment requested to the schedule of values, work completed, and materials and equipment delivered to the Project site but not incorporated in the work.

2. Based on the Engineer's observations and on review of Applications for Payment and accompanying supporting documentation, the Engineer shall:
 - a. Determine the amounts that the Engineer recommends Contractor be paid;
 - b. Recommend reductions in payment based on the provisions stated in the Construction Documents;
 - c. Such recommendations of payment will be in writing and will constitute the Engineer's representation to the Authority, based on such observations and review, that, to the best of the Engineer's knowledge, information and belief, the Contractor's Work has progressed to the point indicated, the Work is generally in accordance with the Contract Documents:
 - i. Subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, and to any other qualifications stated in the recommendation, and
 - ii. Subject to the conditions precedent that permits a Contractor to receive payment based on the Work performed, which has been reviewed and accepted by the Engineer;
 - d. In the case of unit price Work, the Engineer's recommendations of payment will include final determinations of quantities and classifications of the Work subject to any subsequent adjustments allowed by the Contract Documents.

B. Standards for Certain Construction-Phase Decisions:

- a. The Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth in the Contract for initial interpretations, Change Proposals, and acceptance of the Work.
- b. In rendering such decisions and judgments, the Engineer will not show partiality to the Authority or the Contractor, and will not be liable to the Authority, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

C. Certificates, Operation and Maintenance Materials:

- a. During the course of construction, as a general service, the Engineer will verify whether materials and equipment certificates, operation and maintenance manuals and other data required by the Contract Documents

to be assembled and furnished by the Contractor are applicable to the items actually installed and in accordance with the Contract Documents.

- b. After receipt from the Contractor, the Engineer will review and transmit to the Authority:
 - i. Any maintenance and operating instructions,
 - ii. Schedules,
 - iii. Guarantees, bonds, certificates or other evidence of insurance required by the Contract Documents,
 - iv. Certificates of inspection, tests and approvals, and
 - v. Shop Drawings, Samples, and other data as required.
- c. Upon receipt from the Contractor, the Engineer will review and transmit to the Authority the annotated record documents which are to be assembled by Contractor in accordance with the Contract Documents to obtain final payment.
- d. The Engineer must deliver to the Authority those documents described in subparagraph 2 of this paragraph, prior to the payment for such work.

D. *Completion:*

1. Upon authorization from the Authority, as general services, the Engineer shall:
 - a. Participate in visits to the Project to determine substantial completion, assist in the determination of substantial completion and the preparation of lists to be completed or corrected;
 - b. Participate in a final visit to the Project with Authority personnel; and prepare a final list of items to be completed and deficiencies to be remedied; and
 - c. Observe whether all items on the final list have been completed or corrected and make recommendations to the Authority concerning acceptance of the Project and final payment.
3. *Substantial Completion:*
 - a. After a notice has been given by the Contractor as to the substantial completion or completion of Work, the Engineer will promptly visit the Project site to review the Work and determine the status of completion.

- b. The Engineer will follow the procedures in the Contract Document regarding the following:
 - i. the preliminary certificate of Substantial Completion,
 - ii. punch list of items to be completed,
 - iii. objections made by the Authority,
 - iv. notice to Contractor, and issuance of a final certificate of Substantial Completion.
 - b. The Engineer will assist Authority regarding any remaining engineering or technical matters affecting Authority's use or occupancy of the Work following Substantial Completion.
4. *Final Notice of Acceptability of the Work:*
- a. After conducting a final visit to the Project, the Engineer will determine if the Work is complete and acceptable so that the Engineer may recommend, in writing, final payment to the Contractor.
 - b. Accompanying the recommendation for final payment, the Engineer shall also provide a notice to the Authority and the Contractor that the Work is acceptable to the best of the Engineer's knowledge, information, and belief, and based on the extent of the services provided by the Engineer under this Agreement.

3.07 Record Drawings:

- a. Upon authorization from the Authority, the Engineer shall:
 - 1. Provide record drawings, including the base mapping of all completed Work according to the latest Authority As-Built Standards, using the AutoCAD Version 2018 platform.
 - 2. Furnish all AutoCAD files on CD to the Authority.
 - 3. Submit two stamped/signed full size sets, AutoCAD files, .pdf version of the drawings and Project Manual (with addenda) and GPS coordinates no later than one month after final payment of the Work is recommended for approval and in accordance with Authority Standards.

3.08 *Service Timeframe.* Unless otherwise extended by mutual agreement of the parties, the Engineer will render professional services relating to this Project within the following timeframe:

- A. All Basis of Design Services shall be completed within 90 days of the issuance of the Authority's notice to proceed;
- B. All Design Services shall be completed within 200 days following Authority approval the final Basis of Design documents; and
- C. All other services should be completed by the end of construction with an estimated completion date of May 15, 2022.

ARTICLE 4 – PAYMENT OF PROFESSIONAL SERVICES

4.01 *Lump Sum Payments:* The Engineer agrees to accept a lump sum payment for the following services:

- A. ***Basis of Design:*** For services described under § 3.02, paragraph A of this Agreement, the Authority shall pay Consultant a lump sum which will include all expense, labor and cost associated with this service. Payment will be made monthly based on the percentage of completion up to 100% of the total lump sum amount.
- B. ***Design:*** For services described under §3.03 of this Agreement, the Authority shall pay the Engineer a lump sum which will include all expense, labor, and cost associated with this service. Payment will be made monthly based on the percentage of completion up to 70% of the total lump sum amount. After submission by the Engineer to the Authority of a draft set of Contract Documents, payment will be made monthly based on the percentage of completion up to 90% of the total lump sum amount. The balance will be paid when the final Contract Documents are submitted to the Authority.
- C. ***Construction and General Services:*** For services described under §§ 3.04 and 3.06 of this Agreement, the Authority shall pay the Engineer a lump sum which will include all expense, labor and cost associated with this service. Payment will be made monthly based on the percentage of completion up to 100% of the total lump sum amount.
- D. ***Record Drawings:*** For services described under § 3.07 of this Agreement, the Authority shall pay the Engineer a lump sum which will include all expense, labor and cost associated with this service. Payment will be made monthly based on the percentage of completion up to 70% of the total lump sum amount. After submission by the Engineer to the Authority of draft record drawings, payment will be made monthly based on the percentage of completion up to 90% of the total lump sum amount. The balance will be paid when the final record drawings are submitted to the Authority.

4.02 *Resident Inspection:* For services described under § 3.05 of this Agreement, the Authority shall pay the Engineer the payable hourly rates listed under §4.04, paragraph B and direct non-

salary expenses. Overtime premium will be paid at 50% of the Resident Inspectors' direct hourly rate in addition to the payable hourly rate listed under §4.04, paragraph B. Payment for Resident Inspection and expenses will be made monthly.

4.03 **Special Services:** For services described under § 3.02, paragraph B of this Agreement, the Authority shall pay the Engineer for special services pre-approved by the Authority's Chief Operating Officer in an amount approved by the Authority's Chief Financial Officer.

- A. When the Engineer is performing the special services described in § 3.02, paragraph B of this Agreement, such services will be billed at the fixed rates included in Appendix A of this Agreement.
- B. When the Engineer obtains special services from a third party, the Engineer will be reimbursed based on the actual invoice cost paid by the Engineer, plus 5%.

4.04 **Engineering Cost Schedule:**

A. Engineering Costs:

1. Lump Sum Basis of Design Cost	\$ 30,500
2. Lump Sum Design Cost	\$113,300
3. Lump Sum General Service Cost	\$ 72,700
4. Lump Sum Record Drawings Cost	\$ 6,600
 TOTAL LUMP SUM COST:	 \$223,100

B. Resident Inspection Costs:

	Payable Hourly Rate	Employee Direct Hourly Rate
Resident Project Inspector	\$119.00	\$42.60
Construction Engineer/NICET IV	\$149.00	\$53.30

The Dollar amount for Estimated Resident Inspection is based fixed hour estimate of 1040 hours of Project Engineer/Inspector Payable Hourly Rate and 100 hours of Construction Engineer/NICET IV Payable Hourly Rate during the duration of the project. Payment will be made for actual hours worked during the duration of construction. Actual hours will vary based on production rates of the Contractor during construction, unforeseen circumstances that develop during construction, and weather conditions.

1. Estimated Resident Inspection	\$138,660.00
2. TOTAL NOT TO EXCEED RESIDENT INSPECTION:	\$160,000.00

C. Special Services (not to exceed) \$ 20,000

D. Other Costs:

1. Estimated Mileage (IRS rate)	\$0.575/mile
---------------------------------	--------------

2. Estimated Copy Costs (per copy)	\$0.10/sheet
3. Prints (per print)	\$1.00/print
4. Subcontractor Expenses, invoiced as special services	Cost plus 5% maximum
5. Other Direct Non-Salary Costs	At cost

4.05 **Audit:** The Authority reserves the right to audit the Engineer’s records to verify bills submitted and representations made. For this purpose, the Engineer agrees to make company records available for inspection upon written notice by the Authority. The Authority shall have two years from the date of the Engineer’s final bill to complete its audit. If the audit establishes an overcharge, the Engineer agrees to refund the excess.

ARTICLE 5 – GENERAL PROVISIONS

5.01 **Subcontract and Assignments:** The Engineer may not subcontract or delegate any of the work, services, and/or other obligations of the Engineer without the express written consent of the Authority. The Authority and the Engineer bind themselves and their successors, administrators and assigns to the terms of this Agreement. The Engineer shall not assign, sublet or transfer its interest in the Agreement without the written consent of the Authority.

5.02 **Amendments:** No modification or variation from the terms of this Agreement shall be effective unless it is in writing and authorized by a resolution of the Board of Commissioners of the Authority and signed by all parties.

5.03 **Right to Terminate:** The Authority reserves the right to terminate the Engineer’s services at any time, without cause, based on seven (7) days’ written notice. The Engineer shall not be entitled to lost profit and shall perform only such services, after notification of termination, as the Authority directs.

5.04 **Indemnification:**

- A. To the fullest extent permitted by law, the Engineer agrees to indemnify and hold the Authority harmless from all third party claims, liabilities, damages and costs (including all reasonable attorney’s fees, and cost of defense) to which the Authority, its officers, directors and employees may be subject to, arising out of the death or bodily injury to any person or the destruction or damage to any property to the extent caused by the negligent acts, errors or omissions, or willful misconduct of the Engineer’s performance of professional services provided under this Agreement and those of its subcontractors or anyone for whom the Engineer is legally liable.
- B. To the fullest extent permitted by law, the Authority agrees to indemnify and hold the Engineer harmless from all third party claims, liabilities, damages and costs (including all reasonable attorney’s fees and cost of defense) to the extent caused by the negligent acts, errors or omissions of the Authority, its contractors, engineers, or anyone for whom the Authority is legally liable.

5.05 **Confidential Information:**

- A. In order to assist the Engineer in the performance of this Agreement, the Authority may provide the Engineer with confidential information including, but not limited to information relative to the services to be performed. All information received by the Engineer in any fashion and under any conditions resulting from the rendering of the services in consideration of this agreement, are considered confidential. The Engineer shall hold in confidence and not disclose to any person or any entity, any information regarding information learned during the performance of services including but not limited to information relative to the services to be performed.
- B. The Engineer shall use at least the same degree of care to protect and prevent unauthorized disclosure of any confidential information as it would use to protect and prevent unauthorized disclosure of its own proprietary information. The Engineer shall use confidential information only in the performance of this Agreement. No other use of the confidential information whether for the Engineer's benefit or for the benefit of others shall be permitted.
- C. In no event is the Engineer authorized to disclose confidential information without the prior written approval of the Authority. The Engineer may provide such information to its subcontractors for the purpose of performing the services; or disclose such information, with notice to the Authority, if such information is required to be disclosed by law or court order.
- D. The terms of this section shall be binding during and subsequent to the expiration or termination of this Agreement.

5.06 **Insurance:** The Engineer shall secure and maintain such insurance as will protect itself from claims under the Workers' Compensation Act; claims for damages because of bodily injury, including personal injury, sickness or disease, or death of any of its employees or of any person other than its employees; and from claims for damages because of injury to or destruction of property including loss of use resulting therefrom in the amounts indicated on Appendix B. The Engineer shall provide and maintain insurance that will provide coverage for claims arising out of the negligent performance of its services. The Engineer shall provide Certificates of Insurance certifying the coverage required by this provision.

5.07 **Copyrights, Trademarks and Licensing:**

- A. All materials produced under this Agreement, whether produced by the Engineer alone or with others, and regardless of whether produced during regular working hours, shall be considered work made for hire and the property of the Authority. The Engineer shall, during and subsequent to the terms of this Agreement, assign to the Authority, without further consideration, all right, title and interest in all material produced under this Agreement. All material produced under this Agreement shall be and remain the property of the Authority whether registered or not.
- B. In performing work under this Agreement, the Engineer may be granted access to the Authority's GIS data, documents, and other information. The Engineer understands

and agrees that the use of such data, documentation and information shall be treated as confidential information and the Engineer shall abide by the terms and conditions of the Confidentiality and Copyright Licensing Agreement, attached and incorporated in this Agreement as Appendix C.

5.08 **New York Law and Jurisdiction:** Notwithstanding any other provision of this Agreement, any dispute concerning any question of fact or law arising under this Agreement which is not disposed of by agreement between the Engineer and the Authority shall be governed, interpreted and decided by a court of competent jurisdiction of the State of New York in accordance with the laws of the State of New York.

5.09 **Conflicts of Interest:** The Engineer represents that it has advised the Authority in writing prior to the date of signing this Agreement of any relationships with third parties, including competitors of the Authority, which would present a conflict of interest with the rendering of the services, or which would prevent the Engineer from carrying out the terms of this Agreement or which would present a significant opportunity for the disclosure of confidential information. The Engineer will advise the Authority of any such relationships that arise during the term of this Agreement. The Authority shall then have the option to terminate the Agreement without being subject to further obligations under its terms, except for the payment of services already rendered by the Engineer. So long as the Engineer reports such a conflict as required by this section, the Engineer will have no further obligations for completing the scope of services under the terms of this Agreement.

5.10 **Additional Conditions:** The Engineer and the Authority acknowledge that there may be additional conditions, terms and provisions which shall apply specifically to the services to be performed. The parties agree to negotiate in good faith to agree upon such additional terms.

5.11 **Entire Agreement:** This Agreement constitutes the entire understanding of the parties and no representations or agreements, oral or written, made prior to its execution shall vary or modify the terms herein. This Agreement supersedes all prior contemporaneous communications, representations, or agreements, whether oral or written with respect to the subject matter hereof and has been induced by no representations, statements or agreements other than those herein expressed. No subsequent agreement made between the parties shall be binding on either party unless reduced to writing and signed by an authorized officer of the party sought to be bound by such agreement.

5.12 **Independent Status:**

- A. Nothing contained in the Agreement shall be construed to render either the Authority or the Engineer, an owner, member, officer, partner, employee or agent of the other, nor shall either party have authority to bind the other in any manner, other than as set forth in this Agreement, it being intended that the Engineer shall remain an independent contractor responsible for its own actions. The Engineer is retained by the Authority only for the purpose and to the extent set forth in this Agreement.

- B. The Engineer is free to choose the aggregate number of hours worked and the scheduling of such hours as it shall see fit at its discretion within the limitations set forth in Article 4.
- C. Neither the Engineer nor its employees shall be considered under the provisions of this Agreement or otherwise as having an employee, servant or agency status or as being entitled to participate in any plans, arrangements or distributions of the Authority.
- D. In providing the services under this Agreement, the Engineer represents and warrants that it has complied with all applicable federal, state and local laws particularly with respect to licenses, withholdings, reporting and payment of taxes. The Engineer agrees to furnish copies of documentation to the Authority evidencing its compliance with such laws. The Engineer further represents and warrants that any income accruing to the Engineer and its employees from the Agreement shall be reported as such to the appropriate taxation authorities.

5.13 **Doing Business Status:** The Consultant represents it is qualified to do business in the State of New York and has registered with the New York Secretary of State.

5.14 **Gratuities:** The Engineer shall prohibit its agents, employees and consultants from using their positions for personal financial gain, or from accepting any personal advantage from anyone under circumstances which might reasonably be interpreted as an attempt to influence the recipients in the conduct of their official duties. The Engineer or its employees shall not, under circumstances which might be reasonably interpreted as an attempt to influence the recipients in the conduct of their duties, extend any gratuity or special favor to employees of the Authority.

5.15 **Notice:** Any notices required by this Agreement or otherwise shall be delivered by United States Postal mail or personal delivery upon the addresses hereinbefore stated. Any change in such addresses shall be required to be in writing to the other party and acknowledged as such.

ARTICLE 6 – SEVERABILITY

6.01 Any provision or part of the Agreement held to be void or unenforceable by a court of competent jurisdiction shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon the parties, which agrees that the Agreement shall be reformed to replace such stricken provisions or part thereof with a valid enforceable provision that comes as close as possible to expressing the intent of the stricken provision. The validity and enforceability of all other provisions of this Agreement shall not otherwise be affected.

ARTICLE 7 – TERMINATION

7.01 The Authority reserves the right to terminate this Agreement in the event it is found that the Certification filed by the Engineer in accordance with New York State Finance Law §139-k was intentionally false or intentionally incomplete. Upon such finding, the Authority may exercise its termination right by providing written notification to the Engineer in accordance with the written notification terms of this Agreement.

ERIE COUNTY WATER AUTHORITY

By _____
Jerome D. Schad, Chair

GHD CONSULTING SERVICES, INC.

By _____
Robert P. Lannon Jr., P.E., Vice President

STATE OF NEW YORK)
COUNTY OF ERIE) ss:

On the _____ day of _____, in the year 2020, before me personally came Jerome D. Schad, to me known, who, being by me duly sworn, did depose and say that he resides in Amherst, New York, that he is the Chair of the Board of Commissioners for the Erie County Water Authority described in the above instrument; and that he signed his name thereto by order of the Board of Commissioners.

Notary Public

STATE OF NEW YORK)
COUNTY OF ERIE) ss:

On the _____ day of _____, in the year 2020, before me personally came Robert P. Lannon Jr., P.E., Vice President, to me known, who, being by me duly sworn, did depose and say that he resides in _____, New York, that he is the Vice President of the Corporation described in the above instrument; and that he signed his name thereto by order of the Board of Directors of said Corporation.

Notary Public

APPENDIX A

GHD FIXED RATES FOR SPECIAL SERVICES

Classification	Billing Rate/hour
Project Officer	\$240.00
Project Manager	\$205.00
Senior Electrical Engineer	\$205.00
Senior Structural Engineer	\$205.00
Senior Project Engineer	\$170.00
Electrical/Instrumentation Engineer	\$155.00
Structural Engineer	\$135.00
Project Engineer	\$135.00
Senior CADD Technician	\$120.00
CADD Technician	\$100.00
Administrative Assistant	\$70.00

APPENDIX B

POWDERED ACTIVATED CARBON SYSTEM IMPROVEMENTS VAN DE WATER AND STURGEON POINT WATER TREATMENT PLANTS

ECWA Project No. 202000021

Insurance Specs:

The following minimum insurance requirements shall apply to vendors providing services to the Erie County Water Authority (ECWA). If a service or project, in the opinion of ECWA, represents an unusual or exceptional risk, ECWA may establish additional insurance requirements for that service or project. All insurance required herein shall be obtained at the sole cost and expense of the contractor, including deductibles and self-insured retentions, and shall be in full force and effect on the contract commencement date and for the duration of the contract. These requirements include but are not limited to the minimum insurance requirements.

Insurance Requirements:

a. Workers Compensation:

Part 1: Workers Compensation: Statutory

Part 2: Employers Liability: \$1,000,000.

Note: If New York State domiciled employees are used, coverage to be New York Statutory for both Parts 1 and 2

b. New York Disability Benefits Liability: Statutory coverage if New York State domiciled employees are used.

c. Commercial General Liability:

- \$2,000,000. General Aggregate
- \$2,000,000. Products/Completed Operations Aggregate
- \$1,000,000. Each Occurrence
- \$1,000,000. Personal Injury/Advertising Liability
- Erie County Water Authority to be scheduled as an Additional Insured for both on-going and completed operations (attach Additional Insured endorsement to Certificate of Insurance)
- Insurance to be primary and non-contributory

d. Automobile Liability:

- \$1,000,000. Each Accident
- Erie County Water Authority to be scheduled as an Additional Insured.

e. Umbrella Liability:

- \$1,000,000. Each Occurrence
- \$1,000,000. Aggregate

- Erie County Water Authority to be scheduled as an Additional Insured

e. Professional Liability:

- \$1,000,000 Per Claim
- \$1,000,000 Aggregate

Certificates of Insurance to be provided to **ECWA** prior to start of work as follows:

ACORD 25 (Item a-e) including copy of Additional Insured Endorsement Note: If coverage provided for NYS domiciled employees require Forms C 105.2 and DB 120.1 for Workers Compensation and NYS DBL.

Certificates of Insurance, on forms approved by the New York State Department of Insurance, must be submitted to ECWA prior to the award of contract. Renewals of Certificates of Insurance, on forms approved by the New York State Department of Insurance, must be received by ECWA 30 days prior to the expiration of the insurance policy period.

Certificates of Insurance and renewals, on forms approved by the New York State Department of Insurance, must be submitted to ECWA prior to the award of contract. Each insurance carrier issuing a Certificate of Insurance shall be rated by A. M. Best no lower than “A-” with a Financial Strength Code (FSC) of at least VII. The professional service provider shall name ECWA, its officers, agents and employees as additional insured on a Primary and Non-Contributory Basis, including a Waiver of Subrogation endorsement (form CG 20 26 11 85 or equivalent), on all applicable liability policies. Any liability coverage on a “claims made” basis should be designated as such on the Certificate of Insurance. Such insurance shall continue through the term of this Agreement and vendor shall purchase at his sole expense either 1) an Extended Reporting Endorsement (also, known as Tail Coverage); or 2) Prior Acts Coverage from new insurer with a retroactive date back to the date of, or prior to, the inception of this Agreement; or 3) demonstrate through Certificates of Insurance that vendor has Maintained continuous coverage with the same or original insurer. Coverage provided under items; 1), 2), or 3) will continue as long as the law allows.

To avoid confusion with similar insurance company names and to properly identify the insurance company, please make sure that the insurer’s National Association of Insurance Commissioners (N.A.I.C.) identifying number or A. M. Best identifying number appears on the Certificate of Insurance. Also, at the top of the Certificate of Insurance, please list the project number.

Acceptance of a Certificate of Insurance and/or approval by ECWA shall not be construed to relieve the outside vendor of any obligations, responsibilities or liabilities.

Certificates of Insurance should be e-mailed to mmusarra@ecwa.org or mailed to Ms. Molly Jo Musarra, ECWA Claim Representative/Risk Manager Erie County Water Authority, 295 Main Street – Room 350, Buffalo, New York 14203-2494, or if you have any questions you can contact Ms. Musarra by e-mail or phone (716) 849-8465.



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
03/30/2020

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Willis Towers Watson Northeast, Inc. fka Willis of Massachusetts, Inc. c/o 26 Century Blvd P.O. Box 305191 Nashville, TN 372305191 USA	CONTACT NAME: Willis Towers Watson Certificate Center PHONE (A/C, No, Ext): 1-877-945-7378 FAX (A/C, No): 1-888-467-2378 E-MAIL ADDRESS: certificates@willis.com																					
	<table border="1"> <thead> <tr> <th colspan="2">INSURER(S) AFFORDING COVERAGE</th> <th>NAIC #</th> </tr> </thead> <tbody> <tr> <td>INSURER A:</td> <td>Allied World Assurance Company US Inc</td> <td>19489</td> </tr> <tr> <td>INSURER B:</td> <td>Zurich American Insurance Company</td> <td>16535</td> </tr> <tr> <td>INSURER C:</td> <td>Beazley Insurance Company Inc</td> <td>37540</td> </tr> <tr> <td>INSURER D:</td> <td></td> <td></td> </tr> <tr> <td>INSURER E:</td> <td></td> <td></td> </tr> <tr> <td>INSURER F:</td> <td></td> <td></td> </tr> </tbody> </table>		INSURER(S) AFFORDING COVERAGE		NAIC #	INSURER A:	Allied World Assurance Company US Inc	19489	INSURER B:	Zurich American Insurance Company	16535	INSURER C:	Beazley Insurance Company Inc	37540	INSURER D:			INSURER E:			INSURER F:	
INSURER(S) AFFORDING COVERAGE		NAIC #																				
INSURER A:	Allied World Assurance Company US Inc	19489																				
INSURER B:	Zurich American Insurance Company	16535																				
INSURER C:	Beazley Insurance Company Inc	37540																				
INSURER D:																						
INSURER E:																						
INSURER F:																						
INSURED GHD Consulting Services Inc. One Remington Park Drive Cazenovia, NY 13035																						

COVERAGES

CERTIFICATE NUMBER: W16005876

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC <input type="checkbox"/> OTHER:	Y	Y	0310-4497	12/01/2019	12/01/2020	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 1,000,000 MED EXP (Any one person) \$ 25,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000
B	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input checked="" type="checkbox"/> HIRED AUTOS ONLY <input checked="" type="checkbox"/> COLL Ded: \$500 <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS ONLY <input checked="" type="checkbox"/> Comp Ded: \$250	Y	Y	BAP 3757423-04	07/01/2019	07/01/2020	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ Hired Physical Damag \$ 100000
A	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED RETENTION \$	Y	Y	0310-4498	12/01/2019	12/01/2020	EACH OCCURRENCE \$ 1,000,000 AGGREGATE \$ 1,000,000
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N No	N/A	WC 0380936-04	07/01/2019	07/01/2020	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
C	Professional Liab.		Y	V29594190101	12/01/2019	12/01/2020	Each Claim: \$1,000,000 Aggregate: \$1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

GHD Project no.: 11208890, PROP-ECWA-PAC System Improvements.

APPROVED/MJM

Erie County Water Authority is included as an Additional Insured as respects to General Liability, Auto Liability and Umbrella/Excess Liability where required by contract or agreement.

General Liability and Umbrella/Excess Liability policies shall be Primary and Non-contributory with any other insurance in force for or which may be purchased by Additional Insured where required by contract or agreement.

CERTIFICATE HOLDER

CANCELLATION

Erie County Water Authority
 295 Main Street - Room 350
 Buffalo, NY 14203-2494

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE
Julia M Powers



ADDITIONAL REMARKS SCHEDULE

AGENCY Willis Towers Watson Northeast, Inc. fka Willis of Massachusetts, Inc.		NAMED INSURED GHD Consulting Services Inc. One Remington Park Drive Cazenovia, NY 13035	
POLICY NUMBER See Page 1		EFFECTIVE DATE: See Page 1	
CARRIER See Page 1	NAIC CODE See Page 1		

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,
FORM NUMBER: 25 **FORM TITLE:** Certificate of Liability Insurance

Waiver of Subrogation applies in favor of Erie County Water Authority with respects to General Liability, Auto Liability, Umbrella/Excess Liability and Professional Liability where required by contract or agreement.
 Waiver of Subrogation applies in favor of Erie County Water Authority with respects to Workers Compensation where required by written contract, agreement or permit where permissible by law or statute.
 Umbrella/Excess Liability follows form over General Liability, Auto Liability and Employer's Liability.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**ADDITIONAL INSURED – OWNERS, LESSEES OR
CONTRACTORS – SCHEDULED PERSON OR
ORGANIZATION**

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

<p>Name of Person or Organization:</p> <p>Where required by written contract</p>

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

A. Section II – Who Is An Insured is amended to include as an insured the person or organization shown in the Schedule, but only with respect to liability arising out of your ongoing operations performed for that insured.

B. With respect to the insurance afforded to these additional insureds, the following exclusion is added:

2. Exclusions

This insurance does not apply to "bodily injury" or "property damage" occurring after:

- (1)** All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the site of the covered operations has been completed; or
- (2)** That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**ADDITIONAL INSURED – OWNERS, LESSEES OR
CONTRACTORS – COMPLETED OPERATIONS**

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

<p>Name of Person or Organization:</p> <p>Where required by written contract</p>
<p>Location And Description of Completed Operations:</p> <p>Where required by written contract</p>
<p>Additional Premium:</p> <p>N/A</p>

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

Section II – Who Is An Insured is amended to include as an insured the person or organization shown in the Schedule, but only with respect to liability arising out of "your work" at the location designated and described in the schedule of this endorsement performed for that insured and included in the "products-completed operations hazard".

WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

SCHEDULE

<p>Name Of Person Or Organization:</p> <p>Where required by written contract</p>
<p>Where required by written contract Information required to complete this Schedule, if not shown above, will be shown in the Declarations.</p>

The following is added to Paragraph **8. Transfer Of Rights Of Recovery Against Others To Us** of **Section IV – Conditions:**

We waive any right of recovery we may have against the person or organization shown in the Schedule above because of payments we make for injury or damage arising out of your ongoing operations or "your work" done under a contract with that person or organization and included in the "products-completed operations hazard". This waiver applies only to the person or organization shown in the Schedule above.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

PRIMARY AND NON-CONTRIBUTORY

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

Notwithstanding any other provision of this policy to the contrary, the insurance afforded to an additional insured under this policy will be primary to, and non-contributory with, any other insurance available to that person or organization in the event a contract or agreement you enter into requires you to furnish insurance to that person or organization of the type provided by this policy.

Coverage Extension Endorsement



Policy No.	Eff. Date of Pol.	Exp. Date of Pol.	Eff. Date of End.	Producer No.	Add'l. Prem	Return Prem.
BAP 3757423-04	7/1/2019	7/1/2020	7/1/2019		---	---

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

This endorsement modifies insurance provided under the:

Business Auto Coverage Form
Motor Carrier Coverage Form

A. Amended Who Is An Insured

1. The following is added to the **Who Is An Insured** Provision in **Section II – Covered Autos Liability Coverage**:

The following are also "insureds":

- a. Any "employee" of yours is an "insured" while using a covered "auto" you don't own, hire or borrow for acts performed within the scope of employment by you. Any "employee" of yours is also an "insured" while operating an "auto" hired or rented under a contract or agreement in an "employee's" name, with your permission, while performing duties related to the conduct of your business.
- b. Anyone volunteering services to you is an "insured" while using a covered "auto" you don't own, hire or borrow to transport your clients or other persons in activities necessary to your business.
- c. Anyone else who furnishes an "auto" referenced in Paragraphs **A.1.a.** and **A.1.b.** in this endorsement.
- d. Where and to the extent permitted by law, any person(s) or organization(s) where required by written contract or written agreement with you executed prior to any "accident", including those person(s) or organization(s) directing your work pursuant to such written contract or written agreement with you, provided the "accident" arises out of operations governed by such contract or agreement and only up to the limits required in the written contract or written agreement, or the Limits of Insurance shown in the Declarations, whichever is less.

2. The following is added to the **Other Insurance** Condition in the Business Auto Coverage Form and the **Other Insurance – Primary and Excess Insurance Provisions Condition** in the Motor Carrier Coverage Form:

Coverage for any person(s) or organization(s), where required by written contract or written agreement with you executed prior to any "accident", will apply on a primary and non-contributory basis and any insurance maintained by the additional "insured" will apply on an excess basis. However, in no event will this coverage extend beyond the terms and conditions of the Coverage Form.

All other terms, conditions, provisions and exclusions of this policy remain the same.

agent, servant or employee of the "insured" to notify us of any "accident", claim, "suit" or "loss" shall not invalidate the insurance afforded by this policy.

Include, as soon as practicable:

- (1) How, when and where the "accident" or "loss" occurred and if a claim is made or "suit" is brought, written notice of the claim or "suit" including, but not limited to, the date and details of such claim or "suit";
- (2) The "insured's" name and address; and
- (3) To the extent possible, the names and addresses of any injured persons and witnesses.

If you report an "accident", claim, "suit" or "loss" to another insurer when you should have reported to us, your failure to report to us will not be seen as a violation of these amended duties provided you give us notice as soon as practicable after the fact of the delay becomes known to you.

P. Waiver of Transfer Of Rights Of Recovery Against Others To Us

The following is added to the **Transfer Of Rights Of Recovery Against Others To Us** Condition:

This Condition does not apply to the extent required of you by a written contract, executed prior to any "accident" or "loss", provided that the "accident" or "loss" arises out of operations contemplated by such contract. This waiver only applies to the person or organization designated in the contract.

Q. Employee Hired Autos – Physical Damage

Paragraph **b.** of the **Other Insurance** Condition in the Business Auto Coverage Form and Paragraph **f.** of the **Other Insurance – Primary and Excess Insurance Provisions** Condition in the Motor Carrier Coverage Form are replaced by the following:

For Hired Auto Physical Damage Coverage, the following are deemed to be covered "autos" you own:

- (1) Any covered "auto" you lease, hire, rent or borrow; and
- (2) Any covered "auto" hired or rented under a written contract or written agreement entered into by an "employee" or elected or appointed official with your permission while being operated within the course and scope of that "employee's" employment by you or that elected or appointed official's duties as respect their obligations to you.

However, any "auto" that is leased, hired, rented or borrowed with a driver is not a covered "auto".

R. Unintentional Failure to Disclose Hazards

The following is added to the **Concealment, Misrepresentation Or Fraud** Condition:

However, we will not deny coverage under this Coverage Form if you unintentionally:

- (1) Fail to disclose any hazards existing at the inception date of this Coverage Form; or
- (2) Make an error, omission, improper description of "autos" or other misstatement of information.

You must notify us as soon as possible after the discovery of any hazards or any other information that was not provided to us prior to the acceptance of this policy.

S. Hired Auto – World Wide Coverage

Paragraph **7a.(5)** of the **Policy Period, Coverage Territory** Condition is replaced by the following:

- (5) Anywhere in the world if a covered "auto" is leased, hired, rented or borrowed for a period of 60 days or less,

T. Bodily Injury Redefined

The definition of "bodily injury" in the **Definitions** Section is replaced by the following:

"Bodily injury" means bodily injury, sickness or disease, sustained by a person including death or mental anguish, resulting from any of these at any time. Mental anguish means any type of mental or emotional illness or disease.

WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. (This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.)

This agreement shall not operate directly or indirectly to benefit anyone not named in the Schedule.

Schedule

ANY PERSON OR ORGANIZATION FOR WHOM YOU ARE REQUIRED BY WRITTEN CONTRACT OR AGREEMENT TO OBTAIN THIS WAIVER OF RIGHTS FROM US

This endorsement changes the policy to which it is attached and is effective on the date issued unless otherwise stated.

(The information below is required only when this endorsement is issued subsequent to preparation of the policy.)

Endorsement Effective

Policy No: WC 0380936-04

Endorsement No.

Insured: GHD Inc.

Premium \$

Insurance Company: Zurich American Insurance Company

Countersigned By

Wightman Thomas

WC 00 03 13

(Ed. 4-84)

STATE OF NEW YORK
WORKERS' COMPENSATION BOARD

CERTIFICATE OF NYS WORKERS' COMPENSATION INSURANCE COVERAGE

<p>1a. Legal Name & Address of Insured (Use street address only) GHD Inc. GHD Services Inc. GHD Consulting Services Inc. GHD Consulting Engineers, LLC One Remington Park Drive Cazenovia, NY 13035</p> <p><i>Work Location of Insured (Only required if coverage is specifically limited to certain locations in New York State, i.e., a Wrap-Up Policy)</i></p>	<p>1b. Business Telephone Number of Insured</p> <p>1c. NYS Unemployment Insurance Employer Registration Number of Insured 917814561</p> <p>1d. Federal Employer Identification Number of Insured or Social Security Number 98-0425935, 15-0430700, 16-1229774</p>
<p>2. Name and Address of the Entity Requesting Proof of Coverage (Entity Being Listed as the Certificate Holder)</p> <p>PER CERTIFICATE HOLDER LISTED ON ACORD CERTIFICATE</p> <div style="border: 1px solid black; padding: 5px; display: inline-block; margin-top: 20px;">APPROVED</div>	<p>3a. Name of Insurance Carrier Zurich American Insurance Company</p> <p>3b. Policy Number of entity listed in box "1a" WC0380936</p> <p>3c. Policy effective period 7/1/2019 to 7/1/2020</p> <p>3d. The Proprietor, Partners or Executive Officers are <input checked="" type="checkbox"/> included. (Only check box if all partners/officers included) all excluded or certain partners/officers excluded.</p>

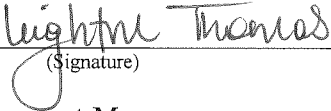
This certifies that the insurance carrier indicated above in box "3" insures the business referenced above in box "1a" for workers' compensation under the New York State Workers' Compensation Law. **(To use this form, New York (NY) must be listed under Item 3A on the INFORMATION PAGE of the workers' compensation insurance policy).** The Insurance Carrier or its licensed agent will send this Certificate of Insurance to the entity listed above as the certificate holder in box "2".

The Insurance Carrier will also notify the above certificate holder within 10 days IF a policy is canceled due to nonpayment of premiums or within 30 days IF there are reasons other than nonpayment of premiums that cancel the policy or eliminate the insured from the coverage indicated on this Certificate. (These notices may be sent by regular mail.) Otherwise, this Certificate is valid for one year after this form is approved by the insurance carrier or its licensed agent, or until the policy expiration date listed in box "3c", whichever is earlier.

Please Note: Upon the cancellation of the workers' compensation policy indicated on this form, if the business continues to be named on a permit, license or contract issued by a certificate holder, the business must provide that certificate holder with a new Certificate of Workers' Compensation Coverage or other authorized proof that the business is complying with the mandatory coverage requirements of the New York State Workers' Compensation Law.

Under penalty of perjury, I certify that I am an authorized representative or licensed agent of the insurance carrier referenced above and that the named insured has the coverage as depicted on this form.

Approved by: Leighton Thomas
(Print name of authorized representative or licensed agent of insurance carrier)

Approved by:  6/1/2019
(Signature) (Date)

Title: Account Manager

Telephone Number of authorized representative or licensed agent of insurance carrier: _____

Please Note: Only insurance carriers and their licensed agents are authorized to issue Form C-105.2. Insurance brokers are NOT authorized to issue it.

Workers' Compensation Law

Section 57. Restriction on issue of permits and the entering into contracts unless compensation is secured.

1. The head of a state or municipal department, board, commission or office authorized or required by law to issue any permit for or in connection with any work involving the employment of employees in a hazardous employment defined by this chapter, and notwithstanding any general or special statute requiring or authorizing the issue of such permits, shall not issue such permit unless proof duly subscribed by an insurance carrier is produced in a form satisfactory to the chair, that compensation for all employees has been secured as provided by this chapter. Nothing herein, however, shall be construed as creating any liability on the part of such state or municipal department, board, commission or office to pay any compensation to any such employee if so employed.

2. The head of a state or municipal department, board, commission or office authorized or required by law to enter into any contract for or in connection with any work involving the employment of employees in a hazardous employment defined by this chapter, notwithstanding any general or special statute requiring or authorizing any such contract, shall not enter into any such contract unless proof duly subscribed by an insurance carrier is produced in a form satisfactory to the chair, that compensation for all employees has been secured as provided by this chapter.

STATE OF NEW YORK
WORKERS' COMPENSATION BOARD

CERTIFICATE OF INSURANCE COVERAGE UNDER THE NYS DISABILITY BENEFITS LAW

PART 1. To be completed by Disability Benefits Carrier or Licensed Insurance Agent of that Carrier

<p>1a. Legal Name and Address of Insured (Use street address only)</p> <p>GHD INC. GHD Services Inc. GHD Consulting Services Inc. GHD Consulting Engineers, LLC ONE REMINGTON PARK DRIVE CAZENOVIA , NY 13035</p> <p>Work Location Of Insured (Only required If coverage Is specifically limited To certain locations In New York State, i.e., a Wrap-Up Policy)</p>	<p>1b. Business Telephone Number Of Insured</p> <p>1c. NYS Unemployment Insurance Employer Registration Number of Insured</p> <p>1d. Federal Employer Identification Number of Insured or Social Security Number</p> <p>98-0425935, 15-0430700, 16-1229774</p>
<p>2. Name and Address of the Entity Requesting Proof of Coverage (Entity Being Listed as the Certificate Holder)</p> <p>PER CERTIFICATE HOLDER LISTED ON ACORD CERTIFICATE</p> <p style="text-align: center;">APPROVED</p>	<p>3a. Name of Insurance Carrier</p> <p>WESCO INSURANCE COMPANY</p> <p>3b. Policy Number of entity listed in box "1a.":</p> <p>0169021</p> <p>3c. Policy effective period:</p> <p>6/18/17 to 12/31/2019</p>

4. Policy covers:

a. All of the employer's employees eligible under the New York Disability Benefits Law

b. Only the following class or classes of the employer's employees:

Under penalty of perjury, I certify that I am an authorized representative or licensed agent of the insurance carrier referenced above and that the named insured has NYS Disability Benefits insurance coverage as described above.

Date Signed 6/18/17 By *Kathleen Elia*

(Signature of insurance carrier's authorized representative or NYS Licensed Insurance Agent of that insurance carrier)

Telephone Number 800-535-2711 Title Vice President

IMPORTANT: If box "4a" is checked, and this form is signed by the insurance carrier's authorized representative or NYS Licensed Insurance Agent of that carrier, this certificate is COMPLETE. Mail it directly to the certificate holder.
If box "4b" is checked, this certificate is NOT COMPLETE for purposes of Section 220, Subd. 8 of the Disability Benefits Law. It must be mailed for completion to the Workers' Compensation Board, DB Plans Acceptance Unit, 328 State Street, Schenectady, NY 12305.

PART 2. To be completed by NYS Workers' Compensation Board (Only if box "4b" of Part 1 has been checked)

**State of New York
Workers' Compensation Board**

According to information maintained by the NYS Workers' Compensation Board, the above-named employer has complied with the NYS Disability Benefits Law with respect to all of his/her employees.

Date Signed _____ By _____

(Signature of NYS Workers' Compensation Board Employee)

Telephone Number _____ Title _____

Please Note: Only insurance carriers licensed to write NYS disability benefits insurance policies and NYS licensed insurance agents of those insurance carriers are authorized to issue Form DB-120.1. **Insurance brokers are NOT authorized to issue this form.**

Additional Instructions for Form DB-120.1

By signing this form, the insurance carrier identified in box "3" on this form is certifying that it is insuring the business referenced in box "1a" for disability benefits under the New York State Disability Benefits Law. The Insurance Carrier or its licensed agent will send this Certificate of Insurance to the entity listed as the certificate holder in box "2".

Will the carrier notify the certificate holder within 10 days of a policy being cancelled for non-payment of premium or within 30 days if cancelled for any other reason or if the insured is otherwise eliminated from the coverage indicated on this certificate prior to the end of the policy effective period? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO

This certificate is issued as a matter of information only and confers no rights upon the certificate holder. This certificate does not amend, extend or alter the coverage afforded by the policy listed, nor does it confer any rights or responsibilities beyond those contained in the referenced policy.

This certificate may be used as evidence of a Disability Benefits contract of insurance only while the underlying policy is in effect.

Please Note: Upon the cancellation of the disability benefits policy indicated on this form, if the business continues to be named on a permit, license or contract issued by a certificate holder, the business must provide that certificate holder with a new Certificate of NYS Disability Benefits Coverage or other authorized proof that the business is complying with the mandatory coverage requirements of the New York State Disability Benefits Law.

DISABILITY BENEFITS LAW

§220. Subd. 8

(a) The head Of a state Or municipal department, board, commission Or office authorized Or required by law To issue any permit For Or In connection With any work involving the employment Of employees In employment As defined In this article, And Not withstanding any general Or special statute requiring Or authorizing the issue Of such permits, shall Not issue such permit unless proof duly subscribed by an insurance carrier Is produced In a form satisfactory To the chair, that the payment Of disability benefits For all employees has been secured As provided by this article. Nothing herein, however, shall be construed As creating any liability On the part Of such state Or municipal department, board, commission Or office To pay any disability benefits To any such employee If so employed.

(b) The head Of a state Or municipal department, board, commission Or office authorized Or required by law To enter into any contract For Or In connection With any work involving the employment Of employees In employment As defined In this article, And notwithstanding any general Or special statute requiring Or authorizing any such contract, shall Not enter into any such contract unless proof duly subscribed by an insurance carrier Is produced In a form satisfactory To the chair, that the payment Of disability benefits For all employees has been secured As provided by this article.

APPENDIX C

ERIE COUNTY WATER AUTHORITY CONFIDENTIALITY AND COPYRIGHT LICENSING AGREEMENT

LICENSE:

Upon execution of this Agreement, the Engineer acquires from the Authority a license to use the proprietary and intellectual property of the Authority for the purpose of completing the work under this Agreement.

The Authority reserves the right to incorporate any Engineer-created data into the Authority's database.

OWNERSHIP:

This License Agreement does not constitute a transfer of title or interest in the data. Any portion of the data that is modified or merged into another computer file or program by the Engineer or is integrated with other programs or data to form derivative products, shall continue to be subject to the provisions of this License Agreement. The Authority retains ownership of the data and all such portions.

CONFIDENTIALITY CLAUSE:

The Engineer agrees that all digital data and hard copy from the ECWA GIS Basemap Features provided to the Engineer are copyrighted by the Authority, are protected by the copyright laws of the United States and are furnished to the Engineer with all rights reserved. Therefore, the Engineer is hereby permitted to use the digital data and hard copies thereof only for the purposes allowed under this Agreement. The Engineer agrees not to otherwise copy, reproduce or use the digital data, hard copy, or the information contained therein for any other purpose whatsoever.

COPYRIGHT NOTICE:

The copyright notice included in each of the files is not only to be retained in those files but is also to be included in any copies made of those files. No part of the files may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photographing and recording, or by any information storage or retrieval system, except as expressly permitted in writing by the Erie County Water Authority.

Upon notification by the Authority of any changes in copyright requirements, the Engineer will make said changes to all subsequent maps or reports, as required.

LIMITATION OF LIABILITY:

ECWA GIS Basemap Features are compiled to National Map Accuracy Standards for 1"=100' scale mapping by Woolpert, Dayton, Ohio, using Stereo photogrammetric methods from aerial photography dated April, May, and/or November, 1990. The control grid is based on New York State Plane Coordinates and North American Datum 1983. The parcels are from Erie County Tax Maps which were available in the County Finance office in June of 1993.

The Authority makes no claims as to the accuracy of the ECWA GIS Basemap Features and assumes no responsibility for their positional or content accuracy. The Authority makes no claims as to the ability of the ECWA GIS Basemap Features to fulfill Engineer application requirements. In providing data, the Authority assumes no obligation to assist the Engineer in the use of the data, or in the development, use, or maintenance of any applications applied to the data.

Engineer recognizes and agrees that the Authority makes NO REPRESENTATIONS OF ANY KIND INCLUDING, BUT NOT LIMITED TO, THE WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE, NOR ARE ANY SUCH WARRANTIES TO BE IMPLIED, WITH RESPECT TO THE DATA OR INFORMATION FURNISHED.

TERMINATION:

The License to use data terminates upon completion of the work under this Agreement.

LIQUIDATION OF DAMAGES FOR BREACH OF AGREEMENT:

The parties agree that if Engineer breaches the Agreement and uses or discloses any of the copyrighted information in any way other than that allowed, during or subsequent to the terms of this Agreement for any purpose whatsoever, the damages of the Authority shall be deemed liquidated at three times the amount of the total value of the data as determined by the Erie County Water Authority.

In addition to treble damages for breach of Agreement, Engineer will additionally forfeit the license acquired to use copyrighted property of the Authority.

SPECIFIC TERMS OF ACCEPTANCE:

This Agreement constitutes the entire agreement between the parties.

APPENDIX D
GHD RESPONSE TO RFP



Erie County Water Authority

Consulting Engineering
Services for Powdered
Activated Carbon System
Improvements
(ECWA Project No.
202000021)

February 14, 2020





February 14, 2020

Proposal No. 11208890

Leonard F. Kowalski, PE
Executive Engineer
Erie County Water Authority
3030 Union Road
Cheektowaga, New York 14227

Re: Consulting Engineering Services Powdered Activated Carbon system Improvements
Van de Water and Sturgeon Point Water Treatment Plants
(ECWA Project No. 202000021)

Dear Mr. Kowalski:

GHD appreciates the opportunity to submit our proposal in response to the Erie County Water Authority's (ECWA) Request for Proposals for upgrades and improvements to the existing powdered activated carbon (PAC) systems at the Van de Water and Sturgeon Point Water Treatment Plants. Serving the water community since 1935, GHD is well known as a leader in the water industry, having been involved in more than 100 water plant projects throughout North America with a variety of treatment processes. As a global company, we can bring that expertise to the ECWA through a combination of our local resources and support from our wide network of technical experts.

Our team strongly believes that GHD presents the best strategic partner for the ECWA to proceed with this important project. We confidently support this statement and will bring the following benefits and value to your project:

- ✓ **GHD can help the ECWA meet its Strategic Initiatives.** As outlined in the ECWA's Comprehensive Strategic Plan (September 2019), GHD will focus on the redundancy and resiliency of key assets such as the PAC systems. In addition to the use of PAC to reduce taste and odor issues, the improved PAC system can offer protection against potential Harmful Algal Blooms (HABs) that have occurred across New York State in recent years. GHD brings proven experience in addressing the risk of cyanotoxins (i.e., microcystin) in finished drinking water caused by HABs both in New York State and across the globe. GHD successfully implemented a new PAC system for the treatment of microcystin at the City of Auburn's WTP. GHD also brings an excellent automation team, consisting of 4-year degreed engineers, to assist the ECWA with the modernization of their control system related to PAC.
- ✓ **GHD brings recent, relevant experience to this project.** In recent years, members of our team have completed many water treatment plant improvement projects including evaluations, design, construction contract administration and field services during construction. These projects have required that we maintain delivery of water during construction. Through these projects and our involvement with professional organizations, our staff is well versed in cutting edge technologies and ever evolving regulatory requirements.

Thank you for the opportunity to submit our proposal. We look forward to strengthening our ongoing partnership. On behalf of our team, thank you for your time and consideration. Our proposal remains valid for a period of 60 days.

Sincerely,
GHD Consulting Services Inc.

Paul J. McGarvey, PE, BCEE
Associate
paul.mcgarvey@ghd.com



Table of Contents

1	Qualifications / Related Experience	1
1.1	About GHD.....	1
1.2	Decades of Water Treatment Experience	2
1.3	Relevant Experience.....	2
2	Project Understanding / Approach	13
2.1	Introduction	13
2.2	Approach.....	14
2.3	Scope of Services	17
3	Project Staffing.....	23
3.1	Organizational Chart.....	23
3.2	Current Workloads	24
3.3	Key Personnel Professional Summary	26
4	Qualifications of Resident Inspector(s)	29
4.1	Dustin Steiner – Senior Resident Inspector.....	29
4.2	James Milks – Senior Resident Inspector	30
5	Work Performed for the Authority	31
6	Current Workload	31
7	Completed Attachments.....	31
8	Proof of Insurance.....	31
9	Proposed Schedule.....	32
10	Fee Schedule.....	33
10.1	Level of Effort.....	33
10.2	Pricing Summary	33
	Appendix A Resumes	
	Appendix B Required Forms	
	Appendix C Certificate of Insurance	

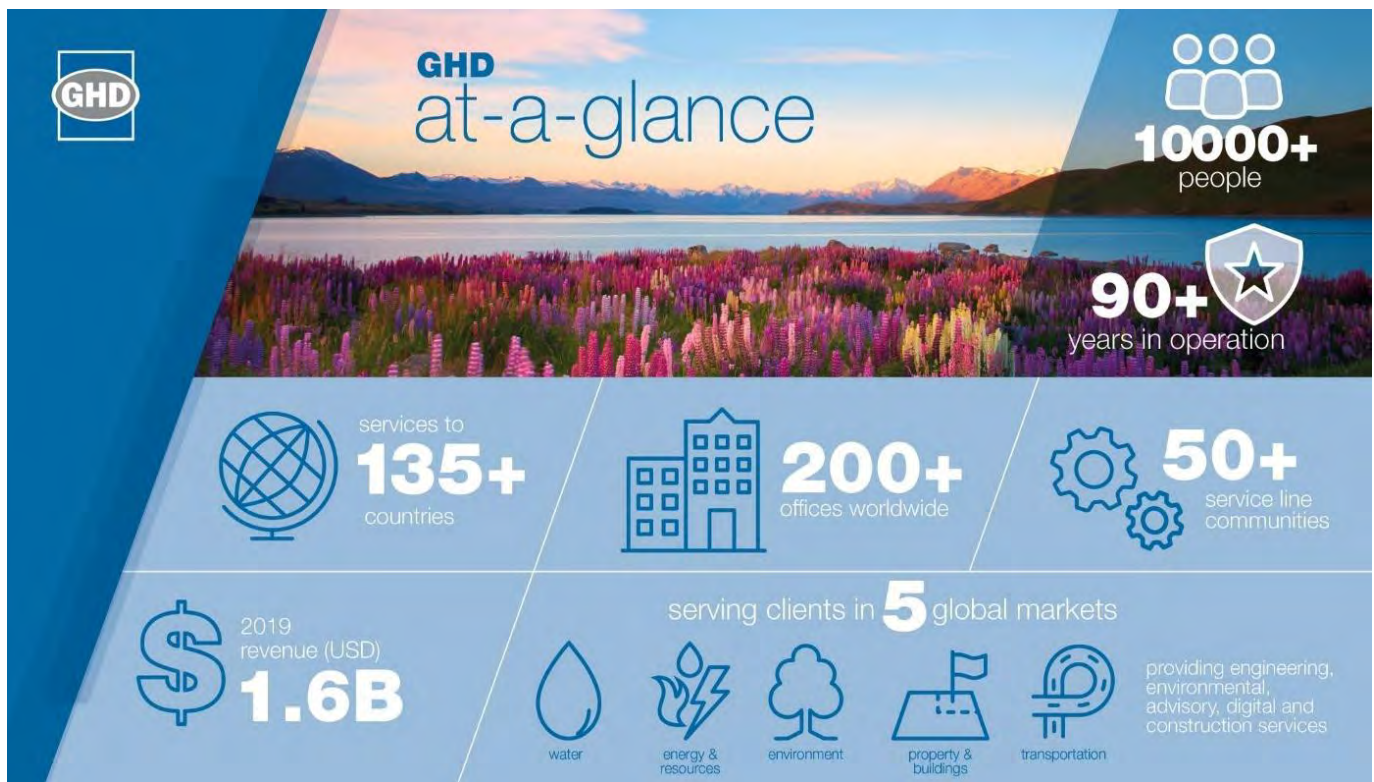
1 Qualifications / Related Experience

1.1 About GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, advisory, digital, and construction services to private and public sector clients. Established in 1928 and privately owned by our people, GHD operates across five continents – Asia, Australia, Europe, North and South America – and the Pacific region. We employ more than 10000 people in 200+ offices to deliver projects with high standards of safety, quality, and ethics across the entire asset value chain. Driven by a client-service led culture, we connect the knowledge, skill and experience of our people with innovative practices, technical capabilities, and robust systems to create lasting community benefits.

Committed to sustainable development, GHD improves the physical, natural, and social environments of the many communities in which we operate.

We are guided by a Practice Quality Management System, ISO 9001:20015 and an Environmental Management System, ISO 14001:2004, which are 3rd party certified. In alignment with the global demands of water, energy and urbanization, our aim is to exceed the expectations of our clients and contribute to their success.



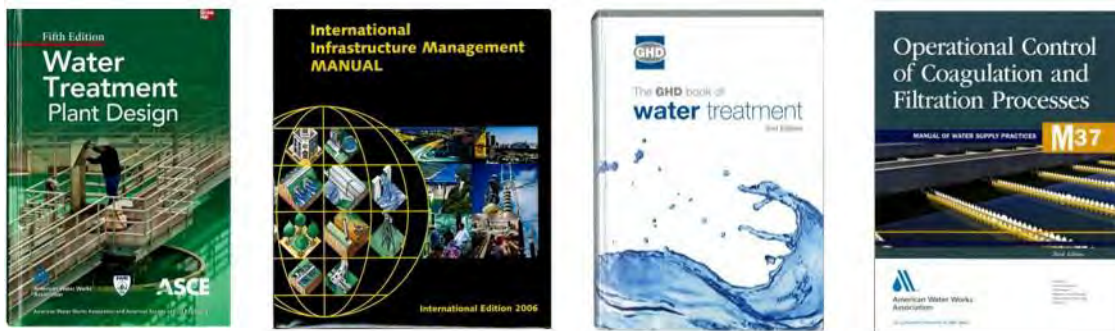
1.2 Decades of Water Treatment Experience

GHD has evaluated, designed and constructed numerous water treatment plants around the world ranging in size from 0.1 to over 150 mgd, which treat both surface water and groundwater sources. Our staff has extensive experience with a wide range of treatment and filtration techniques and can adapt to meet the particular raw water quality requirements, as well as the operational and administrative needs, of our clients. Our treatment experience includes, but is not limited to:

- Conventional Clarification and Filtration
- High Rate Clarification and Filtration
- Membrane Filtration
- Direct Filtration
- Two-Stage Filtration
- Diatomaceous Earth Filtration
- Slow Sand Filtration
- Ion Exchange
- UV Disinfection
- Ozonation
- Dissolved Air Floatation
- Corrosion Control
- Adsorption Processes
- Chlorine Dioxide
- Carbon Dioxide
- Advanced Oxidation
- Ballasted Flocculation/Clarification

Our clients retain us to design new facilities as well as to renovate and expand existing facilities. Most of our water treatment plant projects are directly related to optimizing and sustaining performance to meet the requirements of the US EPA Safe Drinking Water Act and to reduce production costs. GHD has evaluated, designed and constructed hundreds of water treatment plants around the world, with over 100 in the U.S.

GHD literally wrote the book on Water Treatment Plant Design and Asset Management. The GHD Book of Water Treatment, 2nd edition was authored by GHD's current leading water treatment specialists from around the world



1.3 Relevant Experience

The following list of projects highlights GHD's similar experience relevant to the proposed powdered activated carbon project at both the Van de Water Treatment Plant Pump Station and Sturgeon Point Water Treatment Plant. Detailed descriptions are provided on the following pages:

- **Powder Activated Carbon System for Microcystin Treatment**, Auburn, New York
- **Binghamton Water Treatment Plant improvements**, City of Binghamton, Binghamton, New York,
- **Octoraro Water Treatment Plant Capital Improvement Program**, Nottingham, Pennsylvania
- **Lake Ontario Water Treatment Plant Improvements**, Oswego, New York
- **Otisco Lake Water Treatment Plant improvements**, Syracuse, New York

Powdered Activated Carbon System for Microcystin Treatment, Auburn, New York

Description

The City Auburn provides potable water to approximately 45,000 residents and businesses. The City owns and operates both conventional and slow sand filtration plants but produces a large majority of its potable water supply at their conventional facility. In recent years, average and maximum day production of treated water has been 4.02 mgd and 6.21 mgd, respectively. During 2016, following a Harmful Algal Bloom (HAB) in its source water, the City observed microcystin levels of 1.3 µg/L and 0.2 µg/L in its raw and finished water, respectively. The detection of microcystin in the finished water was the first cyanotoxin detection on record, for a public drinking water system in New York State.

Immediately following the detection of microcystin in its finished water, the City retained GHD to complete an expedited evaluation of various treatment options and technologies. A comprehensive technology screening and suitability analysis was completed, which resulted in the selection of Powder Activated Carbon (PAC) as the preferred treatment solution. This selection was governed by several key technical, practical and economic factors including but not limited to: positive laboratory results, rapid implementation potential, mature/proven technology, constructability and site considerations, scalability due to wide ranging contaminant loading, broad spectrum treatment of organic contaminants, and cost.

Despite the compelling case for PAC, the New York State Department of Health (NYSDOH) was reluctant to provide a full-scale endorsement of the technology for cyanotoxin treatment. As a result, the City agreed to conduct a full-scale demonstration study over 2 years, to validate the efficacy of PAC for the treatment of the microcystin.

Working closely with the City, the NYSDOH and the New York State Department of Environmental Conservation (NYSDEC), under a formal emergency declaration, GHD successfully completed the implementation of a full-scale microcystin treatment system and demonstration study. The general scope included:

- Technology screening and selection
- Treatment efficacy laboratory analyses including jar and column testing
- PAC system design, procurement, construction, and commissioning
- Pre-HAB season laboratory demonstration evaluation and analysis
- In-season laboratory demonstration analysis and pilot testing
- Operation and maintenance troubleshooting and SOP development

Client/Contact

City of Auburn
Seth N. Jensen, PE
Director of Municipal Utilities
T: 315.255.4180

Date

Design Completed – 2018
Operational – 2018

Value

\$1,000,000



The PAC system was designed around certain minimum standards including:

1. **Contact time** – 15 minutes (minimum). Based on max and avg. day flows the City could achieve 38 and 60+ minutes respectively.
2. **Dosing ranges** – 0 to 50mg/l. Due to the variable nature of organic loading and specifically the potential cyanotoxin loading, a wide range of dosing was required.
3. **Operating pressure** – 80 psi PAC slurry feed. Due to energy losses through the feed system and to overcome backpressure at the injection point, a minimum pressure was required.
4. **Utility hook ups** – minimum motive water and compressed air sources were required.
5. **PAC storage and containment requirements** – due to flammability/explosive concerns from carbon dust, certain minimum standards for electrical, HVAC and storage were required.

During the procurement process, the City selected the CABOT Norit Americas Inc. PortaPAC System for installation. The system was installed at the City's raw water pumping station along with a number of other ancillary building improvements to accommodate the new treatment system. Some of these improvements included structural/foundational supports, new exterior access, dust control and physical separation/protection of other facilities, access road improvements, new loading pad/area, HVAC upgrades, electrical upgrades and various architectural upgrades. In addition, GHD assisted the City with various SCADA, telemetry and alarming upgrades for operational efficiency and safety.

It is important to note that with the addition of PAC, the City's residuals processing would also change considerably. Consequently, GHD evaluated the existing residuals handling processes and recommended various minor improvements to the City's settling and sludge pumping systems. Moreover, GHD reviewed the City's lagoon operations and ultimately recommended various upgrades to accommodate the increased loading associated with the PAC. Working closely with the NYSDEC, GHD designed and bid a separate lagoon improvements project, which was completed the following year.



The Outcome

Since the installation of the PAC system, **the City has seen complete microcystin removal and has recorded no detections of cyanotoxins in its drinking water.**

The City now reports that its taste and odor complaints, which have historically been common during certain seasons, have all but been eliminated.

Water Treatment Plant improvements, City of Binghamton, New York



Client/Contact

City of Binghamton
Ray L. Standish, PE
City Engineer
T: 607.772.7007

Date

2003

Value

\$15,000,000

Challenge

GHD provided evaluation, design, and construction services for comprehensive improvements to the City of Binghamton's water filtration facilities. The plant is a 20 million gallon per day (mgd) conventional filtration plant, including a raw water pumping station and intake on the Susquehanna River; chemical feed building housing alum, chlorine dioxide, sodium hypochlorite, powder activated carbon, acid, caustic and polymer; four flocculation/ sedimentation basins; 10 rapid sand filters, chlorination, corrosion control and fluoridation.

The improvement program provided upgrades to the treatment plant to comply with current and proposed drinking water regulations to improve the reliability of the process, to address the rehabilitation needs of a 40-year-old facility, and to improve operation and maintenance of the facility.

Description

The major plant improvements include:

- Chemical feed systems replacement
- Conversion from chlorine gas to sodium hypochlorite
- A silo for powder-activated carbon storage and feed
- Exterior masonry and roof replacement of all buildings
- Residual pumping expansion
- Heating, ventilating and air conditioning replacement for all buildings
- Structural improvements to process tankage
- Replacement of major electrical components
- Replacement of raw, finished water and backwash pumping systems
- Replacement of all filter valves and actuators
- Painting gallery piping
- Rebuilding two filters (media and under drains).

SCADA

The project design also included a complete supervisory control and data acquisition (SCADA) system for the City's water treatment, water distribution, and sewer collection systems, encompassing 27 remote tanks, water booster

pumping stations, and sewage pumping stations. GHD provided programming services for the SCADA system. A computerized operation and maintenance manual and maintenance management system were also prepared for the water treatment plant.

Sedimentation Basin Repairs

Due to the age and condition of the sedimentation basins, significant improvements were provided to them. New sludge collection equipment was provided and the entire effluent end of the basin was rebuilt to prevent short circuiting and to minimize potential freezing of the effluent weir. Concrete condition at or above the water level was deteriorated due to freeze/thaw damage and was repaired using a metal reinforced pneumatically applied concrete.

PAC Storage and Feed System

The City feeds PAC to the raw water to control tastes and odors from the river. The existing feed system consisted of bag storage and a dry chemical feeder requiring routine manual loading to the dry feeder hopper. The operation was messy, dust control was limited, and the storage and feed room not designed to required electrical codes. Replacement and rehabilitation alternatives were evaluated including replacement in-kind with electrical and ventilation upgrades, replacement with a slurry storage system, and replacement with a dry silo storage and feed system. **A 20 ton storage and feed silo was designed and constructed to replace the existing system, consisting of a welded steel storage silo with a full dry feed system under the skirt of the silo, with air activation of the conical section of the silo.** Water education to stainless steel piping delivered wetted carbon to the rapid mix tank.

GHD Services included:

- Evaluation
- Design
- Bidding
- Construction engineering
- Permitting
- Bench-scale treatment studies
- SCADA and PLC programming
- Computerized Maintenance Management
- Computerized O&M Manuals



The outcome

The water plant improvement provided **\$15.5 million in upgrades and is the largest single public works project undertaken by the City.** The project received the **Environmental Project of the Year Award from the New York State American Public Works Association.**

Octoraro Water Treatment Plant Capital Improvement Program, Nottingham, Pennsylvania



Client/Contact

Chester Water Authority
Brian MacEwen
Director of Engineering
T: 610.876.8185

Date

2004 to 2015

Value

Construction: \$40,000,000

Challenge

The 60 MGD Octoraro Water Treatment Plant (WTP) has been in service for more than a half a century. The original design and past upgrades of the plant were oriented toward particulate removal and microbial safety of the finished water. While the plant served the Authority and its customers well, two major issues faced the Authority: (1) increasingly restrictive regulatory requirements and (2) an aging plant infrastructure.

Description

GHD completed a multi-year capital improvement program at the Octoraro WTP, which included the following assignments:

- Providing operations guidance, including completing a number of water quality and treatment studies
- Conducting a thorough review of the treatment plant processes and facilities
- Identifying cost-effective improvements to address plant reliability and efficiency issues
- Addressing anticipated future regulations impacting the Authority and providing treatment operations guidance, including bench testing
- Design and construction phase services for various projects, including new river intake, new blend tank upstream of the plant headworks, major improvements to the flocculator, sedimentation and clearwell facilities, filter and pipe gallery renovations, new high service pumping station, new coagulant chemical storage and feed, and new chlorine storage and feed systems
- Integrated SCADA for remote monitoring and control.

The improvements made at the Susquehanna intake included the addition of Johnson intake screens and a high-pressure air burst system. The improvements have mitigated intake clogging and frazil ice formation while maintaining adequate flow and through-slot velocity and have prevented blockages from restricting supply to the treatment plant.

The existing sedimentation basins were upgraded with inclined stainless steel plate settlers. The plate settlers improve basin performance by providing laminar flow conditions between the plates. This optimizes settling, resulting in low settled water

turbidities and stable basin performance under a wide variety of flow and water quality conditions. The plate settlers discharge to a new filter influent flume system. Before discharge, a filter top mixer allows chemicals to be effectively added to the settled water, providing uniform water quality to the filters.

The PAC system was designed for a maximum carbon slurry dose of 40 mg/L at multiple dosing locations and consisted of:

- Three (3) approximately 50,000 gallon cast in place carbon slurry storage tanks to store 40,000 pounds of carbon slurry per tank. The tanks included integrated mixers, water fill lines, PAC off-loading system, level sensors, and dust control system.
- Integrated carbon feed room consisting of peristaltic hose pumps to feed carbon slurry to chase water lines to multiple carbon dosing points from any carbon slurry tank.
- Integrated SCADA for remote monitoring and control.

Modifications to the clearwell flumes has allowed treated water to pass through the main clearwell to either the main pumping station or auxiliary pumping station without short circuiting. These modifications were necessary to ensure compliance with chlorine contact time (CT) requirements of the Safe Drinking Water Act.

A new high lift pumping station includes four new vertical turbine pumps with a total pumping capacity of 55 MGD, two new 2000 KW emergency generators, and related instrumentation and controls to replace aging split case pumps. The pump sizing was selected to allow a combination of constant speed and VFD driven pumps to optimize responses to demand and to minimize energy consumption.

New PACL storage and feed facilities were designed and constructed consisting of two new 6000 gallon storage tanks and four hose pumps for metered PACL feed. The storage tanks and feed pumps are integrated into a common secondary containment design to meet regulatory requirements.

A new alum storage and feed facility was designed and constructed consisting of a new 2300 SF CMU building housing, six new 10,500 gallon HDLPE alum storage tanks and four new hose pumps for metered alum feed. The project included installation of new 8-inch diameter carrier pipe and pull vaults for new alum feed tubing.

Existing gas storage and feed facilities were upgraded. The following are included:

- Three 10,000 ppd evaporators
- Three 2000 lb. chlorine container scale system
- New chlorine gas emergency shot-off system
- Three 4000 ppd chlorinators
- Three 2000 ppd chlorinators

The contract for this project included a temporary sodium hypochlorite feed system consisting of six 6500 gallon HDPE storage tanks and eight peristaltic hose pumps for metered sodium hypochlorite feed.

Flocculator improvements included replacement of existing flocculators with new paddle wheels, drives, VFD controls for flocculator drives, channel gates, new motorized gates and modifications to the existing process flow pattern to obtain better flow distribution between flocculators and sedimentation basins.

The projects were carefully planned with the Authority to maintain continuous treatment in compliance with applicable regulations during the course of construction.



The outcome

The projects resulted in an up-to-date, state-of-the-art facility to serve the Authority and its customers well into the future. **The facility is among a small number of plants across the US that have achieved and maintained Phase IV Partnership of Safe Water status.**

Otisco Lake Water Treatment Plant Improvements, Syracuse, New York



Client/Contact

Onondaga County Water Authority
Geoffrey Miller, PE – Deputy Executive Director
T: 315.455.7061

Date

Design Completed – 2008
Operational – 2010

Value

Project Cost - \$14,875,000
Engineering Fees - \$1,330,000

Challenge

The Onondaga County Water Authority (OCWA) Otisco Lake Water Treatment Plant (WTP) is a 24 million gallon per day (mgd) direct filtration plant which was originally placed into service in 1985.

The WTP is a high-rate, direct filtration process that has successfully met changing water quality regulations since it was placed into service. OCWA has achieved Phase 3 status in the American Water Works Association Partnership for Safe Water, will be seeking Phase 4 status, and as such, has more stringent goals for water quality than most water systems, including maximum combined filter effluent of 0.1 NTU. In addition, under the Stage 2 Disinfectants and Disinfection By-products (DBP) Rule, OCWA was required to make treatment modifications to reduce by-product formation.

Description

Based on the results of a pilot and demonstration study, OCWA proceeded with the following improvements to the WTP to improve treatment performance.

- Provide two new granular activated carbon filters with low-profile underdrains for a deeper bed, coarse media, design with auxiliary air scour, and rebuild the existing four filters to the same
- Utilize chlorine dioxide for pre-disinfection and zebra mussel control at the intake in lieu of chlorine gas to control DBPs.
- Generally update systems throughout the facility to improve operations and safety and renew aging equipment and reduce energy use.
- Include the WTP in OCWA's computerized maintenance management system (Maximo).

GHD was retained to provide the basis of design, final design, and construction services for the +\$15 million capital improvement program to the OCWA Otisco Lake WTP. The project was funded through the Drinking Water State Revolving Loan program.

In addition to the process enhancements discussed above for turbidity and disinfection byproduct control, the project also included various performance maintenance upgrades to improve the reliability and performance of building systems and process equipment.

These improvements included the following:

- Design using LEED design principles and energy modeling of the facility for the design of insulation and natural lighting components
- Replacement of heating system boilers
- Replacement of emergency generator

- Conversion of chlorine gas to sodium hypochlorite at two locations, utilizing wood-stave tank construction
- Installation of a three-chemical chlorine dioxide generation system for raw water (intake) disinfection and zebra mussel control
- Replacement of plant water system
- Carbon dioxide storage and carbonic acid feed system for pH control of the raw water for improved coagulation
- Conversion of the WTP to a full plant-wide Supervisory Control and Data Acquisition System (SCADA)
- Replacement of filter valve actuators
- Replacement of filter instruments, including loss of head and flow transmitters
- Replacement of backwash and filter rate of flow controllers
- Replacement of submersible lagoon recycle pumps
- Upgrade of coagulant and polymer feed systems
- Replacement of membrane roofing with reflective membrane roof
- New stormwater management systems
- Extended maintenance access drive to the rear of plant
- Replacement of the dehumidifier with an energy efficient geothermal powered unit.

In addition to the above improvements, OCWA desired to provide site and security improvements to the intake and WTP sites in order to meet the recommendations provided in their water system vulnerability assessment.

All new and existing equipment was included in the existing computerized maintenance management system.



The outcome

The design of the capital improvement program for the Otisco Lake WTP was initiated in 2006, and construction was completed in 2010 and is operating successfully. With competitive bids received, OCWA was able to incorporate an additional \$584,000 of improvements to the plant. **Filter run times were greatly improved and finished water quality continues to meet Partnership for Safe Water goals. Backwash optimization resulted in a 30% reduction in overall backwash volume.**



Lake Ontario Water Treatment Plant Improvements, Oswego, New York



Client/Contact

Onondaga County Water Authority
Andrew Weiss, PE
Executive Engineer
T: 315.455.7061

Duration

August 2018 – Ongoing

Project Value

\$3,290,000

Project

Water treatment plant evaluation, basis of design and final design for improvements to a 60 mgd treatment facility that provides high quality drinking water to about 340,000 people.

Challenge

Originally designed for a treatment capacity of 36 mgd, and expanded to 72 mgd, the Lake Ontario WTP (LOWTP) located in the Town of Oswego in Oswego County was placed into service on June 1, 1967. When the LOWTP was converted to direct filtration, the approved plant capacity was increased to 72 mgd. It reliably produces drinking water for more than half of the customers in OCWA's service area and serves as a backup supply to the City of Syracuse. In 50 years' time, the facility has been well maintained and operated. Despite this, and excluding several small renovation projects, the majority of equipment has aged to the point where continued maintenance has become challenging and in some cases not readily achievable. Water quality regulations have changed dramatically since its inception, as has the quality of Lake Ontario, and the facility overall is due for a major reinvestment and upgrade

Description

GHD was selected for this project based on our combination of water quality expertise, filter plant design and construction experience and our sustainable design experience.

GHD is performing a comprehensive evaluation of the LOWTP, Raw Water Pump Station (RWPS), and Clean Water Pump Station (CWPS). GHD produced a Preliminary Evaluation and Basis of Design Report documents for the existing conditions of the facility and recommendations and a basis of design for improvements.

The project includes:

- Review the past five years of raw and finished water quality data and water production records
- Summarize existing and anticipated future drinking water regulations affecting the plant
- Evaluate the entire LOWTP campus, RWPS, and CWP from the raw water tunnel crib to the CWPS discharge and Tug Hill Pump Station, including solids handling lagoons and freeze-dry beds and clearwells
- Provide recommended improvements for process, structural, architectural, mechanical, electrical, instrumentation, HVAC, plumbing, fire protection, and security systems



- Review previous reports and test results for hazardous materials at the facilities and collect and test soil for the presence of lead
 - Over three seasons (winter, spring, and summer), perform piloting of contact improvements to the existing clarifiers and two alternate deeper bed filter designs, for comparison with the existing facilities
- Perform a desktop evaluation of existing corrosion control treatment in accordance with current USEPA and New York State guidance.
- Conduct improvement workshops to discuss observations and preliminary recommendations
- Identify permits and approvals needed for the work
- Identify possible funding opportunities for the improvements
- Summarize the findings and recommendations with opinions of cost

A prioritization and phasing workshop was held with OCWA to develop a phased approach to the over \$50 million in improvement recommendations.



The outcome

These comprehensive improvements to the Lake Ontario WTP will contribute to a renewed, more reliable treatment process and stable operation with a focus on future treatment needs. These will in turn enable this important facility to **sustain excellent water quality that meets or exceeds all drinking water regulations and AWWA Partnership** for Safe Water goals. **GHD is currently preparing the first phase of plant improvements totaling about \$34 million.**



2 Project Understanding / Approach

2.1 Introduction

GHD has thoroughly reviewed the project description, scope of work, and project requirements provided in the Authority's RFP, as well as visited the Van de Water Treatment Plant (VDWTP) and Sturgeon Point Water Treatment Plant (SPWTP), and we are confident in our ability to perform the work as presented in the RFP. The following sections present GHD's understanding of the current conditions and project needs, as well as our proposed approach to the Powder Activated Carbon (PAC) System Upgrades at both WTPs.

The SPWTP is a conventional surface water treatment plant located in Evans, NY that was originally constructed in 1961 with a production capacity of 24 Million Gallons per Day (MGD). The original plant included two coagulation basins (flocculation and sedimentation basins). The WTP was expanded in the late 1960's with additional coagulation basins and filters to increase production capacity to 60 MGD. The plant was ultimately expanded in the mid-1970s, to increase the production capacity to 90 MGD. During the late 1970's, significant upgrades were made to the coagulation basins including the addition of tube settlers and new sludge collection equipment.



The VDWTP is also conventional treatment plant located in the Town of Tonawanda, NY that utilizes raw water from the Niagara River. The plant went online in the 1970s and has a rated capacity of 50 mgd. Treatment consists of rapid mixing, flocculation, sedimentation, filtration, and chlorine disinfection and corrosion control. Residual solids produced by the sedimentation and filter backwash processes are thickened and dewatered onsite before final offsite disposal. The last major upgrade was the replacement of the flocculators and tube settlers around 2012.

The VDWTP and SPWTP have PAC storage and feed systems that date back to the 1970s. Both systems are currently not in use and are in need of significant upgrades to be functional. The systems were originally installed for taste and odor treatment, however, the raw water characteristics of Lake Erie and the Niagara River have changed, thanks in no small part to the Zebra mussel, the need to operate the PAC system diminished. We understand that these systems have not been operated in over 20 years. ECWA has acknowledge the growing threat of harmful algal blooms (HABs) in the Great Lakes and want to be prepared if either the SPWTP or VDWTP is faced with raw water quality concerns from cyanobacteria.

Harmful algal blooms (HABs) are a concern in all 50 states. Red tides, blue-green algae, and cyanobacteria are examples of HABs that can have severe impacts on human health, aquatic ecosystems, and the economy.

Cyanobacteria are photosynthetic bacteria that have been detected in lakes in recent years. Cyanobacteria can produce cyanotoxins, which are a growing concern to drinking water utilities that use surface water supplies as their source water. Cyanobacteria can result in taste and odor issues, increased turbidity, increased disinfection byproduct precursors, and the presence of cyanotoxins in raw and finished drinking water (AWWA WRF, 2016). Blue-green algae blooms, occur in many different types of water and typically peak during the late summer and early fall months.

Cyanotoxins present serious health risks to humans and exhibit varying levels of toxicity depending on the type of toxin. Microcystin is one of the most toxic cyanotoxins and is produced by various species of cyanobacteria. Microcystin exhibits both acute and chronic effects on humans and animals by damaging the liver (Gupta et al., 2003; Li et al., 2008). Microcystin is also suspected of promoting primary liver cancer with long-term exposure to sub-lethal concentrations (Yan et al., 2006; Weng et al., 2007).

There are currently no federal or New York State water quality criteria or regulations for cyanobacteria or cyanotoxins in drinking water; however, the United States Environmental Protection Agency (USEPA) issued a Health Advisory Limit (HAL) value for microcystin of 0.3 µg/L for bottle-fed infants, young children, and those who may be more susceptible than the general public, such as pregnant women, the elderly, and immune-compromised individuals (USEPA, 2015). The World Health Organization (WHO) has a recommended guideline value of 1.0 µg/L for microcystin-LR in drinking water (WHO, 2003).

Microcystin-LR is the standard form of microcystin used for most analyses. Further, cyanotoxins are included in the USEPA Contaminant Candidate List 4, which identifies contaminants that are currently not subject to any national drinking water regulations, but may require regulation in the future.

PAC has been used successfully to address cyanotoxins at water treatment plants. GHD has used PAC successfully at the Auburn WTP specifically for HAB related concerns. Returning the ability to add PAC at both SPWTP and VDWTP will allow ECWA to be prepared for future taste and odor concerns and HABs related issues. The proposed PAC project will increase ECWA's resiliency and emergency preparedness, and reduce the likelihood of HABs causing water quality issues.

The existing VDWTP PAC system is located at the Van de Water Pumping Station (VDWPS) and consists of an 80,000 gallon epoxy-lined concrete carbon slurry tank with a mixer and dust collector, two slurry transfer pumps that move carbon to the slurry day tank, from which two carbon slurry feed pumps convey the carbon to the application point in the 48-inch raw water line at the VDWPS.

The PAC system at the SPWTP consists of a 60,000 gallon epoxy-lined concrete bulk carbon slurry tank with a mixer and dust collector, and two slurry transfer pumps located in dedicated room at grade level at the south end of the main treatment building. The carbon slurry day tank is located on the second floor of the treatment building along with two carbon slurry feed pumps. The PAC application points are at flash mixing or to the settled water lines leading to the filters.

When in use, powdered activated carbon is delivered in dry form and blown into the slurry tanks where it is mixed with water to form a slurry. Typically mixing ratio is one pound of dry PAC to one gallon of water. The process is typically dusty thus the need for dust collectors and appropriate air handling.

2.2 Approach

The PAC systems at both WTPs have the typical components of modern systems; namely, bulk storage and mixing, transfer pumps, day tank, and feed pumps. One difference we have seen between other PAC systems and ECWA's is that other facilities tend to store PAC in dry form. ECWA's carbon slurry tanks are located within enclosed rooms at both facilities allowing for air handling and dust control. Based on our observations and discussions with ECWA personnel, it appears the mechanical equipment, piping and possibly tank liners need to be replaced, but the general process flow of the system will not need to be changed.

During the basis of design phase of the project we will identify the anticipated consumption rate of PAC at each facility based on flow rates and our experience treating HABs at other WTPs. We have found that typical dose rates of PAC for HABs is 10 to 20 mg/L, however, can be much higher depending on the characteristics of the cyanotoxins. PAC dose rates for taste and odor concerns is often in the 1 to 20 mg/L range. The dosing rate will allow us to determine the feed pump size, which will dictate the day tank size. The existing day tanks at each WTP appeared small in volume compared to the potential demand. We will confirm the proper size day tanks to minimize filling of the tank(s) as it is often the cause of spills. Controls will also be incorporated to minimize the potential for overfills. This particularly critical at SPWTP as the bulk tank and day tanks are in separate room and on different floors. We will also pursue the potential for eliminating the day tank with the Department of Health. The use a day tank for PAC is really not critical as spills or siphoning from the bulk tank into the raw water is not likely nor is it a significant health concern as the PAC will settle out in coagulation basins downstream of the application point.

With an understanding of the feed rates, we will be able to determine how many days storage the existing bulk slurry tanks provide. Increasing the size of the bulk tanks would be a significant cost as the tanks are integral to the building construction at both facilities. Based on typical applications rates and plant flows, the existing bulk carbon tanks provide enough PAC to address a 1-3 week event before refilling the tank would be required. Additional capacity can be provided by having PAC stored onsite in a dedicated silo or in Super Sacks. The introduction of the PAC from the Super Sacks into the bulk slurry tanks would be more manual than when trucked deliveries are blown into the bulk tank, but resiliency is provided by not having to be reliant on a delivery company in a time of need. There is essentially no shelf life limit to PAC if kept dry. If ECWA wanted to pursue dry PAC storage in Super Sacks, we would evaluate the use of a feed system such as Norit Porta-PAC or ProMinent Tomal with the potential for outdoor application as the PAC will likely only be used in summer months.

The ability to store dry PAC, especially in Super Sacks, could also provide ECWA with a method of adding PAC during construction or in an emergency if the regular system is offline.

The existing bulk carbon slurry tanks at both SPWTP and VDWPS are epoxy-lined concrete tanks. The epoxy coating has likely failed considering the number of years since it was installed and the harsh environment. We believe removing the epoxy and recoating the tanks during the upgrade is likely required. An option is to have the inside of the tanks and epoxy coating

visually inspected during the basis of design at both SPWTP and VDWTP. ECWA would have to dewater the tanks and remove accumulated materials to aid the inspection. If the tanks were to be inspected during design, ECWA may consider slowly feeding the PAC slurry currently stored in the tanks to the raw water at both WTP. This addition of PAC will only have a positive impact on organics removal and will not result in ECWA having to pay to dispose of the current supply of PAC slurry.

The PAC has likely partially solidified on the bottom of the tanks making cleaning very difficult without an entry by ECWA. Another approach is to postpone inspection until construction when it can be done by the contractor following appropriate confined space entry requirements. GHD could develop the bid documents requiring the contractor to clean the tanks and perform a confined space entry to visually inspect the tank interiors. GHD's field representative would also enter the tanks with the contractor to observe conditions. The bid documents would have unit price items and/or allowances to perform repairs to the concrete and to apply a new protective coating. Our budget for this project has been developed using the construction phase inspection approach.

After storage, pumping is the most critical aspect of PAC usage. GHD will look at various technology for the slurry transfer and feed pumps. ECWA currently has peristaltic hose pumps for the feed application, which we believe to be a good selection as the carbon in the slurry can be very abrasive. Hose pumps allow for ease of maintenance making for a robust system with high operating availability. A similar style pump could also be used for transferring slurry from the bulk tank to the day tank.

A high efficiency mixer will be selected for the bulk slurry tank. The mixer will need to flash mix delivered dry powder and then keep the carbon in suspension while stored in the bulk tank. We typically specify Philadelphia Mixers and SPX Lightning Mixers in these applications.

A significant component of the system is dust collection. PAC systems are notorious for being messy with carbon in the air during delivery operations. Our mechanical engineers will focus on creating a negative vacuum in the bulk tank headspace and directing all air flow through a dust collection system specifically selected to remove particles in the PAC size range.

PAC has a low potential for combustion both in bulk form and as airborne dust. All powdered activated carbons are classified as weakly explosive (Dust explosion class St1). Given the necessary conditions of a strong ignition source, right concentrations of airborne carbon dust, adequate oxygen levels, and confinement, there is a low potential for a deflagration event. GHD's design will follow the current version of Recommendations for Water Works (10 State Standards), which recommends carbon rooms be equipped with explosion-proof electrical outlets, lights and motors.

It is our experience that the contact time required to effectively treat HABs (cyanobacteria) is longer than that typically required for taste and odor compounds (ex. MIB and geosmin). PAC is applied at the VDWPS which provides extended contact time before settling occurs in the coagulation basins at the VDWTP. At SPWTP PAC is currently able to be applied at the flash mixers and prior to the filters. Application prior to the filters may not provide the contact time necessary, but adding PAC to the flash mixers should provide the required time.

To further aid in development of our approach and project budget, we anticipate creating the following design drawings.

GENERAL	
G-000	Cover Sheet
G-001	Abbreviations, Symbols, List of Drawings
G-002	Site Plan
STRUCTURAL	
S-001	Housekeeping Pads, Concrete Repairs and Details
MECHANICAL	
M-001	STPWTP Process Flow Diagram
M-002	VDWPS Process Flow Diagram
M-003	STPWTP Plan and Section of Carbon Room
M-004	STPWTP Plan and Section of Chemical Room
M-005	STPWTP Feed Pipe Routing Plan
M-006	VDWPS Plan and Section of Carbon Room
M-007	VDWPS Feed Pipe Routing Plan
M-008	Details
M-009	Details
ELECTRICAL	
E-001	STPWTP and VDWTP Electrical One Line Diagrams
E-002	STPWTP Plan of Carbon and Chemical Rooms
E-003	VDWPS Plan of Carbon Room
E-004	Details
INSTRUMENTATION	
I-001	Process and Instrumentation Drawing
I-002	SPWTP Plan of Carbon and Chemical Rooms
I-003	VDWPS Plan of Carbon Room
HVAC	
H-001	STPWTP Dust Collection System
H-002	VDWTP Dust Collection System
Total Drawing Sheets	
22	

2.3 Scope of Services

GHD's proposed fee for the PAC System Upgrades at both SPWTP and VDWPS is based on the following scope of services:



2.3.1 Task 1. Basis of Design Report

GHD will provide the following services in order to develop the required Basis of Design Report:

1. Request and review existing plans, specifications, as-built records and other documentation furnished by ECWA related to the PAS Systems at SPWTP and VDWPS.
2. Organize and attend a project kickoff meeting with ECWA to discuss the project team, communications, goals and project schedule.
3. Conduct a site visit to verify existing site conditions. Condition of the existing concrete bulk tanks and carbon system piping will be noted.
4. Develop a draft Basis of Design Report along with preliminary design documents for the new systems at both facilities, which will include but not be limited to:
 - a. Final design criteria
 - b. Preliminary drawings consisting of:
 - c. Process Flow Diagram
 - d. Plan view of carbon rooms showing general layout
 - e. Elevations and section to relay design intent
 - f. Process and Instrumentation Diagram
 - g. Equipment motor lists and code compliance requirements
 - h. Control narrative for the system
 - i. Outline specifications
 - j. Sequence of construction
 - k. Probable opinion of construction costs and cash flows
 - l. Project schedule
5. Submit the draft Basis of Design Report to ECWA for review and comment. GHD will then meet with ECWA to discuss comments. We will revise the report to address comments and then submit ten copies of final report to ECWA along with a digital pdf file.



2.3.2 Task 2. Design

GHD will provide the following services during design:

1. Visit the site as needed to assist in the preparation of drawings and specifications.
2. Prepare detailed design drawings, specifications and contract documents at 60%, 90 percent and 100 percent design stages. Tasks include but are not limited to:
 - a. Meetings with Authority engineers and operators to fully understand the goals of the systems. Minimum of three meetings at 60%, 90%, and 100% design
 - b. Preparation of base drawings in AutoCAD version 2014 based on available records furnished by ECWA.
 - c. Preparation of engineering calculations to support the design of the improvements, including related civil, mechanical, electrical, structural, and architectural features of the project.
 - d. Submission of the plans to various utility companies and regulatory agencies as required.
 - e. Preparation of final plans, profiles, and job specific detail drawings that include editing of the Authority's standard detail drawings where appropriate.
 - f. Preparation of contract specifications that include editing of the Authority's standard "front end" specifications and standard technical specifications where appropriate and preparation of additional technical specifications as required.
 - g. Obtaining New York State Wage Rates and inserting them into the specifications.
 - h. Preparation of a quantity take-off and opinion of probable construction cost.
 - i. Submission of the Task 1 Basis of Design Report with contract specifications, drawings, application forms and fees to Erie County Health Department for approval.
3. Furnish to the Authority for review five sets of drawings, specifications and other contract documents, during 60%, 90%, and 100% design.
4. Prepare documentation for compliance with New York State SEQR (Type II actions) and SWPPP.
5. Revise the Authority's Standard Operating Procedures (SOPs), Arc Flash, and Lock-out Tag-out (LOTO) program documentation for the new PAC systems for each plant. Revisions shall be done in accordance with the Authority's existing format.
6. Assist Authority in assembling known reports and drawings of existing conditions, and identifying the technical data contained in such reports and drawings upon which bidders may rely.
7. Prepare a schedule for the project utilizing the Authority's standard format. The project schedule shall be updated as needed.



2.3.3 Task3. General Services

GHD will complete the following tasks under general services:

Bidding Services

1. Furnish twenty (20) sets of final Construction Documents including contract drawings, final specifications, and other documents required for bidding and construction purposes.

2. Conduct a pre-bid meeting and distribute minutes, when appropriate.
3. Prepare and distribute addenda, as required to clarify, correct, or change the issued documents.
4. If the contract documents require, evaluate and determine the acceptability of "or equals" and substitute materials and equipment proposed by prospective contractors, prior to award of contract for the work.
5. Provide assistance to the Authority in securing bids, tabulating bid results, analyzing bid results, and making recommendations on the award of each construction contract.

Construction Services

1. Prepare a pre-construction meeting notice, conduct a pre-construction meeting and distribute minutes.
2. Supply an approved contractor's schedule for construction of the project.
3. Receive, review and determine the acceptability of any and all schedules that the contractor is required to submit to the Engineer, including: Progress schedule, Schedule of Submittals, Schedule of Values.
4. Provide consultation and advice to the Authority during construction.
5. Prepare elementary sketches and supplementary sketches, if required, to resolve actual field conditions encountered.
6. Interpret contract documents and resolve problems as to amount, quality, acceptability, and fitness.
7. Review the contractor's submittals of material and/or equipment for compliance with the Consultant's design concept and take appropriate action such as but not limited to: "approved", "approved as corrected", "revise and resubmit"; or "not approved".
8. Schedule and attend progress meetings at a minimum every two weeks.
9. Report to the Authority monthly on the progress of the work with a written monthly summary including daily inspector reports.
10. Defective Work: Reject Work if, on the basis of Engineer's observations, Engineer believes that such Work is defective under the terms and standards set forth in the Contract Documents. Provide recommendations to Authority regarding whether Contractor should correct such Work or remove and replace such Work, or whether Authority should consider accepting such Work as provided in the Contract Documents.
11. Compatibility with Design Concept: If Engineer has express knowledge that a specific part of the Work that is not defective under the terms and standards set forth in the Contract Documents is nonetheless not compatible with the design concept of the completed Project as a functioning whole, then inform Authority of such incompatibility, and provide recommendations for addressing such Work.
12. Clarifications and Interpretations: Accept from Contractor and Authority submittal of all matters in question concerning the requirements of the Contract Documents (requests for information or interpretation - RFIs), or relating to the acceptability of the Work under the Contract Documents. With reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents.
13. Differing Site Conditions: Respond to any notice from Contractor of differing site conditions, including conditions relating to underground facilities such as utilities, and hazardous environmental conditions. Promptly conduct reviews and prepare findings, conclusions, and recommendations for Owner's use.
14. Substitutes and "Or-equal": Evaluate and determine the acceptability of substitute or "or- equal" materials and equipment proposed by Contractor.
15. Change Orders: Notify the Authority when a change in the work is proposed which will cause an adjustment in the contract cost. Evaluate whether the proposed change is justified and reasonable, and if necessary prepare change orders, field directives, and make recommendations for approval. Discuss changes in the plans or procedures authorized by the Consultant with the Authority prior to implementation. Obtain approval for all change orders from the Board of Commissioners prior to implementation.

16. Change Proposals and Claims: (a) Review and respond to Change Proposals. Review each submitted Change Proposal from Contractor and either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to the Authority and Contractor. If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer will not resolve the Change Proposal. (b) Provide information or data to Authority regarding engineering or technical matters pertaining to Claims.
17. Applications for Payment: Based on Engineer's observations and on review of Applications for Payment and accompanying supporting documentation:
 - a. Determine the amounts that Engineer recommends Contractor be paid. Recommend reductions in payment based on the provisions stated in the Construction Contract. Such recommendations of payment will be in writing and will constitute Engineer's representation to Authority, based on such observations and review, that, to the best of Engineer's knowledge, information and belief, Contractor's Work has progressed to the point indicated, the Work is generally in accordance with the Construction Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, and to any other qualifications stated in the recommendation), and the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work. In the case of unit price Work, Engineer's recommendations of payment will include final determinations of quantities and classifications of the Work (subject to any subsequent adjustments allowed by the Contract Documents).
18. Contractor's Completion Documents: Receive from Contractor, review, and transmit to Owner maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance required by the Contract Documents, certificates of inspection, tests and approvals, and Shop Drawings, Samples, and other data as required. Receive from Contractor, review, and transmit to Authority the annotated record documents which are to be assembled by Contractor in accordance with the Construction Contract Documents to obtain final payment.
19. Substantial Completion: Promptly after notice from Contractor that Contractor considers the entire Work ready for its intended use, in company with Authority and Contractor, visit the Site to review the Work and determine the status of completion. Follow the procedures in the Contract regarding the preliminary certificate of Substantial Completion, punch list of items to be completed, Authority's objections, notice to Contractor, and issuance of a final certificate of Substantial Completion. Assist Authority regarding any remaining engineering or technical matters affecting Authority's use or occupancy of the Work following Substantial Completion.
20. Final Notice of Acceptability of the Work: Conduct a final visit to the Project to determine if the Work is complete and acceptable so that Engineer may recommend, in writing, final payment to Contractor. Accompanying the recommendation for final payment, Engineer shall also provide a notice to Authority and Contractor that the Work is acceptable to the best of Engineer's knowledge, information, and belief, and based on the extent of the services provided by Engineer under this Agreement.
21. Standards for Certain Construction-Phase Decisions: Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth in the Contract for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Authority or Contractor, and will not be liable to Authority, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.
22. Check installation for preparation of record drawings.
23. Other Tasks: Perform or provide the following other Construction Phase tasks or deliverables:
 - a. The Engineer is not responsible for the construction means, methods, techniques, sequences or procedures, time of performance, programs or for any safety precautions in connection with the construction work. The Engineer is not responsible for the Contractor's failure to execute the work in accordance with the construction Contract.

- b. Notify the Owner of all permanent work which does not conform to the result required in the Construction Contract, prepare a written report describing any apparent non-conforming permanent work and make recommendations to the Owner for its correction and; at the request of the Owner have recommendations implemented by the Contractor.



2.3.4 Task 4. Resident Inspection

Upon authorization from the Authority, the Consultant shall complete the following services.

1. Provide technical inspection of construction by a full-time resident engineer and/or representatives as required, who will:
 - a. Inspect all work to determine the progress, quality, quantity and conformance of the work in accordance with contract documents.
 - b. Notify any affected third parties in writing prior to start of construction.
 - c. Prepare daily inspector reports.
 - d. Review, verify and approve requests for monthly and final payments to contractors, based on quantities of work put in place.
 - e. Provide bi-weekly updates summarizing the Resident costs and projecting future Resident costs for the duration of the project.
2. For Resident services, the Consultant shall provide an hourly rate that is fully loaded (direct hourly rate, overhead and profit). Overtime premium will be paid at 50% of the Resident Inspectors' direct hourly rate. Consultant shall breakdown its direct hourly rate, its audited overhead rate for inspection services and its profit percentage. Consultant shall provide an estimate of the number of hours for resident inspection in the proposal.
3. Once a contractor bid has been awarded, the contract will set an estimated amount and a not-to-exceed amount for Resident representation services. Before reaching the not-to-exceed amount for Resident representation, the Consultant must seek approval from the Authority's Board of Commissioners to increase the amount of the Resident Inspection based on the realistic number of hours to complete such services.



2.3.5 Task 5. Record Drawings

1. GHD will provide electronic record drawings in AutoCAD version 2014 and a PDF file of all completed work on a DVD or flash drive. One full size set and one-half set of hard copies of these drawings shall also be provided to the Authority.
2. Submit record drawings no later than one month after final payment is recommended for approval and in accordance with Authority Standards.



2.3.6 Task 6. Special Services

We understand the Authority may require that we provide or arrange for and assist in obtaining one or more of the following special services in carrying out the project. Because it's not possible to determine in advance the need for or the cost of such services, these are included as separate elements of cost which shall be negotiated. As requested, for the purposes of this proposal, we have assumed a lump sum fee of \$20,000. These services include:

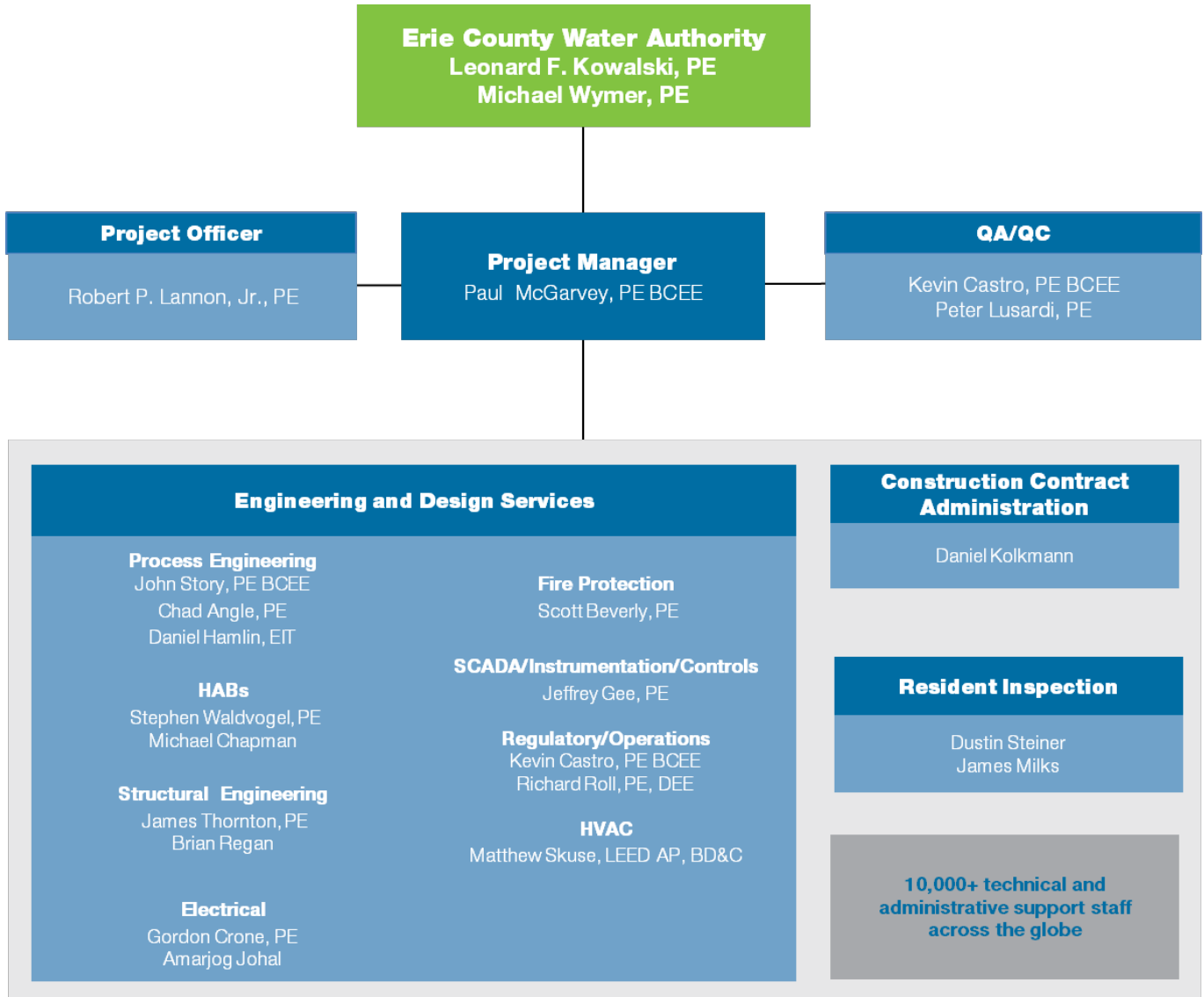
1. Soils Investigations - including test borings, pavement cores, and the related analysis.
2. Detailed mill, shop and/or laboratory inspection of materials and equipment.
3. Land surveys, maps, plates, descriptions and title investigations which may be required to acquire lands, easements, and rights-of-way for the proposed facilities.
4. Additional copies of reports, contract drawings and documents.

5. Extra travel and subsistence for the Consultant and his staff beyond that normally required under ordinary circumstances, when authorized by the Authority.
6. Assistance to the Authority serving as an expert witness in litigation arising from project development or construction.
7. New York State SEQR (Type I and Unlisted Actions).
8. Air, water, and/or soil sampling, testing, and/or analysis.
9. Operation and maintenance manuals.
10. Start-up services.
11. Hazardous material testing and assessment.
12. Wetlands investigations, delineation, and mitigation.
13. Storm Water Pollution Prevention Plans
14. Applications for NYSDEC permitting.
15. Assistance with grant research, completion of grant applications and reporting/documentation after award.
16. Laboratory testing, jar testing, and pilot testing performed by consultant.

3 Project Staffing

Our proposed team for this project is shown below. Our team has been organized to offer the most qualified staff to respond to ECWA's needs in a timely and cost effective manner. As proposed, communication with ECWA will be through the Project Manager with the required discipline support provided by seasoned professionals. Full resumes are included in Appendix A and our proposed project team will be supported by technical, CAD, and administrative staff from our downtown Buffalo area.

3.1 Organizational Chart



3.2 Current Workloads

Table 3.2 presents GHD’s proposed project team and includes their role on the project, current workload, and office location.

Table 3.2 Project Staffing

Key Personnel	Role	Current Workload	Office Location
Paul J. McGarvey, PE BCEE	<i>Project Manager</i>	<ul style="list-style-type: none"> • ECWA Guenther Pump Station Project • City of Buffalo Col. Ward Facility Electrical Upgrades • South & Center Chautauqua Lake Sewer Districts Westside Sewer Extension • ECWA VDWTP Residuals Upgrades 	Buffalo, NY
Robert P. Lannon Jr., PE	<i>Project Director</i>	<ul style="list-style-type: none"> • Niagara County Sewer District No. 1 (Retained Engineer) – Multiple projects • Town of Lewiston (Retained Engineer) Water System Improvements • Village of Youngstown (Retained Engineer) Shoreline Protection Improvements 	Buffalo, NY
Kevin Castro, PE BCEE	<i>Quality Assurance/ Quality Control and Regulatory</i>	<ul style="list-style-type: none"> • Onondaga County Water Authority (OCWA) Lake Ontario WTP Improvements (Design) • City of Binghamton WTP Solids Evaluation and Design (Design) • City of Binghamton Lead Service Line Replacement (Design) • City of Syracuse Water Term Services • City of Syracuse Water Morningside Reservoir Cover Replacement • Village of Scarsdale Boniface Tank • City of Oswego WTP Improvements design 	Syracuse, NY
Peter Lusardi, PE	<i>Quality Assurance/ Quality Control and Regulatory</i>	<ul style="list-style-type: none"> • Pennsylvania American – Milton Water Filtration Plant - New Clearwell and High Service Pump Station (design) • Aqua Pennsylvania – Evanwood and Christian Springs Wells – New Water Storage Tanks and Iron and Manganese Filtration (design) • Aqua Pennsylvania – Upper Merion Reservoir Filtration Plant - Reservoir Aeration Alternatives Evaluation (study) 	Harrisburg, PA

Key Personnel	Role	Current Workload	Office Location
		<ul style="list-style-type: none"> • Dillsburg Area Authority – Sherwood Forest Booster Pump Station (Design) • Elizabethtown Area Water Authority – Miscellaneous Water Main Replacement Projects (Project management) 	
John D. Story, PE BCEE	<i>Process Engineering</i>	<ul style="list-style-type: none"> • ECWA VDWTP Residuals Upgrades • Oneida County WPCP Upgrades • Town of Grand Island Lift Station 8 Forcemain • Town of Amherst WPCP Improvements 	Buffalo, NY
Chad Angle, PE	<i>Process Engineering</i>	<ul style="list-style-type: none"> • Antrim Township Municipal Authority WWTP Phase II Upgrade project • Project manage construction phase services for Antrim Township Municipal Authority WWTP Phase II Upgrade project • PA DCNR Presque Isle State Park sanitary sewer upgrade design: • Chambersburg New Clearwell Project: starting 	Harrisburg, PA
James Thornton, PE	<i>Structural Engineering</i>	<ul style="list-style-type: none"> • Metropolitan St. Louis Sewer District Kingsland Storage Tank • Confidential Chemical Client Design of Steel structures (Multiple projects) 	Buffalo, NY
Brian Regan, EIT	<i>Structural Engineering</i>	<ul style="list-style-type: none"> • Rialto Bioenergy Facility Pipe Bridge • Buffalo Sewer Authority Emergency Transformer Replacement • Honeywell Buffalo BRM • City of Buffalo Col. Ward Facility Electrical Upgrades 	Buffalo, NY
Gordon Crone, PE	<i>Electrical Engineering</i>	<ul style="list-style-type: none"> • ECWA Guenther Pump Station • City of Buffalo Col. Ward Facility Electrical System Upgrades • Buffalo Sewer Authority Emergency Transformer Replacement 	Buffalo, NY
Amarjog Johal	<i>Electrical Engineering</i>	<ul style="list-style-type: none"> • ECWA Guenther Pump Station • City of Buffalo Col. Ward Facility Electrical System Upgrades • Buffalo Sewer Authority Emergency Transformer Replacement 	Buffalo, NY

Key Personnel	Role	Current Workload	Office Location
Jeffrey Gee, PE	SCADA/ Instrumentation/ Controls	<ul style="list-style-type: none"> Rialto Bioenergy Facility 	Buffalo, NY
Matthew Skuse	HVAC Engineering	<ul style="list-style-type: none"> Batavia Fire Hall Depew Building Renovations Lakeshore Library 	Buffalo, NY
Daniel Kolkmann	Construction Administration	<ul style="list-style-type: none"> Town of Tonawanda WWTP Bioclarifier and Screens Replacement Town of Lewiston Water System Improvements Village of Hamburg Water System Consolidation Improvements 	Buffalo, NY
Dustin Steiner	Resident Inspection	<ul style="list-style-type: none"> City of Buffalo Water Board: Screens Replacement and Building Improvements Filtration Plant Filter Media and Piping Replacement Chlorine Piping and Valve Replacement 	Buffalo, NY
James Milks	Resident Inspection	<ul style="list-style-type: none"> Town of Tonawanda WWTP Bioclarifier and Screens Replacement 	Buffalo, NY

3.3 Key Personnel Professional Summary

The following is a brief summary of the proposed key personnel for this project. We have included full resumes for the following individuals, as well as the larger project team as [Appendix A](#) of this document.



Paul J.
McGarvey, PE
BCEE

Qualified: M.Eng., Water Resources and Environmental Engineering Program, 1992; BS Civil Engineering, 1990

Connected: Registered Professional Engineer: New York; Board Certified Environmental Engineer, American Academy of Environmental Engineers (Water Supply and Wastewater, #05- 20030); Water Environment Federation – Member of NYWEA Program Committee and Board of Directors, American Water Works Association – Member of Joint Directory Committee, American Public Works Association; Air and Waste Management Association – Niagara Frontier Section 2002/2003 Chair

Professional Summary: Paul has more than 25 years' experience in environmental engineering, including water treatment and distribution. He has performed assignments for ECWA dating back to the early 1990s including work at both treatment plants and multiple pumping stations.



Robert P.
Lannon, Jr.,
PE

Qualified: B.S., Civil Engineering, 1985

Connected: Registered Professional Engineer (New York), Water Environment Federation, New York Water Environment Association (Western Chapter Board of Directors)

Professional Summary: Bob has more than 30 years of experience in the civil engineering field. He has acted as Project Officer/Manager for various municipal projects across Western and Central New York, including the design of water and wastewater facilities, roadways, sanitary and storm sewer systems, and pumping stations for numerous municipalities throughout Western and Central New York.



Kevin Castro,
PE BCEE

Qualified: BS Civil and Environmental Engineering, 1988; MS Civil and Environmental Engineering, 1993

Connected: Registered Professional Engineer: NY, PA, CT, MD, Board Certified Environmental Engineer (BCEE), American Academy of Environmental Engineers, RAM-W Certified Vulnerability Assessor

Professional Summary: Kevin has 32 years' of experience in waterworks engineering. His expertise includes planning, study, design, and construction management of water supply, treatment, distribution, pumping, and storage facilities, with specific expertise with upgrades and expansion of large water filtration plants up to 90 mgd in capacity.

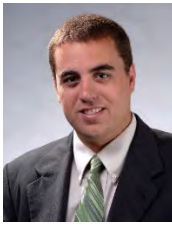


Peter J.
Lusardi, PE

Qualified: Master of Environmental Engineering, 1991; Bachelor of Science – Engineering, 1979; Professional Engineer: PA, NJ, Certified Water Treatment Plant Operator: PA; Board Certified Environmental Engineer

Connected: American Society of Civil Engineers, American Water Works Association (current Board Chairman, Pennsylvania Section of AWWA), Water Environment Federation, Chairman, Middlesex Township Municipal Authority (2000 to present)

Professional Summary: In 37 years of engineering work, Peter gained experience in both water and wastewater engineering, particularly with respect to physical/chemical and biological treatment. His experience includes the design and planning of a wide variety of water and wastewater projects that have helped clients reduce treatment costs without compromising process and regulatory requirements. His work includes water resources evaluations, planning and design of water and wastewater treatment, recovery and reuse projects, and treatment optimization of existing facilities.



John D. Story,
PE BCEE

Qualified: B.S., Civil Engineering, 2003

Connected: Registered Professional Engineer: New York; Board Certified Environmental Engineer, American Academy of Environmental Engineers (Water Supply and Wastewater); New York Water Environment Association; American Public Works Association (New York Chapter/Western New York Branch)

Professional Summary: John has 15 years' experience in the fields of civil and environmental engineering. He has been involved in the study, design, and construction phases of various projects. His experience includes water treatment and wastewater treatment, collection systems, pump stations, and biosolids treatment.



Chad Angle, PE

Qualified: Master of Science -Civil Engineering, Virginia Tech, 1995; Bachelor of Science -Civil Engineering, Drexel University, 1994, Registered Professional Engineer: PA

Connected: Water Environment Federation; Pennsylvania Water Environment Association; American Society of Civil Engineers; American Water Works Association

Professional Summary: Chad has 25 years of experience as a civil engineer with a focus on water, wastewater design, and stormwater management design and analysis. Chad's experience includes computerized hydraulic modeling of water distribution systems, sanitary sewer collection systems, and stormwater management facilities. Chad has also been the lead design engineer on various pumping station designs, and water and wastewater treatment plant upgrades.



Daniel Hamlin,
EIT

Qualified: MS, Environmental and Water Resources Engineering, 2018; B.S. Environmental Engineering, 2017

Connected: Engineer in Training: New York; Member of New York Water Environment Association and American Water Works Association

Professional Summary: Dan has been involved in multi-disciplinary projects assisting with planning, designing and construction. Dan has a focus in wastewater and municipal water systems, but is working to develop a breadth in multiple scopes of work.



Brian Regan, EIT

Qualified: MS Civil Engineering, State University of New York at Buffalo, Bachelor of Science (BS) Civil Engineering, State University of New York at Buffalo

Connected: Intern Engineer, New York

Professional Summary: Mr. Regan is a Civil/Structural engineer and has been with GHD for over 10 years. During this time, he has gained experience in municipal, chemical, oil and gas, environmental, and engineering consulting industries. His experience includes analysis and/or design of foundations, retaining walls, truss/joist systems, wall and roof framing systems, and equipment supports. Other responsibilities have included preliminary and detailed design, and bid and construction document preparation.



Amarjog Johal

Qualified: Master of Engineering, Electrical and Computer Engineering, 2010; Bachelor of Technology, Electrical Engineering, 2007, PG Certificate, Wireless Telecommunications, 2009

Connected: Registered Professional Engineer (P. Eng): Professional Engineers Ontario (PEO)

Professional Summary: Amarjog has extensive experience in low, medium and high voltage (LV/MV/HV) electrical design, protective relaying and power system studies. He possesses distinguished experience in performing Arc Flash studies in compliance with CSA Z462 and NFPA 70E. His work history includes several engineering evaluations, LV/MV/HV system designs, studies and arc flash and electrical safety instructional trainings for various industrial and municipal/utility clients throughout Canada and the US



Jeffrey Gee, PE

Qualified: BS Electrical and Computer Engineering, 1989

Connected: Registered Professional Engineer: NY, NJ, TX, MI, TN, OH, IA, PA, IL

Professional Summary: Jeff is an Associate at GHD and a Licensed Electrical Engineer and the Buffalo-based Automation Design Group Leader. He has more than 29 years of experience in system evaluation, design, construction, troubleshooting, and project coordination with small and large scale electrical and automation projects. His electrical work has encompassed many industrial 480 Volt system designs inclusive of transformer selection, motor controls, VFD specification, grounding, and coordination. His automation work history spans many hardware and software platforms across several PLC, HMI, and SCADA development environments. Key areas of experience include instrumentation specification, communications systems design, upgrades of existing electrical automation architectures, software project management, construction management, Arc Flash Hazard assessments, and computer based Arc Flash Potential studies. In addition he is the GHD Corporate Electrical Safety Captain and has developed an 8-hour Electrical Safety Course based upon NFPA-70E that he regularly delivers internally and externally.



Matthew Skuse

Qualified: B.S., Mechanical Engineering Technology, 2001; A.A.S., Computing Graphics Technology, 1999

Connected: LEED AP® BD+C; American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)

Professional Summary: Matt has 16 years of experience in design and construction of municipal, water, and wastewater facility process systems, roofing systems, and HVAC systems. Matt has been involved in several engineering evaluations, studies, and inspections for municipal facility related improvements.

4 Qualifications of Resident Inspector(s)

GHD's Buffalo construction group offers qualified inspectors with years of experience working on municipal water and wastewater projects across Western and Central New York. Depending on the proposed project's construction schedule, we propose to make one of the following inspectors available for your project. Both have municipal waterline construction experience.

4.1 Dustin Steiner – Senior Resident Inspector



Dustin has more than 22 years of municipal and industrial construction; environmental investigation and reporting; and health and safety experience. He received a Bachelor of Science in Environmental Science from SUNY Plattsburg in 1993 and completed the Applied Environmental Science Program at the William H. Miner Institute in 1992.

Dustin possesses effective project oversight and construction administration experience with targeted communication and excellent organizational skills. His responsibilities include day-to-day coordination between the Owner and prime contractors and their subcontractors, contract specification and plan review, daily inspection report preparation, contract submittal review, and preparation of progress and final payment applications. He has experience in all phases of municipal projects, from plan conception through construction including start-up activities.

The following are examples of Dustin's experience at the City of Buffalo's Water Treatment Plant, the Colonel F. G. Ward (Col. Ward) High Service Pumping Station and the Massachusetts Avenue Pumping Station:

- Water Treatment Plant Filter Rehabilitation: Replacement of approximately 7,000 feet of process piping, wall penetrations, filter media, internal expansion joint repairs, pump station replacement, forcemain replacement, as well as concrete repair and wall penetration repairs.
- Screens Replacement and Building Improvements: Replacement of two large traveling water screens, wash pump and piping, and two large sluice gates. The project also included structural modifications to the large screen well, new building roofing system, doors, windows, and new heating and ventilation system.
- Inspection during the emergency repair to the chlorination system.
- Col Ward High Service Pumping Improvements: Additional improvements to address energy efficiency at the Col Ward and Massachusetts Avenue Pumping Stations including an additional (third) 20 mgd pump at Col Ward, significant HVAC updates, lighting retrofits, building envelope repairs/weatherization. This project also included upgrades to the existing 50 mgd pumps at Massachusetts Avenue.
- \$20 million water treatment plant filter gallery rehabilitation project (2004 – 2009):
 - Installation of 280 valves and electric actuators, a brand new steam heating system, a new natural gas heating system, plant dehumidification, new windows and electric louvers, new store front-style enclosures with enclosed walkways, three new FRP stairways, miscellaneous electrical monitoring equipment, a new battery back-up electrical system (UPS), a new electrical power distribution system, a new automated filter washing system, new plant lighting, painting throughout the plant, and general construction.
 - Filter rehabilitation, valve replacement, actuator replacement, electrical upgrades, asbestos abatement, and general construction.

Dustin also provided resident inspection, oversight and coordination during construction for the Bradford City Water Authority's Water Treatment Plant Residuals Handling Facility. The project included installation of two concrete storage tanks complete with mixing units and tube settlers; a sludge pump station complete with sludge pumps and associated electrical equipment; a centrifuge building and associated equipment; a solids dewatering centrifuge and appurtenances; underground potable water piping and waste sludge piping, high and low voltage electrical equipment, two chemical dosing stations, and general construction.

4.2 James Milks – Senior Resident Inspector



Jim has more than 45 years of engineering and resident inspection experience, which includes water and wastewater treatment facilities, storage facilities, transmission and collection systems, and pumping stations. Jim received a Certificate in Civil Technology from Erie Community College (ECC) in 1978, an Associate of Applied Science in Civil Technology from Mohawk Valley Community College in 1982, and he earned a certificate in Electronics Technology from Bryant & Stratton in 1988.

Jim has provided resident inspection on a number of ECWA projects through the years. Jim was involved in the original design and construction (supervision and coordination of various contractors and daily discussions) for the 75 MG VDW WTP, new raw water intake tunnel and structure bored under the Niagara River, raw water pumping station and 48-inch transmission main to feed the new plant. Jim also provided resident inspection services during the complete rehabilitation of six water storage tanks and construction of three new water storage tanks, ranging in size from 200,000 gallons to 4.6 million gallons. He has also overseen the installation of numerous waterlines and storage tanks for municipalities to ECWA standards.

Jim has also been involved in many large wastewater treatment, collection and pump station projects through the years as shown below.

- Town of Tonawanda Wastewater Treatment Plant Bio-Clarifier Rehabilitation: Demolition and replacement of equipment for four 100-foot diameter clarifiers including electrical component replacement for class 1, division 1, explosion proof areas; rebuilding of the concrete center pier replacement and installation of stainless steel concrete covers to protect the existing concrete from further deterioration.
- Town of Tonawanda Wastewater Treatment Plant Screens Replacement: Replacement of three traveling bar screens with washer/compactors and a new belt conveyor for discharge of collected solids to a dumpster. The project also includes new upstream and downstream level sensors, work on existing sluice gates and installation of electric actuators and new control panels.

5 Work Performed for the Authority

During 2017, 2018 and 2019, GHD has performed work on the following ECWA Contracts:

- Contract GHD-007 Guenther Pumping Station (Ongoing)
- Contract GHD-008 Van de Water Treatment Plant Residuals Treatment System Upgrades (Ongoing)

6 Current Workload

GHD's current remaining workload with the Authority includes the following two projects:

- Guenther Pumping Station project is transitioning into the final design phase.
- Van de Water Water Treatment Plant Residuals Treatment System Upgrades, is nearing completion of the basis of design report phase.

7 Completed Attachments

In accordance with Section 139 of State Finance Law, GHD has completed and signed Forms A, B and C, as well as the Statement Relating to Sexual Harassment Policy; these forms are provided as [Appendix B](#).

8 Proof of Insurance

GHD has reviewed the Authority's insurance requirements for professional services and have included a sample copy of GHD's Certificate of Liability Insurance and the required NYS Workers Compensation and Disability coverage as [Appendix C](#) to this document. If selected for this project, we will provide the Authority with the requested project-specific insurances.

9 Proposed Schedule



Proposed Project Schedule

Erie County Water Authority
 Van de Water & Sturgeon Point WTP Powder Activated Carbon Improvements
 ECWA Project No. 202000021
 GHD Project 11208890

Key Project Tasks	2020												2021												2022					
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun		
1 Agreement and NTP																														
2 Kickoff Meeting with Client																														
3 Basis of Design Report (BODR)																														
4 Client Review of BODR and Meeting to Discuss																														
5 Preparation of 30% P&S																														
6 Client Review and Meeting to Discuss 30% P&S																														
7 Preparation of 60% P&S																														
8 Client Review and Meeting to Discuss 60% P&S																														
9 Preparation of 90% P&S																														
10 Client Review and Meeting to Discuss 90% P&S																														
11 Submittal to ECDOH																														
12 Regulatory Agencies Review (assumed)																														
13 Finalize P&S for Bidding																														
14 Bidding																														
15 Award and Contractor NTP																														
16 Construction Phase																														
17 Onsite Construction Activities and RI (6 months)																														


10 Fee Schedule

10.1 Level of Effort

TASK DESCRIPTION	Project Manager	QA/QC	Sr. Electrical/ Structural Engineer	Sr. Project Engineer	Engineer	Electrical & Instrumentation Engineer	Structural Engineer	Sr. CADD	CADD	RPR	Administrative Assistant	Total Hours	Subcontractor Costs	Total Cost
Basis of Design Report	18	3	2	35	68	24		8	45		14	217	\$0	\$30,500
Design	38	7	10	85	214	126	9	81	241		26	837	\$0	\$113,300
General Services	72	6	6	190	68	40	4				100	486	\$0	\$72,700
Resident Inspection (6 months @40 hrs/wk)										1040		1,040	\$0	\$130,000
Record Drawings	1			8				8	40			57	\$0	\$6,600
Special Services												0	\$0	\$20,000
Total Hours	129	16	18	318	350	190	13	97	326	1,040	140	2,637	\$0	\$373,100
Typical Classification Rates (\$/HR)	205	240	205	170	135	155	135	120	100	125	70			

10.2 Pricing Summary

Project 20200021 – RFP for Powdered Activated Carbon System Improvements, Van de Water and Sturgeon Point Water Treatment Plants	
Task 1 - Basis of Design Report	\$30,500
Task 2 – Design Documents	\$113,300
Task 3 - General Services	\$72,700
Task 4 - Resident Inspection	\$130,000
Task 5 - Record Drawings	\$6,600
Task 6 - Special Services	\$20,000.00
TOTAL:	\$373,100

The left side of the page features a large, dark blue trapezoidal shape that tapers from top to bottom. Overlapping this is a lighter blue, semi-transparent trapezoidal shape that also tapers but is positioned slightly to the right and top of the darker one.

Appendix A
Resumes

Appendix A



Paul J. McGarvey

Project Manager



Qualified: M.Eng., Water Resources and Environmental Engineering Program, State University of New York at Buffalo, 1992; BS, Civil Engineering, State University of New York at Buffalo, 1990

Connected: Registered Professional Engineer: New York; Board Certified Environmental Engineer, American Academy of Environmental Engineers (Water Supply and Wastewater, #05-20030) ;Water Environment Federation – Member of NYWEA Program Committee and Board of Directors, American Water Works Association – Member of Joint Directory Committee, American Public Works Association; Air and Waste Management Association – Niagara Frontier Section 2002/2003 Chair

Professional Summary: Paul has more than 25 years' experience in environmental engineering, including water treatment and distribution, sludge composting, sludge digestion, and general wastewater treatment and collection.

Water

Project Director
Residuals Handling Improvements |
Erie County Water Authority | Erie County, NY

Paul directed the design and construction phases of residuals improvements at the 90 million gallon per day (mgd) Sturgeon Point Water Treatment Plant. Improvements included new tube settlers and polymer fed system to enhance settling in thickener/clarifiers, replacing the existing residuals pump station with a new 3,000 gallon per minute (gpm) pump station, modifications to the residuals equalization basin to provide uniform mixing of co-mingled residuals from the coagulation basins and filter backwashes, and new thickened residuals pumps.

Project Manager
Colonel Ward Facility Electrical Upgrades |
Buffalo Water Board | Buffalo, NY

Study and ongoing design of facility wide electrical improvements including replacement of 5 kV substation, 480-volt switchgear and majority of subsystem, and UPS system for low lift process. Colonel Ward facility includes pumping station and treatment plant rated for 160 mgd. Served as Water Board's engineer overseeing another firms' work on electrical upgrades at the Massachusetts Avenue Pumping Station.

QA/QC Engineer
Water Filtration Plant Screen Replacement |
City of Buffalo | Buffalo, NY

Design, bid and construction services for the replacement of two mechanically cleaned bar screens in the raw water tunnel at the Colonel Ward Pump Station.

Project Manager
Water Filtration Plant Chemical Upgrade |
City of Buffalo | Buffalo, NY

Project involved chemical storage improvements including tank, dikes, spill control, floor coatings, and pumps for caustic system.

Project Manager
Water Filtration Plant Residuals Handling
Evaluation | City of Buffalo | Buffalo, NY

Alternatives investigated included direct discharge to the sewers or onsite gravity thickeners followed by settling in an onsite lagoon and periodically hiring a contractor to dewater the lagoon or installing on-site dewatering equipment and abandoning the lagoon.

Wastewater

Project Manager
Southtowns Advanced Wastewater Treatment
Facility (AWTF) | Erie County, NY

The upgrades to the 16 mgd Advanced Wastewater Treatment Facility (AWTF) were designed to accommodate wet weather peak flows of 90 mgd and improve solids handling. Project included a new 58 mgd wet weather pumping station, overflow retention facility improvements, and disinfection upgrades. Solids handling improvements included two new 50 diameter gravity thickeners, a new 2 meter plate and frame filter press with polymer conditioning, and dewater solids pumping improvements to existing incinerators.

Project Manager
Amherst Water Pollution Control Facility
(WPCF) Biosolids Pellet Bagging | Town of
Amherst, NY

This project included the study, design, and construction of biosolids pellet bagging at the 36 mgd WPCF. The facility treats biosolids from its activated sludge process with gravity thickening, anaerobic digestion, centrifuge



dewatering, and rotary sludge drying. Options for bagging for retail sale of the pellets produced from the process were investigated. Design incorporated a semi-automatic bagging system consisting of weigh device, bag hanger, bag sealer, palletizing equipment and a stretch wrapper.

Project Manager
Wastewater Treatment Plant Digester Heating and Mixing Improvements | Town of Grand Island, NY

This project included the construction of digester heating and mixing improvements at the Town's 3.0 mgd pure oxygen activated sludge plant with gravity sludge thickening and anaerobic sludge digestion. The project involved the installation of a new digester gas/natural gas boiler, sludge pumps, spiral heat exchanger, and digester gas compressors for mixing system.

Project Manager
Southtowns Advanced Wastewater Treatment Facility | Erie County, NY

Capital Improvement Plan and Preventative Maintenance Program Evaluation. An evaluation was performed to determine the condition, serviceability, and longevity of the equipment at the plant. A capital improvement plan was developed to prioritize capital expenditures. Preventive maintenance practices were reviewed to maximize the useful life of the equipment.

Project Engineer
Big Sister Creek Wastewater Treatment Plant | Town of Angola, NY

Wastewater Treatment Plant Expansion. The \$5.5 million expansion to the Big Sister Creek WWTP included grit aeration and removal equipment, new 105 foot secondary clarifier, two new aerobic digesters, dissolved air flotation thickening, recessed plate and frame filter press dewatering, tertiary filtration, new building, and flow distribution structures and equipment.

Project Engineer
Wastewater Treatment Facility (WWTF) Operation and Maintenance Manual | Moravia, NY

Preparation of the operation and maintenance manual for the 0.7 mgd activated sludge plant. The project included upgrading existing facilities for nitrification and the addition of final settling, tertiary filtration, and sludge dewatering facilities.

Project Engineer
Water Pollution Control Facility Operation and Maintenance Manual | Carthage/West Carthage, NY

Preparation of operations & maintenance manual for the sludge handling facility upgrade. Project included the addition of a recessed plate filter press for sludge

dewatering, post-lime sludge stabilization facilities, and associated process equipment.

Project Manager
Southtowns Advanced Wastewater Treatment Facility Facilities Report | Erie County, NY

The Southtowns AWTF was nearing its rated capacity of 16 million gallons per day after nearly 20 years of operation. The Southtowns Sewage Treatment Agency sought to develop a plan to provide for the sewage treatment needs of its member communities for the next 20 years. Existing pure oxygen activated sludge treatment system was evaluated to determine existing capacity. Future wastewater flows and loads were determined for the service area, additional treatment needs were identified, and alternatives for addressing these needs were developed and evaluated. Recommended improvements were estimated to cost \$22.8 million and would provide a maximum month treatment capacity of 26 mgd. Process improvements included: Unox upgrades, clarifiers, conversion to sodium hypochlorite, ferric chloride addition, gravity thickener, sludge holding, filter press, and incinerator feed modifications.

Project Engineer
New Disinfection System | Saratoga County Sewer District No. 1 Wastewater Treatment Plant | Saratoga, NY

The project expanded the treatment capacity of the plant from 13 mgd to 21.3 mgds and included upgrades to preliminary, secondary, disinfection, and sludge treatment processes. Disinfection improvements included conversion from gaseous chlorine feed system to UV disinfection. The new UV system was installed in the chlorine contact tanks previously used by the gaseous chlorine system. A sodium hypochlorite feed system was provided to assist with odor control and sludge de-bulking at various points in the facility.

Project Manager
Southtowns Advanced Water Treatment Facility Biosolids Handling | Erie County, NY

The project included the design and construction of a new biosolids conveyance system to transport dewater sludge from two filter presses to two incinerators at this 16 mgd facility. Project included ability to bypass incinerators and load dewatered sludge into trucks for offsite disposal.

Work history

1992 – present	Associate, GHD, Buffalo, NY
	Named Associate, 2015



Robert P. Lannon Jr. Project Director/Principal



Qualified: B.S., Civil Engineering, 1985

Connected: Registered Professional Engineer (New York), Water Environment Federation, New York Water Environment Association (Western Chapter Board of Directors)

Professional Summary: Bob has more than 30 years of experience in the civil engineering field. He has acted as Project Officer/Manager for various municipal projects across Western and Central New York, including the design of water and wastewater facilities, roadways, sanitary and storm sewer systems, and pumping stations for numerous municipalities throughout Western and Central New York. Bob is also a member of GHD's North American Executive Committee.

Municipal Water

Project Director/Principal
Guenther Street Pump Station Improvements |
Erie County Water Authority | Hamburg, NY

As Principal, Bob is responsible for assignment of a Project Manager and ensures availability of staff to support the project and the overall quality of the project.

Project Director/Principal
Town-wide Water System Improvements |
Town of Lewiston | Lewiston, NY

As retained engineer for the Town, Bob is directing project efforts for the development, design and construction phase services for this Town-wide water system improvement project. The project includes 44,500 linear feet of waterline ranging in size from 8 – 16 inches in diameter. Work includes railroad crossings, stream crossings, NYSDOT and Niagara County Highway roadways, trenchless technologies, and several interconnections.

Project Director/Principal
Master Meter Improvement Plan |
City of Auburn | Auburn, NY

Bob oversaw the Buffalo staff performing a variety of tasks relating to the inspection and improvement prioritization of inter-municipal water and sewer interconnections and meters between the City and surrounding communities.

Project Director/Principal
Water Treatment Plant Residuals Handling
Plan | City of Auburn | Auburn, NY

Bob advised the project manager and team performing tasks related to the planning of the City's residuals settling lagoon cleaning and improvement project.

Project Director/Principal
Water Treatment Plant Process Tank Joint
Repairs | Niagara Falls Water Board | Niagara
Falls, NY

Bob oversaw the team designing repairs to the pretreatment/flocculation tank, which included the installation of an epoxy resin adhesive sealing system to repair and seal the expansion joint.

Municipal Wastewater

Project Director/Principal
WWTP Phase 3 Rehabilitation | Niagara Falls
Water Board | Niagara Falls, NY

Bob directed project staff involved in the design and replacement of various systems at the WWTP, including new sludge and scum collection equipment, plant water pumps and controls, polymer pumps and controls, replacement of carbon filter media and support gravel, and other instrumentation and SCADA upgrades.

Project Director/Principal
Capital Plan, Phase 1A (Solids Processing
Improvements) | Niagara County Sewer
District No. 1 | Wheatfield, NY

Bob oversaw the design and integration of a new solids dewatering centrifuge at the WPCC, which included: a shaftless screw conveyor system, solids equipment ventilation system, new centrifuge support and maintenance platform, and modification of and interconnection with all existing plant process piping to provide a complete and operational system. The project also included a permanent polymer dosing system and the replacement of the existing waste activated sludge (WAS) pumps with two new WAS chopper pumps. The complete design required detailed coordination for incorporating the new equipment with the existing plant SCADA system.



Project Director/Manager
Capital Plan, Phase 1 (Contracts 41G and 41E)|
Niagara County Sewer District No. 1 |
Wheatfield, NY

Project Manager for the addition of two non-clog, centrifugal wastewater pumps, associated piping and valves, headworks facility upgrades, emergency power upgrades, general site improvements, and electrical high voltage loop switch replacements

Project Director/Principal
Water Pollution Control Center Upgrades |
Town of Lewiston | Lewiston, NY

Bob directed a multi-disciplined team conducting detailed investigations for the preliminary analysis of several processes at the plant including grit removal, sludge processing, and tertiary treatment technologies. After evaluating several options for sludge dewatering, the project proceeded with the replacement of the belt filter press with a rotary press, associated polymer system, wash pumps and piping, sludge piping, HVAC upgrades, and associated electrical improvements.

Project Director/Principal
WWTP Sludge Thickener No. 2 Repairs |
Niagara Falls Water Board | Niagara Falls, NY

Project Officer overseeing detailed design, construction administration, and resident inspection phase services to facilitate a full cleaning, inspection, and repair of the tank concrete floor surface, as well as the installation of a new collector mechanism and associated appurtenances.

Project Director/Principal
WWTP Sludge Thickener No. 1 Repairs |
Niagara Falls Water Board | Niagara Falls, NY

Project Officer overseeing detailed design, construction administration, and resident inspection phase services to facilitate a full cleaning, inspection, and repair of the tank concrete floor surface, as well as the installation of a new collector mechanism and associated appurtenances.

Project Officer/Manager
Wastewater Facilities | Niagara Falls Water
Board | Niagara Falls, NY

Bob managed numerous projects at the NFWB's 48 mgd physical chemical WWTP and throughout their collection and conveyance system, including the investigation and evaluation of the carbon slurry transport system, backwash operation, regeneration furnace, and carbon storage system to recommend improvements that would reduce the amount of carbon fine generation within the wastewater treatment plant.

Municipal Infrastructure and Engineering

Town Engineer
Retained Engineering Services | Town of
Lewiston | Lewiston, NY | 2001-2003, 2004-
2010, 2014-Present

As Town Engineer, Bob is the main client contact and responds to client inquiries. He attends monthly Board Meetings and oversees engineering support services as required by the Town for municipal infrastructure projects.

Engineer of Record
Town Engineer | Town of Niagara | Niagara
Falls, NY | 1999-2011, 2017-Present

As Town Engineer, Bob is the main client contact and responds to client inquiries. He attends monthly Board Meetings and oversees engineering support services as required by the Town for municipal infrastructure projects, including:

- Providing cost effective recommendations to reduce flooding at problem locations throughout the Town's drainage system.
- Periodic engineering reviews of proposed projects regulated by the Town Planning and Zoning boards.

Work history

2003 – present	Principal, GHD (formerly CRA Infrastructure & Engineering, Inc.), Buffalo, NY
	Named Principal, 2009
1983 – 2003	O'Brien & Gere, Williamsville, NY



Kevin Castro, PE BCEE

Principal – Water/Infrastructure



Qualified: Clarkson University BS 1988, MS 1993, Civil and Environmental Engineering
Connected: Registered Professional Engineer: NY, PA, CT, MD, Board Certified Environmental Engineer (BCEE), American Academy of Environmental Engineers, RAM-W Certified Vulnerability Assessor

Professional Summary: Kevin has 28 years' of experience in waterworks engineering. His expertise includes planning, study, design, and construction management of water supply, treatment, distribution, pumping, and storage facilities.

Water Treatment

Project Director

Erie County Water Authority | New York, USA

Project director for design and construction of residual handling improvements to the Authority's 90 mgd Sturgeon Point WTP.

Project Manager

Conventional Filtration Water Treatment Plant | City of Binghamton | Binghamton, New York, USA

Project manager for the design, construction services and start up for a \$15 million improvement program for the 20 million gallons per day conventional filtration plant, including chemical handling systems, structural and architectural repairs, raw water and finished water pumping facilities, and supervisory control and data acquisition system for the entire water distribution and sewer collection system. A computerized maintenance management system and on-line operation and maintenance manual were also prepared for the facilities. The project won the New York State APWA Environmental Project of the Year Award, an Engineering Excellence Award from New York Association of Consulting Engineers, and a design award from the American Concrete Institute.

Project Manager

Susquehanna River Water Treatment Plant | City of Havre de Grace | Havre de Grace, Maryland, USA

Project manager for the Capital Improvement Plan for the City's 4.0 million gallons per day Susquehanna River plant to identify needed improvements to a 40 plus year old conventional filtration plant. Project manager for design of Phase I Improvements, including finished water pump replacement and powdered activated carbon feed system. Project review for Phase II Improvements, including

chemical feed system replacement and supervisory control and data acquisition.

Project Principal

Lake Ontario Water Treatment Plant, Onondaga County Water Authority, Oswego, New York

Lake Ontario Water Treatment Plant Evaluation. GHD is completing a comprehensive evaluation of the existing Water Treatment Plant, Raw Water Pump Station, and Clear Water Pump Station facilities. The project includes developing an updated hydraulic profile for the plant. GHD will be delivering an evaluation report with improvement recommendations and basis of design for the improvements.

Project Director

City of Port Jervis | Port Jervis, New York, USA

Project director for evaluation design and construction of the addition of dissolved air flotation to the City's 3 mgd ozone/direct filtration WTP.

Project Director

Facility Evaluation | Mohawk Valley Water Authority | New York, USA

Project director for a facility evaluation of the Authority's 32 mgd direct filtration plant including a prioritized, phased capital improvement plan. Subsequently provided design and construction of improvements to the fluoride feed system.

Project Director

City of Rome | Rome, New York, USA

Project director for the design and construction of a 25 mgd ultraviolet disinfection facility, corrosion control, emergency chlorination, and reservoir repairs.



Project Director
Water Treatment Plant Improvements | City of Rome | Rome, New York, USA

Project director for design and construction of improvements to the City's 17 mgd conventional packaged water treatment plant, included filter rebuild, air scour retrofit, filter painting and control improvements.

Project Director
Water Treatment Plant Master Plan | Monroe County Water Authority | Rochester, New York, USA

Project director for the evaluation and development of a master plan of improvements for a 50 mgd direct filtration plant.

Project Director
UV Disinfection Facilities | Village of Skaneateles | Skaneateles, New York, USA
Project director for design and construction of a 2 mgd UV disinfection facility for the Village's Skaneateles Lake supply. The project included preselection of medium pressure UV units and was provided to comply with the USEPA LT2ESWTR.

Project Director
UV Disinfection Facility, City of Rome, Rome, New York

Project director for the design of a 25 mgd ultraviolet disinfection facility, corrosion control, emergency chlorination, and reservoir repairs. The project includes well point dewatering of deep excavations.

Project Director
Membrane Microfiltration Water Treatment Plant | Town of Newburgh | Newburgh, New York, USA

Project director for the evaluation, design, permitting and construction of 6.0 mgd membrane microfiltration water treatment plant. Project included jar testing studies for disinfectant by-product precursor removal.

Project Manager
Direct Filtration Plant Improvement Project | Onondaga County Water Authority | Syracuse, New York, USA

Project manager for design and construction services for a \$13 million improvement program for the Authority's 24 million gallons per day direct filtration plant. The project included the addition of two granular activated carbon filters and rebuilding the four existing filters. The project won a Platinum award from the American Consulting Engineers Council for Engineering Excellence. The project also included conversion of chlorine gas to sodium hypochlorite at two facilities, the addition of chlorine dioxide as a preoxidant for disinfection by-product control, and carbon dioxide for pH control, and supervisory control and data acquisition implementation for the plant.

Project Manager
Membrane Microfiltration and Softening Water Treatment Plant | New York State Office of General Services | Sonyea, New York, USA

Program development for a 0.8 million gallons per day membrane microfiltration and ion exchange softening plant for a groundwater supply at Groveland Correctional Facility. Project included pre-oxidation for iron and manganese, direction coagulation, and ultraviolet disinfection for enhanced cryptosporidium inactivation.

Project Manager
Chadwick Lake Water Treatment Plant - Manganese Treatment Alternatives Evaluation and Chlorine Dioxide Demonstration Study | Town of Newburgh | Newburgh, New York, USA

Project manager for a manganese treatment alternative evaluation and a chlorine dioxide demonstration study to identify improvements to the Town's Chadwick Lake Water Treatment Plant for improved manganese removal.

Project Review
Iron Filtration Treatment Plant Expansion | Anne Arundel County | Anne Arundel, Maryland, USA

Project review for the expansion of the County's Arnold Iron Filtration Treatment Plant to 16.0 million gallons per day capacity. The existing plant is an 8.0 million gallon per day conventional filtration plant with aeration, flash mixing, flocculation sedimentation, granular media filtration and chlorine disinfection.

Project Manager
Treatment Optimization Study | Margerie Water Treatment Plant | Danbury, Connecticut, USA
Project manager for a treatment optimization study for the City's 5.75 million gallons per day Margerie plant for improved performance during reservoir algae blooms.

Project Manager
Ultraviolet Disinfection Facility | City of Syracuse | Syracuse, New York, USA
Project manager for the conceptual design of a 60 million gallons per day ultraviolet disinfection facility for the City's unfiltered Skaneateles Lake supply. Design included conceptual process layout for a low-pressure, high-output and a medium-pressure ultraviolet system. The layout included blending and control of two raw water hydraulic gradients from the City's raw water transmission system. A siting evaluation was performed to identify candidate sites for the facility along the City's 19-mile raw water transmission pipelines.

Project Manager
Filtration Plant Siting Study | Village of Skaneateles | Skaneateles, New York, USA
Project manager for a filtration plant siting study to identify the required site size for a filtration plant in the event that the Village lost filtration avoidance.



Project Manager
Coagulant Selection Jar Test Study |City of Danbury | Danbury, Connecticut, USA

Project manager for a coagulant selection jar test study for the City's 10 million gallons per day West Lake Water Treatment Plant to reduce solids loading to the wastewater treatment plant from process residuals.

Project Manager
Corrosion Control and Chlorination Facilities | City of Syracuse | Syracuse, New York, USA

Project manager for the design, construction services, and start-up of new corrosion control and chlorination facilities for the City's distribution reservoirs. Facilities provide treatment to two 25 million gallons per day reservoir discharges, including phosphate corrosion inhibitor and sodium hypochlorite addition. An operation and maintenance manual was developed for the facility. Each facility was designed to meet historic preservation requirements of the New York State Office of Historic Preservation. The project won an Engineering Excellence Award from the New York State Association of Consulting Engineers.

Project Manager
Water Filtration Plant Improvements |Village of Potsdam | Potsdam, New York, USA

Project manager for the comprehensive evaluation, design, construction services and start-up of a two-phased improvement program for the Village's water filtration plant, a 2.6 million gallon per day conventional filtration plant with pre-ozonation, chlorination, fluoridation, and corrosion control. Project included jar test studies of chemical pre-treatment optimization for improved particulate and disinfectant by-products precursor removal, automated operation of the plant, and the development of an operation and maintenance manual. Each of the four filters was rebuilt within low profile porous cap underdrain and new media.

Project Manager
Skaneateles Lake Filtration Facilities | City of Syracuse | Syracuse, New York, USA

Project manager for preliminary studies, piloting, and conceptual design of a 60 million gallons per day filtration facility for the City's Skaneateles Lake water supply for compliance with the United States Environmental Protection Agency's Surface Water Treatment Rule. Design capacity evaluated at 60 million gallons per day and alternatives piloted included high-rate direct filtration and membrane microfiltration. Conceptual design included a 60 million gallons per day high rate direct filtration plant with pre-ozonation, 60 million gallons per day raw and finished water pumping stations, chemical feed facilities, backwash settling lagoons, and residual freeze/dry beds |

Project Manager
Supervisory Control and Data Acquisition Implementation and Performance Maintenance

|Cornell University Filtration Plant| Ithaca, New York, USA

Project manager for the design, construction services and start up for implementation of supervisory control and data acquisition and performance maintenance for the 3.6 million gallons per day conventional filtration plant. Evaluated improvements to reduce disinfection by-products and ultraviolet disinfection for future cryptosporidium inactivation as well as provided structural inspection of existing sedimentation basins and clearwell.

Project Manager
Intermunicipal Water Filtration Facilities | Villages of Carthage and West Carthage | New York, USA

Project manager for the design, construction services and start-up of an intermunicipal water filtration facility. Design included a 1.0 million gallons per day slow sand filtration plant with chlorination, fluoridation and corrosion control facilities, and a 0.5 million gallons per day booster pumping station. Project also included analysis and design of improvements and pipeline cleaning to the Village's 15 mile transmission main to serve both communities. This project won an Engineering Excellence Award from the New York State Association of Consulting Engineers.

Project Review
Filtration Plant Improvements. Village of Massena | Massena, New York, USA

Project review of the development of a master plan of improvements for the Village's 5.0 million gallons (19 million liters) per day diatomaceous earth filtration plant.

Project Manager
Taste and Odor Control Treatment Strategy. Village of Massena | Massena, New York, USA

Project manager for the evaluation of treatment strategies to control taste and odor at the Village's 5.0 million gallons per day diatomaceous earth filtration plant. Project evaluated activated carbon contactors, ozone, and powdered activated carbon.

Project Manager
Iron Filtration Treatment Plant Conceptual Design | Village of Rockville Centre | Rockville Centre, New York, USA

Project manager for the conceptual design of a 3.2 million gallon per day iron filtration treatment plant.

Project Manager
Water Supply Reservoir Algae Control Evaluation |City of Port Jervis, New York, USA

Project manager for an algae control evaluation for the City's water supply reservoir to determine the energy impact of algae on water treatment processes funded by the New York State Energy Research and Development Authority. The treatment process evaluated includes a 2.0



million gallons per day ozone/direct filtration treatment plant.

Project Manager

Evaluation of Solar-Powered Reservoir Mixing | Chadwick Lake Reservoir | Newburgh, New York, USA

Project manager for an evaluation of solar-powered reservoir mixing for reduction of manganese in the Town's Chadwick Lake reservoir supply. The study was funded by New York State Energy Research and Development Authority.

Project Manager

Sodium Hypochlorite Storage and Feed Facility | City of Syracuse | Syracuse, New York, USA

Project manager for the conceptual design of a sodium hypochlorite storage and feed facility to replace a gas chlorination facility for the City's 60 million gallons per day supply. Design included onsite generation and traditional bulk storage.

Project Manager

Corrosion Control Facilities and Backflow Prevention | Delaware Aqueduct TAP | Newburgh, New York, USA

Project manager for the design and construction services for corrosion control facilities and backflow prevention for the Town's 10 million gallons per day Delaware Aqueduct Tap off the New York City supply.

Project Manager

Water Treatment Facilities | City of Pawtucket, | Pawtucket, Rhode Island, USA

Project manager for the basis of design services associated with a design/build/operate proposal for new 25 million gallons per day water treatment facilities, including new intakes, 25 million gallons per day raw water pumping station, 42-inch diameter transmission main, a 25 million gallon per day two-stage water filtration facility with associated chemical systems, supervisory control and data acquisition system, and a 35 million gallons per day finished water pumping station.

Project Review

Water Treatment Plant Fluoride Tracer Study | City of Danbury | Danbury, Connecticut, USA

Project review for fluoride tracer studies of the City's 10 million gallons per day West Lake Water Treatment Plant clearwells and 5.75 million gallons per day Margerie WTP clearwells for verification of compliance with disinfection standards.

Project Engineer

Jar Test Studies, for the City of Niagara Falls Water Treatment Plant | City of Niagara Falls | Niagara Falls, New York, USA

Project review for fluoride tracer studies of the City's 10 million gallons per day West Lake Water Treatment Plant

clearwells and 5.75 million gallons per day Margerie WTP clearwells for verification of compliance with disinfection standards.

General Services

Project Manager

General Engineering Services | Water Department City of Syracuse | Syracuse, New York, USA

Project managed under this contract include:

- Infrastructure Renewal Plan for the City's 500-mile water transmission/distribution system
- Morningside Reservoir cover evaluation
- Conceptual design of corrosion control and chlorination facilities
- Improvements to Skaneateles Lake chlorination systems
- Camillus Ravine pipeline slope stabilization design and construction
- Booster pump replacement
- Watermain replacement
- Chemical storage tank replacement
- Fluoride feed system rehabilitation
- Pipe bridge replacement
- 7th North Street meter vault design
- 20-inch water main replacement evaluation
- Chemical bulk storage tank inspections and relining.

Project Manager

General Engineering Assignments | City of Danbury | Danbury, Connecticut, USA

Projects managed under the general services contract include:

- Tracer studies for the clear wells at their 10 million gallons per day West Lake and 5.5 million gallons per day Margerie Water Treatment Plants
- Coagulant screening study
- Corrosion inhibitor screening study
- Treatment optimization study for the Margerie Water Treatment Plant to improve algae removal
- Sodium hypochlorite storage and feed system design
- Vulnerability assessment and emergency response plan update for the water system
- Filter media replacement
- Water Treatment Plant PLC replacement design.



Peter J. Lusardi, PE BCEE

Process Engineering



Qualified: Master of Environmental Engineering, The Pennsylvania State University, 1991; Bachelor of Science – Engineering, The Pennsylvania State University, 1979; Professional Engineer: PA, NJ, Certified Water Treatment Plant Operator: PA; Board Certified Environmental Engineer

Connected: American Society of Civil Engineers, American Water Works Association (current Board Chairman, Pennsylvania Section of AWWA), Water Environment Federation, Chairman, Middlesex Township Municipal Authority (2000 to present)

Professional Summary: In 37 years of engineering work, Peter gained experience in both water and wastewater engineering, particularly with respect to physical/chemical and biological treatment. His experience includes the design and planning of a wide variety of water and wastewater projects that have helped clients reduce treatment costs without compromising process and regulatory requirements. His work includes water resources evaluations, planning and design of water and wastewater treatment, recovery and reuse projects, and treatment optimization of existing facilities.

Process Engineer

60 MGD Water Treatment Plant | Chester Water Authority | Chester, PA

Treatment Process Assistance. Included chemical treatment, jar studies, preparing recommendations for cold water treatment optimization, distribution system nitrification issues, improving compliance with CT requirements, disinfection byproducts regulations, lead and copper regulations, powdered activated carbon optimization, copper pipe pitting, bottled water treatment and filter plant performance requirements.

Process Engineer | Planning
City of Asheville, NC

Process evaluation of three water filtration plants, combined capacity of 43 mgd. Evaluated performance, reliability and regulatory compliance of each unit process including both treatment and residuals handling and prepared recommendations and cost estimates for improvements.

Process Engineer/Lead Design Engineer
Planning and Design | Upper Merion Reservoir Filtration Plant | Aqua Pennsylvania, Valley Forge, PA

Evaluated alternatives for removing trichloropropane at 15 MGD direct filtration plant. Analysis including developing preliminary design (costs and layout) for using a new water source necessitating adding pretreatment (flocculation and sedimentation basins) to existing direct filter plant. Work has included design of tertiary GAC filter system.

Process Engineer/Design Engineer
Pretreatment Modifications Water Filtration Plant | Borough of Chambersburg, PA

The 8 MGD water filtration plant formerly had to be taken out service after heavy rainfall because of very high color

concentrations that WTP was not able to effectively filter. Based on extensive jar studies, pretreatment chemicals were changed and client is now able to keep WTP in service even during extreme weather events.

Project Engineer
Broadcreek II WTP Process Evaluation | Anne Arundel County, MD

Prepared pilot plant protocol and participated in bench top studies for evaluation oxidation, precipitation, settling, chemical addition sequence for removal of iron and manganese at filtration facility

Project Design Engineer
Chloramination Facilities | York Region Environmental Services | Markham

Prepared process design plans and specifications for chlorine and ammonia storage, feed and control for 35 MGD pump station facility. Work included preparing the control strategy, integrating chemical feed and analytical equipment building/chemical feed layout, process narrative, process P&ID and process I/O list and construction cost estimate

Project Engineer
Water Filtration Plant Audit | Aqua Pennsylvania | Pickering East and West Facility, Phoenixville, PA

Performed audit of existing 60 MGD facility including, sources, intakes, water filtration facility, buildings and pump stations. Evaluated condition, performance issues, risk and criticality and made recommendations for each part of the facility along with project cost estimates. Priority system for improvements based on risk x criticality.



Project Manager/Process Engineer
Planning, Pilot Testing, Design and Project Management | Elizabethtown Area Water Authority | Borough of Elizabethtown, PA

2.0 MGD microfiltration membrane filtration facility for surface water; chemical feed facilities, design of 0.25 mg elevated water storage tank including, site work, SCADA and booster chlorine system; planning for \$8 million capital improvements projects; planning and design of intakes, pumps, and transmission main for withdrawal of 1.5 MGD from the Cornwall Quarry. Client Manager – Represents GHD at monthly meetings, provides budgeting, invoicing, etc. and advises Authority on day-to-day issues involving water treatment, storage, distribution and regulatory issues.

Project Engineer
Water Treatment Facility Project | Shippensburg Borough Authority | Shippensburg, PA

Prepared design plans and specifications for three well stations (total capacity 5.0 MGD) including pumping, chemical treatment, building layout, and P&ID facilities, including chlorine gas (2 wells) and onsite sodium hypochlorite generation (1 well).

Water System Various Projects. Prepared design plans and specifications for various ground water wells and treatment systems with a total capacity of 5.0 MGD; prepared water system master plan. Included a water resources evaluation and recommended system improvements and costs for 20-year period; developed distribution system computer model and performed evaluation with recommendations for improvements.

Process Engineer
Membrane Filtration Plant | Aqua Pennsylvania | Conshohocken, PA

Developed process design and managed pilot plant testing of 4.0 MGD ultrafiltration membrane filtration plant. Designed facilities for treatment, pumping and storage for two wells with capacity of 0.5 MGD.

Process Engineer
Disinfection Byproducts Study | Aqua Pennsylvania | Roaring Creek Facility, Shamokin, PA

Evaluation of alternatives to reduce DBPs via both treatment and distribution system modifications at 8.0 MGD surface water filtration facility.

Design of Chloramination Facilities. Prepared design plans and specifications for Aqua ammonia bulk storage, chemical feed, monitoring, mixing, process control, new storage building layout, chlorine gas feed modifications, P&ID, I/O list, and process narrative. Managed design of other disciplines including electrical, structural, HVAC and architectural.

Process Engineer
New Chlorine Feed System and Scrubber | Aqua Pennsylvania | Pickering West Facility, Phoenixville, PA

Prepared design plans and specifications for ton container chlorine feed system for 40 MGD facility, including new evaporators, liquid automatic switchovers, dry bed scrubber, emergency shutdown valves, process control, chlorine room layout, P&ID, I/O list, and process narrative. Managed design of other disciplines including electrical, structural, HVAC and architectural.

Other related areas of interest

Published Refereed Papers

- Lusardi P. and Consonery P., 1999. Factors Affecting Filtered Water Turbidity. Journal of American Water Works Assoc., Vol. 91 No. 12.
- Lusardi P., 1996. Strategies for Complying with the Total Residual Chlorine Rule without Compromising Disinfection Performance. Keystone Water Quality Manager, Vol. 29 No. 4.

Presentations

- Consonery, Lusardi, et al 2004, Total Organic Carbon: A Reliable Indicator of TTHM and HAA5 Formation? AWWA Water Quality Technology Conference, 2004.
- Lusardi, 2013, Pickering West Water Treatment Plant Case Study on Sustainable Design, AWWA Annual Conference, Denver, CO
- Lusardi, 2015, Pretreatment Improvements to Achieve Phase IV of the Partnership for Safe Water, AWWA Annual Conference, Anaheim, CA
- Lusardi, 2017, Impact of Wastewater Treatment Plant Biological Nutrient Removal on Susquehanna River Nitrogen Concentrations, Pennsylvania Municipal Authorities Association, Annual Conference

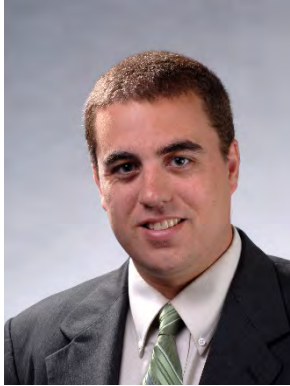
Work history

1991 – present | GHD, Harrisburg, PA



John D. Story

Design Manager – Process Engineering



Qualified: B.S., Civil Engineering, 2003

Connected: Registered Professional Engineer: New York; Board Certified Environmental Engineer, American Academy of Environmental Engineers (Water Supply and Wastewater); New York Water Environment Association; American Public Works Association (New York Chapter/Western New York Branch)

Professional Summary: John has 15 years' experience in the fields of civil and environmental engineering. He has been involved in the study, design, and construction phases of various projects. His experience includes water treatment and wastewater treatment, collection systems, pump stations, and biosolids treatment.

Municipal Water Systems

Project Engineer
Residuals Handling Improvements |
Erie County Water Authority | Erie County, NY
Evaluation, design, and construction phases of residuals improvements at the 90 mgd Sturgeon Point Water Treatment Plant. Improvements included new tube settlers and polymer fed system to enhance settling in thickener/clarifiers, replacing the existing residuals pump station with a new 3,000 gpm pump station, modifications to the residuals equalization basin to provide uniform mixing of co-mingled residuals from the coagulation basins and filter backwashes, and new thickened residuals pumps.

Project Engineer
Emergency Backup Power Study |
City of Buffalo Division of Water | Buffalo, NY
The study included an analysis of the existing backup power at the Colonel Ward and Massachusetts Avenue Pumping Stations, the existing filtration plant, and two booster stations. Several operating scenarios, each with different pumping options, were identified and the backup power requirements for each scenario were calculated. Based on the pumping rate into the system and the pressures available under each scenario, recommendations for backup power generation were made. Final design included two 2,200 KW diesel generators at the City's Colonel Ward Pumping Station, as well as smaller natural gas generators at two booster stations.

Project Engineer
Recreational Aquatic Spray Park Ground
Improvements | City of Buffalo | Buffalo, NY
The improvements involved modifications to the spray parks located at Martin Luther King, Jr., Cazenovia, and Stachowski Parks for compliance with the New York State Department of Health code. The code was issued in

January 2006, and the City was interested in opening the spray parks in July of the same year. The new code required the installation of ultraviolet disinfection and significant improvements to the existing spray feature treatment systems, or conversion to direct discharge. Construction was completed within the required time frame.

Project Engineer
Water System Improvements | Village of
Cassadaga | Cassadaga, NY
Design and construction of a new storage tank and booster station for the Village. The project included a new 280,000 glass fused to steel bolted storage tank and a new booster station to serve homes near the tank with low residual pressure. The project also included the installation of approximately 9,700 LF of new waterlines, ranging in size from 4-inch to 12-inch in diameter. Open cut and trenchless methods were utilized.

Municipal Wastewater Systems

Project Manager
WPCP Solids Handling Upgrades | Oneida
County Department of Water Quality and Water
Pollution Control | Utica, NY
John managed the \$60 million solids handling upgrades at the Oneida County Water Pollution Control Plant. In response to increased flows and loads, and to replace existing equipment that had reached the end of its useful service life, the entire solids handling system at the plant was rehabilitated or replaced. Existing fluidized bed incinerators were rehabilitated for short-term compliance with new emissions regulations, while new anaerobic digesters were installed for long-term operations with the goal of eventually phasing out the incinerators. The new digester facilities include two new 1.2 million gallon egg shaped primary digesters, along with a gas holding secondary digester. New energy recovery facilities were included in the project consisting of a 600 kW microturbine system and hot water heat exchanger. Other



significant project components included a new standby post-lime stabilization system, rehabilitations to existing gravity thickeners for primary sludge, new gravity belt thickeners for waste activated sludge, new belt filter presses, and replacement of various sludge pumps at the plant. A new septage receiving facility was included in the project to screen hauled waste and for conveyance directly to the anaerobic digesters. Due to the energy recovery aspect of the project, funding was received from NYSERDA and Empire State Development.

Project Manager
WPCP Headworks Upgrades | Oneida County
Department of Water Quality and Water
Pollution Control | Utica, NY

Project Manager for the \$70 million headworks upgrades at the Oneida County Water Pollution Control Plant. Due to increased flows from CSO/SSO abatement, as well as new industrial flows in the system, the headworks were expanded from a peak capacity of 55 mgd to a peak capacity of 111 mgd. The existing raw waste pump station was refurbished with new dry-pit submersible pumps and multi-rake bar screens. The project also includes a new 27 mgd influent screening/pumping facility with mechanically cleaned bar screens and dry-pit submersible pumps to supplement the existing raw waste pump station. New grit removal facilities were included consisting of a stacked tray type vortex grit removal tanks, grit pumps, and grit washers/classifiers. Significant electrical upgrades included new unit substations, and two 2.5 MW diesel generators.

Project Engineer
Southtowns AWTF Biosolids Handling
Improvements | Erie County Division of
Sewerage Management | Hamburg, NY

Design included two new 55-foot diameter gravity thickeners, progressive cavity thickened sludge and filter press feed pumps, a new 1.5 m x 2.0 m, 250 ft3 plate and frame filter press, and new hydraulic piston type dewatered sludge pumps. Also designed flat fiberglass covers for the thickener tanks, and an activated carbon odor control system for the thickeners. A new thickener complex building was designed with the odor control system at the first floor and thickened sludge pumps in the basement.

Project Engineer
Disinfection Upgrades | Southtowns AWTF and
Lackawanna STP | Erie County Division of
Sewerage Management | Hamburg and
Lackawanna, NY

The upgrades consisted of bulk sodium hypochlorite feed systems, complete with storage tanks; containment systems; and bulk truck offloading systems. The Southtowns system is designed to disinfect peak plant flows of 42 million gallons peak day, and overflow retention facility flows up to 58 million gallons per day.

The Lackawanna system can disinfect peak plant flows of 14.6 million gallons per day. Both systems utilize peristaltic pumps and compound loop control.

Project Engineer
Big Sister Creek Wastewater Treatment Plant
Ultraviolet Disinfection Upgrade |
Erie County Division of Sewerage Management |
Erie County, NY

Responsible for evaluation of disinfection alternatives, including medium and low-pressure ultraviolet plant effluent disinfection systems, and bulk sodium hypochlorite Overflow Retention Facility chemical feed systems. Also evaluated the potential use of on-site chlorine and sodium hypochlorite generation systems. The final design consisted of a low-pressure ultraviolet disinfection system for the 11.5 million gallons per day plant effluent, and a bulk sodium hypochlorite feed system including storage tanks, containment systems, and a bulk truck unloading system for the 30 million gallons per day Overflow Retention Facility.

Project Engineer
Wastewater Treatment Plant Chemical Feed
Improvements | Niagara Falls Water Board |
Niagara Falls, NY

Upgrade included improvements to the sodium hypochlorite and hydrogen peroxide chemical feed systems. The WWTP utilizes both chemicals due to the high oxidant demand from industrial and groundwater flows. Utilized bulk chemical storage tanks and containment in accordance with New York State Department of Environmental Conservation Chemical Bulk Storage regulations. Used peristaltic pumps for chemical feed to plant effluent, carbon bed under drain, and carbon bed backwash. Provided field inspection of contractors.

Work history

2003 – present	Associate, GHD, Buffalo, NY
	Named Associate 2020



Chad Angle, PE Process Engineering



Qualified: Master of Science -Civil Engineering, Virginia Tech, 1995; Bachelor of Science - Civil Engineering, Drexel University, 1994, Registered Professional Engineer: PA

Connected: Water Environment Federation; Pennsylvania Water Environment Association; American Society of Civil Engineers; American Water Works Association

Professional Summary: Chad has 25 years of experience as a civil engineer with a focus on water, wastewater design, and stormwater management design and analysis. Chad's experience includes computerized hydraulic modeling of water distribution systems, sanitary sewer collection systems, and stormwater management facilities. Chad has also been the lead design engineer on various pumping station designs, and water and wastewater treatment plant upgrades.

Water

Senior Engineer

Octoraro Water Treatment Plant Lime and Carbon Storage and Feed Facilities Improvements | Chester Water Authority | Nottingham, PA

Designed improvements to the existing lime and powdered carbon storage and feed facilities. Design and evaluation consisted of new slurry mixers, metering and piping, and conversion of existing carbon slurry tanks to lime slurry tanks. Carbon improvements consisted of demolition of existing dry carbon silo and replacement with two large carbon slurry tanks to immediately off-load dry carbon and produce a carbon slurry. Carbon system included new feed pumps, piping, mixers, and metering system. Systems were designed to serve the existing 60 MGD plant.

Senior Engineer

Bristol Water Treatment Facility SOP | Aqua Pennsylvania, Inc. | Bristol, PA

Developed a comprehensive and plant wide Sequence of Operation Plan (SOP). SOP reviewed the operation of each process and equipment, and developed a sequence of operation for startup and shutdown in remote, local and hand.

Senior Engineer

Octoraro Water Treatment Plant Chlorine Storage and Feed Facilities Improvements | Chester Water Authority | Nottingham, PA

Designed new chlorine storage and feed system improvements that included: new 10,000 ppd evaporators, 4,000 and 2,000 ppd chlorinators, new ton chlorine containers scale system, new chlorine liquid piping system, and new chlorine gas vacuum piping system to the existing 60 MGD Octoraro Water Treatment Plant. Project included the design of a temporary sodium

hypochlorite feed system for disinfection during construction that totaled 39,000 gallons of storage. Construction cost \$1,500,000.

Senior Engineer

Octoraro Water Treatment Plant Flocculation Basins and Flume Improvements | Chester Water Authority | Nottingham, PA

Designed new flocculators, gates and flume improvements to the existing 60 MGD Octoraro Water Treatment Plant. Construction cost \$2,500,000.

Senior Engineer

Octoraro Water Treatment Plant Sedimentation Basin Improvements | Chester Water Authority | Nottingham, PA

Designed new sedimentation basin and back recovery basin chain and flight and cross collectors, along with influent gate modifications to the existing 60 MGD Octoraro Water Treatment Plant. Design also included in-basin concrete repair and coatings along concrete deck coatings. Total Construction cost \$2,100,000.

Project Engineer

Ridley Water Treatment Plant 8.0 MGD Upgrade | Aqua Pennsylvania, Inc. | Media, PA

Design included the addition of inclined plate settlers, conversion of sedimentation basins to backwash recovery basins, new mixed media filters, new clearwell, new finished water pumping station, new gas chlorine storage and feed system, and new chlorine scrubber system. Construction cost \$14,952,000.

Senior Engineer

Water Distribution Study | Antrim Township Municipal Authority | Franklin County, PA

Evaluated the alternatives and cost to extend the existing water system to adjacent service areas within the Authority. Study included the evaluation of service and pressure to each new service area, the cost to extend



service to each area, and the financing needed to complete the extensions, and the impact on yearly and monthly debt service.

Project Engineer

Octoraro Water Treatment Plant Upgrade | Chester Water Authority | Nottingham, PA

New liquid aluminium sulphate storage and feed facility. Facility consisted of providing six (6) 10,500-gallon FRP storage tanks and four (4) peristaltic hose pumps. Construction cost \$1,079,950.

Resident Engineer

Octoraro Water Treatment Plant High Lift Pumping Improvements | Chester Water Authority | Nottingham, PA

Performed resident engineering duties to insure all aspects of construction were completed in accordance with the contract documents. Construction consisted of a new high lift pumping facility with four (4) vertical turbine pumps from 1750 hp to 900 hp, 84" diameter PCCP, 48" to 30" diameter DIP, clearwell modifications, and associated electrical and HVAC work. Construction cost \$13,050,000.

Project Engineer

Pickering Water Treatment Facility Schuylkill and Perkiomen Intake and Raw Water Pump Station Upgrades | Aqua Pennsylvania, Inc. | Phoenixville, PA

Design of new passive intake screens, Hydroburst air scouring systems, and new raw water vertical turbine pumps with a total pumping capacity of 52 MGD and 32 MGD for the Schuylkill and Perkiomen stations, respectively. Prior to design, developed computer model to analyze existing operation and develop new flow alternatives for the proposed system upgrades. Construction cost \$7,900,000.

Pickering West Water Treatment Facility. Liquid aluminium sulphate storage facilities. Design consisted of demolition of two (2) 18,000-gallon concrete lead lined storage tanks in the installation of two (2) 17,595-gallon site built FRP tanks, and the installation of new aluminium sulphate transfer pumps. Construction cost \$666,400.

Project Engineer

Bristol Water Treatment Facility | Aqua Pennsylvania, Inc. | Bristol, PA

Design of residuals handling and dewatering facility upgrades. Included new 42-ft. diameter thickener, improvements to the existing 42-ft. diameter thickener, new polymer feed system, new conditioning tank, and upgraded process controls. Construction cost \$1,500,000.

Project Engineer

Seven Main Division Wells | Aqua Pennsylvania, Inc. | Multiple Locations, PA

Prepared groundwater feasibility studies. Evaluated the new PA Groundwater Rule and determined the compliance or non-compliance of each well. Developed alternatives to meet the PA Groundwater Rule for each well and developed capital expenditure costs for each upgrade.

Project Engineer

WaterCAD V8 Water Distribution System Model | New Oxford Municipal Authority | Adams County, PA

Prepared to evaluate existing conditions, proposed system improvements, value engineering assessments of proposed improvements, and assisted in prioritizing improvements. Modeling also consisted of determining areas of deficiency in system capacity and available pressures, and modeling improvements for identified deficiencies.

Work history

2007 – present	GHD, Harrisburg, PA
2005 – 2007	SAIC Corporation, Harrisburg, PA
2001 – 2005	Raudenbush Engineering, Inc., Middletown, PA
1997 - 2001	CDM Smith, Lancaster, PA
1996 - 1997	SAIC Corporation, Middletown, PA



Daniel Hamlin Engineer



Qualified: MS, Environmental and Water Resources Engineering, 2018; BS, Environmental Engineering, 2017

Connected: Engineer-in-Training: New York; Member of Water Environment Federation, New York Water Environment Association and American Water Works Association

Professional Summary: Dan is an environmental engineer at GHD and contributes to the evaluation and design of water and wastewater systems to meet the needs of the client and provide optimal treatment and operational capability. He has been involved in multi-disciplinary projects assisting with planning, designing and construction. He applies his knowledge developed through his graduate education to each project.

Municipal Water Systems

Engineer

Water Treatment Plant Disinfection Conversion Evaluation | City of Buffalo Water Board | Buffalo, NY

Daniel calculated the amount of sodium hypochlorite bulk storage and pumping required to meet the needs of the treatment facility, and satisfy rules and regulations. This included determining the size of the bulk chemical storage system that could be constructed in the already constrained rooms and areas of the plant. These calculations were composed into a preliminary design for the new disinfection system that maintains the functionality and redundancy of the existing system, while providing additional flexibility and operator control.

Engineer/Resident Engineer

Permanent Granular Activated Carbon Filter Installation | Town of Owasco | Owasco, NY

Daniel contributed to the design of the permanent connection to the existing granular activated carbon (GAC) filter system implemented to address harmful algal blooms (HABs). He determined the necessary piping connections to optimize the system both operationally and economically. Daniel also developed protocols to guide the client in operating the filters to give them operational flexibility.

Engineer

GAC Filter Disinfection | Wells College | Aurora, NY

Daniel advised the client regarding the disinfection of five 2,000-pound activated carbon filters used to remove toxins associated with HABs. Daniel performed calculations to determine the sufficient volume of chemicals necessary to make sure disinfection of the filters occurred, and to achieve neutralization of the filters after disinfection. Daniel's advisement reduced the total

quantity of chemical required for the procedure, reducing risk and cost for the Client.

Engineer

Preliminary Engineering Report | Prince William County Service Authority | Prince William County, VA

Daniel assisted in development of a preliminary engineering report for the client assessing the use of spray-in-place pipe (SIPP) products to extend the life of their infrastructure and prevent breakages in their distribution system. Daniel researched the practice of applying in situ repair of municipal potable water lines with SIPP linings and reviewed distribution data from the client. Daniel also contacted SIPP applicators and vendors to determine relevant application and cost information. This information was used as the basis for the design report submitted to the client.

Engineer

Water Treatment Plant Filter Troubleshooting | City of Batavia | Batavia, NY

Daniel reviewed the design specifications for the City's existing sand filters and their method of water treatment in order to develop potential hypotheses for calcification issues within the filters. Daniel contacted filter media vendors to obtain cost estimates for new media necessary to restore the functionality in one particular filter that experienced severe boiling and mudballs due to calcification of the media, with the potential for future media replacement in the remaining filters.

Engineer

Auburn Residual Lagoon Modeling | City of Auburn | Auburn, NY

Daniel modeled the residual lagoons that capture solids from the City's Auburn Water Treatment Facility. He used PCSWMM to develop a 2D model in order to predict a velocity diagram and possible flow rates in the lagoons. The model informed what types of effluent weir and orifice



combinations would be appropriate to settle material before discharge into surface water.

Research Assistant

Testing of Fluorosilicic Acid on Pipe Loop System | City of Buffalo Division of Water | Buffalo, NY

Daniel performed a pilot-scale, corrosion control study with fluorosilicic acid in concentrations consistent with concentrations of fluoride the City of Buffalo intended for the water distribution system. Daniel performed necessary troubleshooting of the pipe loop system’s equipment to maintain optimal performance. He selected the necessary equipment required to measure various water quality parameters pertinent for the study, and performed the measurement of such parameters. He also collected samples following EPA protocol to measure lead and copper, among other analytes. Daniel developed a broad understanding of lead pipe-scale chemistry, and compiled the collected theory and data from the pipe loop study into his master’s thesis. The measurements and results from the pipe loop study will be delivered to the City of Buffalo as part of their corrosion control study and implementation of using fluorosilicic acid for drinking water fluoridation.

Other related areas of interest

Recognized (Certifications/Trainings)

- NYS DEC Erosion and Sediment (E&SC) Training

Published Papers

- “Lead Corrosion in a Water Distribution System: Effect of Fluorosilicic Acid, Pipe Scale Analysis, and Equilibrium Speciation Simulation” Hamlin, Daniel; 2018

Work history

2019 – present	GHD, Buffalo, NY
2017 – 2018	SUNY Research Foundation, Buffalo, NY
2015 – 2017	Watson Bowman Acme Corp., Amherst, NY



Stephen C. Waldvogel Principal



Qualified: M.S., Environmental Engineering, 1999; B.S. Civil Engineering, 1997

Connected: Registered Professional Engineer: New York; American Water Works Association, New York Water Environment Association

Professional Summary: Stephen is a Principal at GHD with more than 20 years of diverse financial, engineering and utility system management experience. He assists many of our municipal water and wastewater utilities with strategic financial, technical and organizational assistance. Stephen has directed numerous engineering design projects covering a broad range of municipal water and wastewater applications. Stephen has also directed many complex economic evaluations, feasibility studies, asset management initiatives, organizational reviews and other business/management related analyses for a broad range of municipalities.

Water System Analysis and Design

Project Manager

Full Scale Microcystin Treatment and Demonstration Project | City of Auburn | Auburn, NY

Following the detection of cyanotoxins in the City's drinking water system, Stephen directed an emergency review of treatment technologies, which included laboratory analysis, literature reviews and case studies. The analysis identified powder activated carbon (PAC) as the most suitable for the City's urgent treatment needs. Working closely with the regulatory agencies Stephen directed the expedited design, procurement and commissioning of a temporary water treatment system for the removal of cyanotoxins from the City's raw water. The system was installed within 5 months and was used successfully for several months in full-scale demonstration mode to remove cyanotoxins and conduct intensive analysis for the Department of Health. Based on the initial findings, several minor improvements were made such that the system can be used on a permanent basis.

Project Manager

Full Scale Microcystin Treatment and Demonstration Project | Town of Owasco | Owasco, NY

Following the detection of cyanotoxins in the Town's drinking water system, Stephen directed an emergency review of treatment technologies that included laboratory analysis, literature reviews and case studies. The analysis identified granular activated carbon (GAC) as the most suitable for the Town's urgent treatment needs. Working closely with the regulatory agencies Stephen directed the expedited design, procurement and commissioning of a temporary water treatment system for the removal of cyanotoxins from the Town's raw water. The system was installed within several months and was used successfully in full-scale demonstration mode to remove cyanotoxins and conduct intensive analysis for the department of

health. Based on the success of the temporary system the Town has retained GHD to design a permanent GAC system.

Project Manager

Emergency Microcystin Treatment Upgrades | Wells College | Aurora, NY

Stephen directed the design of a granular activated carbon (GAC) treatment system for removal of cyanotoxins at the College's water plant. The project included an expedited design, procurement and construction process such that the GAC system would be operational before the next harmful algal bloom season. The project also included a new chlorine feed system and automated controls.

Project Director

Conceptual Design - Water Plant Upgrades
Wells College | Aurora, NY

Stephen directed the evaluation and conceptual design of several alternatives for upgrades to the water treatment facilities at the College. The College has experienced significant difficulties with its aging treatment and raw water pumping systems. GHD developed a conceptual design for the replacement of the College's diatomaceous earth filters and raw water pumps.

Project Manager

Water Treatment Plant Residuals Handling Plan | City of Auburn | Auburn, NY

Stephen directed an evaluation and study of potential improvements to the City's residuals settling lagoon. The improvements included cleaning, stabilization and redirecting flow to enhance residence time and improve settling/retention. The study included site inspections, sample collection for sludge characterization, and high-level capital cost estimates for the lagoon cleaning and infrastructure improvements for the City's planning purposes.



Project Manager

Water Filtration Plant and Lower Pumping Station Improvements | City of Auburn | Auburn, NY

Stephen managed a major capital improvement project for the City, which included upgrades at the City's filtration plant and high service pumping station. Included in GHD's work was a design report, funding applications, detailed design, bidding and construction oversight. The improvements included; replacement of two vacuum priming systems, the rehabilitation of two separate backwash pump and motor assemblies, the replacement of 12 rapid mix and flocculator motors and mixers, the relocation and replacement of 13 mixer variable frequency drives, and the repair of the rapid sand filtration plant's influent concrete flume wall. Also included was the rehabilitation of the City's three high service centrifugal pumps and motors, the replacement of various large diameter valves, the replacement of large diameter exposed bell and spigot cast iron piping with flanged ductile iron piping, and the reconfiguration of the suction and discharge risers and headers. The completion of these improvements required that the City's sole source of drinking water be taken offline. For this reason, the project included a temporary potable water bypass pumping system, wet taps and line stops to facilitate construction.

Project Manager

Water System Improvement Project | Village of North Collins | North Collins, NY

Project Manager for the planning, financing, design, and construction of a new automated water treatment facility, pumping station, new SCADA controls, well house rehabilitation, and several miles of transmission and distribution mains throughout the Village. Stephen oversaw the preparation of funding applications, Map and Plan, and various other planning documents. He provided oversight during the hydraulic analysis and directed the design of plans and specifications for bidding. Stephen worked closely with Village personnel during startup of new pumping systems, chemical addition systems, and new pressure zone.

Work history

May 2003 – present	Principal, GHD (formerly CRA Infrastructure & Engineering, Inc.), Buffalo, NY Named Principal 2018 Named Associate 2012
2001 – 2003	R&D Engineering, PC (acquired by CRA in 2003), Buffalo, NY
1998 – 2001	American Water Services, Buffalo, NY
1997	Ammann & Whitney, New York, NY

Michael Chapman

Manager Water Quality



Qualified. Bachelor of Science, Monash University, 1974.
Bachelor of Chemical Engineering, RMIT, 1985

Connected. Water Research Association – Scientific Advisory Committee.
Australian Water Recycling centre of Excellence – Industry Representative,
National Protocol Development Committee (Recycled Water Treatment Processes). Author 'Water Treatment Plant Design" (2012) AWWA/ASCE- Ch. 9; High rate granular media filtration and GAC

Relevance to project. Mike is a Chemical Engineer with over 40 years' experience in the water industry. He is a water treatment and water supply specialist and has extensive experience in drinking water & recycled water treatment design, review / upgrade of water /brackish/seawater, risk assessment and pilot plant studies. He was the Global Leader for Water Treatment and Desalination Service Line from 2008 to 2016, which means he was the Australian and international technical leader for this area for GHD. Previously Manager WQ & Asset Management for all water treatment facilities by

Recent Experience for 2002 to 2019

Olympic Dam Mine site -Augmentation of Process and Drinking Water Study
BHP| SA

Concept design and cost estimation for four options for supply of 20 to 50MLD more water for up to 35MLd of drinking water and the rest for process water. Pipe routes, hydraulic assessment for pipelines and pump stations and modelling and design for brackish water (TDS= 3,000mg/L at up to 80oC) and seawater water (TDS= 43,000mg/L) at desalination treatment using RO and lime/Carbon dioxide water stabilisation (2019)

Project Director

Merrimu WTP –Master Plan
Western Water | Vic

Development of 50-year development plan for the supply storages, the 35MLD Clarifier/Filter plant and downstream distribution system for the Merrimu WTP. Project covers new supply sources, upgrades to WTP capacity and treatment process, existing WTP condition assessment, works to improve distribution system performance for pH and THMs and options assessment and cost estimation for business plan for next Water Plan (2019)

Design lead for Douglas and Northern WTP upgrade project
Townsville Regional Council| QLD

Concept then detail design and tendering for 90MLD lamella plate clarifier, 230MLD gas chlorination, UV disinfection, Powdered Activated Carbon and fluoridation systems at Douglas WTP and 60MLD UV disinfection system at Northern WTP (2019)

Design lead for Marom ck WTP & Howlong WTP Upgrade works projects
Ballina SC and Federation Council| NSW
Detailed Concept then D&C design for new chemical dosing for coagulation and treated water stabilisation, flocc tank and mixer, filter automation and plant automation for 3MLD Marom ck WTP and similar works at 4MLD Howlong WTP (2018/19)

Design lead for review of La Mesa WTP upgrade

Wabag | Philippines

Review of hydraulics, layout and process design for retrofit of new flocculation tank arrangement and addition of new lamella plates clarification process and sludge removal systems in place of Degremont Pulsators at this 1000MLD WTP. Work included review of hydraulic, layout and process design and assessment of impacts on existing gravity filter and sludge processing systems (2018)

Lead for water transfer& treatment
Northern Magnetite –Power and Water Study
SIMEC| SA

Michael Chapman

Manager Water Quality

Concept design and cost estimation for five (5) options for supply of water and several options for power to a new mine development for 5Mtpa rising to 30Mtpa capacity. Works included identification of GAB and other aquifer options to give the 30 to 120ML/d of water for process and 4+ ML/d of drinking water for construction/operations. Pipe routes, hydraulic assessment for pipelines and pump stations and modelling for GAB water desalination or seawater treatment using RO, including evaporation ponds, were completed. CAPEX, OPEX, NPC and advantages/risks/MCA assessment were completed for this \$1B level cost project (2018)

Process lead- Forth and Leven WTP
Technical Adviser role for upgrade
Contracts for Forth, Leven and Bryn Estyn Water Treatment Plants
Tas Water | Vic
Currently completing concept design and cost estimation for upgrade of the 54ML/d(Forth) and 15ML/d (Leven) plants and providing advice to others for 180ML/d (Bryn Estyn) plant based on addition of Microfiltration and Ozone/GAC and UV plus gas chlorine disinfection. This work will then feed into Specifications for construction works for each of these WTP (2018)

Project manager/designer
Mixing /aeration systems in large reservoirs
Various | Vic/NSW/QLD/SA
Concept and detail design or D&C contracts & commissioning of 17 No bottom mounted mixing/aeration systems for 40 to 200,000ML reservoirs. Most recent was for 2046ML Bundanoon ck dam for Wingecarribee Council in 2017, Mt Bold Res (43,000ML) and Ross River Dam (230,000ML) (1996/2019)

Project Director
Rosslynne WTP –Master Plan
Western Water | Vic
Development of 50-year development plan for Process review/Asset condition for relocation of lime system, plant augmentation and energy reduction (solar panels) for this 42MLD WTP that has DAFF/UV (2018)

Treatment plant lead

Brackish water desalination assessment
Orrorroo, Melrose and Quorn
SAWater | SA
Concept design including hydraulics, layout, RO and brine pond modelling and detailed CAPEX and OPEX for bores, treatment, storage and pumping works for 0.5 to 1.2 ML/d production capacities drinking water plants (2018)

Process lead
Coffs Harbour WTP –Condition and assessment & energy reduction
Process review/Asset condition for relocation of lime system, plant augmentation and energy reduction (solar panels) for this 42MLD WTP that has DAFF/UV/gas chlorination and lime/carbon dioxide/caustic soda based treated water stabilisation. Works included concept and D&C documentation for relocation of lime system from upstream at dam to WTP site (2018)

Process lead
Grahamstown WTP –Concept design then D&C tender documents
Options assessment then concept design/risk assessment then D&C documentation for new sludge removal systems using sludge suckers for this existing 250ML/d WTP (2018)

Design lead
Mt Isa WTP –UV and chlorination works
Options assessment then concept design summary, control description, drawings and CAPEX and OPEX for new UV disinfection and gas chlorination for 600L/s capacity Mt Isa water supply system (2018)

Project Director
Rosslynne WTP- THMs concept and D&C tendering Western Water | Vic
Options assessment, Concept design, Business case then D&C tender documents and assessment of tenders for first known Australian THM reduction by in tank aeration system (2017/18)

Design Lead
PFOS removal at WTP | QLD
Pilot studies and concept design and cost estimation for PFOS and PFHxS removal at an existing WTP (2017)



James Thornton

Senior Structural Engineer



Qualified: BS Civil Engineering 1977; Master of Business Administration (MBA) 1994

Connected: Professional Engineer – New York State; Member - American Institute of Steel Construction (AISC)

Professional Summary: Jim has 42 years of experience in designing structures and buildings. Work has included the design of superstructures and foundations composed of reinforced concrete, structural steel, timber, and masonry among other building materials. Work has been completed in the water, wastewater, energy, and industrial sectors along with some commercial and institutional work.

Municipal Engineering

Senior Structural Engineer

John Street Pump Station | Monroe County
Division of Pure Waters | Henrietta, NY

Jim provided oversight of the structural design for the new grinder chamber and demolition and reconfiguration of the wet well.

Senior Structural Engineer

Oak Orchard WWTP Infrastructure
Improvements | Onondaga County Department
of Water Environment Protection | Clay, NY

Jim conducted a structural condition inspection of the #2 primary settling tank and preparation of a report on his findings. He oversaw detailed design of recommended improvements.

Senior Structural Engineer

Parker-Fries Interceptor and Parker Pump
Station | Town of Tonawanda | Tonawanda, NY

Senior Structural Engineer responsible for overseeing the design of the new reinforced concrete chambers as part of a major sewer interceptor replacement project and monorail system at the Parker Pump Station.

Civil/Structural Group Leader

Hamburg Drain Screening Facility | Buffalo
Sewer Authority | Buffalo, NY

Work included the design and construction of a 4500 s.f. steel-framed building with masonry exterior walls to house the new screens. Scope also included the realignment of an existing 16' wide by 13' deep underground canal to and from the new facility.

Senior Structural Engineer

Tonawanda Creek Road Pumping Station
Rehabilitation and Capital Plan
Implementation | Niagara County Sewer
District No. 1 | Pendleton/Wheatfield, NY

Senior Structural Engineer overseeing the design for the solids processing improvements, bar screen platform and containment pad for the grit system at the Niagara County Sewer District's Water Pollution Control Center.

Senior Structural Engineer

Vanderbilt Pumping Station, Depew Pumping
Station and Depew Overflow Retention Facility
Upgrades | Erie County Division of Sewerage
Management | Depew, New York

Senior Structural Engineer responsible for overseeing the design of building modifications, reinforced concrete valve chamber, and the Depew Overflow Retention Facility upgrades.

Civil/Structural Engineer

Donner Road Bridge Replacement | Town of
Pendleton | Pendleton, NY

Provided civil/structural design for a bridge deck replacement. Work included evaluating various deck alternates to determine the most effective and best cost solution. Scope also entailed checking the capacity of the existing bridge abutments and working with the bridge deck pre-caster to ensure that all state and local requirements were met.

Industrial Engineering

Civil/Structural Group Leader

Facilities Design for a New Mining Installation |
Confidential Client | Soda Springs, ID

Work included the preliminary design of foundations and floor slab for a 76,000 s.f. pre-engineering steel building to house offices, warehouse, and maintenance areas.



Work also included foundations and floor slabs for ancillary buildings for tire changing, lineout facilities, and erosion control materials storage.

Civil/Structural Engineer
Joliet Wastewater Treatment Upgrade | Caterpillar | Joliet, IL

Provided civil/structural design for reinforced concrete sumps, pits, tank foundations, tank dikes, and buildings for an \$8 million wastewater treatment plant upgrade. Work included structural steel design of new pipe supports and the design of a new control room structure within an existing building.

Civil/Structural Group Leader
Structural Steel Evaluation | Confidential Client – Chemical Manufacturing | Niagara Falls, NY

Led a team of three engineers inspecting and evaluating all exterior steel structures in a 110-acre chemical manufacturing plant. Work included rating the condition of each structure and making recommendations on repairs and replacements.

Civil/Structural Engineer
Pelletizer System Design | Lafarge North America Cement | Ravenna, NY

Designed reinforced concrete foundations for a new 120' tall Cement Kiln Dust (CKD) silo pelletizer, and loadout area. Work included designing structural steel supports with reinforced concrete foundations for approximately 500 l.f. of 10" steel CKD slurry pipeline.

Civil/Structural Engineer
Chlorine Pipeline Replacement | Timet | Henderson, NV

Provided civil/structural design for reinforced concrete foundations and structural steel pipe supports for a new 8" chlorine pipeline between two chemical plants. Work included the installation of snubber supports required to dampen the seismic loads in the area.

Civil/Structural Group Leader
Plains Bumstead Facilities Upgrade | Plains Midstream Canada | Glendale, AZ

Work included the design of a new structural steel rack for loading railcars with butane and propane. Project also required the design of new foundations for pumps and tanks and the design of numerous pipe bridges and pole lines to support product piping.

Environmental

Project Manager
102nd Street Landfill | Confidential Client | Niagara Falls, NY

Project Manager coordinating the field efforts to remediate a 3-acre CERCLA landfill. Fieldwork included the construction of a barrier wall around the landfill perimeter along with a groundwater collection and pumping system.

Work also included construction of a 1900 l.f. earthen cofferdam in the Niagara River and the excavation of contaminated sediment which was then dewatered and placed on the landfill. Site was capped with an HDPE geomembrane and bentonite mat with topsoil and turf.

Project Manager
Remedial Waste Storage Facility | Confidential Client | Niagara Falls, NY

Coordinated the design and construction effort to install a 15,000 s.f. drum storage building (pre-engineered steel) and a 54,000 s.f. solid waste storage building with secondary containment and leak detection.

Project Manager
Remedial Waste Disposal | Confidential Client | Niagara Falls, NY

Coordinated the classification, loading, shipping, and disposal of over 60,000 tons of hazardous waste from western New York remediation activities. Work included the design and installation of 1000 l.f. of railroad siding to increase loading productivity and reduce shipping costs.

Landfill Gas to Energy

Civil/Structural Group Leader
Various Projects | Confidential Client | Various Cities, Various States

Led group of three engineers designing structures for new Energy from Landfill Gas Facilities in Oregon, Virginia, Arkansas, Nevada, Florida, and Michigan.

Work included the design and drafting of reinforced concrete masonry unit (CMU) buildings with reinforced concrete foundations to house the compressors and generators. Roofs were generally steel framed with metal deck and single ply roofing. Work included miscellaneous pipe supports and foundations for ancillary equipment.

Work history

1998 – present	GHD (formerly Conestoga-Rovers & Associates) Buffalo, NY
1996 – 1997	Glenn Springs Holdings, Inc., Grand Island, NY
1984 – 1996	Occidental Chemical Company, Niagara Falls, NY
1982 – 1984	Norman Bahler Associates, Tonawanda, NY
1980 – 1982	Occidental Chemical Company, Grand Island, NY
1977 – 1980	Charles H Sells, Inc., Dansville, NY



Brian Regan

Civil/Structural Engineer



Qualified: Master of Science (MS) Civil Engineering, State University of New York at Buffalo, Bachelor of Science (BS) Civil Engineering, State University of New York at Buffalo

Connected: Intern Engineer, New York

Professional Summary: Mr. Regan is a Civil/Structural engineer and has been with GHD for over 10 years. During this time, he has gained experience in municipal, chemical, oil and gas, environmental, and engineering consulting industries. His experience includes analysis and/or design of foundations, retaining walls, truss/joist systems, wall and roof framing systems, and equipment supports. Other responsibilities have included preliminary and detailed design, and bid and construction document preparation.

Water Treatment

Design Engineer

BCWA Residual Handling Facility | Bradford City Water Authority | Bradford, Pennsylvania

- Designed two cast in place concrete sludge tanks and associated interconnected pump station.
- Designed cast in place equipment supports, elevated, composite concrete/grating floor, structural steel floor framing, cast in place concrete shear/retaining walls, and cast in place floor/ foundation slab for a centrifuge building.
- Specified a pre-engineered metal building.

Design Engineer

Alden Water System Assistance | Alden | Alden, New York

- Designed a reinforced concrete masonry unit (CMU) shear wall building with steel framed roof and cast in place concrete foundation.
- Designed a cast in place concrete clear well.
- Designed cast in place concrete equipment supports.
- Specified a precast concrete overflow chamber.

Design Engineer

Colonel Ward Pumping | City of Buffalo | Buffalo, New York

- Designed modifications to an existing cast in place concrete pump foundation to support new pumps and associated valves and piping.
- Designed modifications in an existing cast in place concrete wall to allow the installation of a new steel pipe.
- Evaluated existing precast concrete planking and specified new planking for elevated floor modifications above a clear well.

Wastewater Treatment/Distribution

Design Engineer

Phase 3 Rehabilitation | Niagara Falls Water Board | Niagara Falls, New York

- Designed cast in place concrete modifications and supports to existing concrete structures.
- Designed an aluminum elevated walkway.
- Designed new penetrations in existing masonry walls for mechanical equipment.

Design Engineer

NCSD Phase 1A Capital Plan | Niagara County Sewer District No. 1 | Wheatfield, New York

- Evaluated existing elevated cast in place concrete two-way slab for new loading conditions.
- Designed equipment supports and containment area for a polymer feed system.
- Designed an elevated cast in place concrete platform and supporting steel columns and bracing.
- Designed cast in place concrete and steel equipment supports for a centrifuge and screw conveyor.

Design Engineer

Hamburg Drain Screening Facility | Buffalo Sewer Authority | Buffalo, New York

- Designed a temporary steel bulkhead for an existing stone box culvert wall.
- Designed new cast in place concrete interconnections to an existing stone box culvert and a new screening facility.
- Specified precast concrete box conduit sections.
- Designed cast in place concrete below grade walls and beams for a screening facility.
- Designed cast in place concrete supports for screening facility equipment.



Design Engineer
Tonawanda | Town of Tonawanda |
Tonawanda, New York

- Designed several cast in place concrete underground chambers to regulate sewer flows.
- Designed a cast in place concrete foundation for a pump station backup generator.

Design Engineer
ECSD No. 4 Vanderbilt PS Rehab | Erie County
Department of Environmental Protection |
Depew, New York

- Designed modifications to an existing masonry wall and cast in place concrete floor to allow the installation of a new generator, wall fan, and louver in an existing pump station.
- Designed a new steel baffle and modified an existing cast in place concrete wall in an overflow retention facility.
- Modified an existing cast in place concrete headwall to accommodate a new outfall pipe.
- Designed a cast in place concrete foundation for electrical equipment.

Industrial

Design Engineer
Niagara HCI Burner | Confidential Client |
Niagara Falls, New York

- Evaluated existing steel framing for loading/unloading facilities and piping/equipment supports.
- Designed cast in place concrete equipment foundations and steel supports for new and existing equipment and piping.

Design Engineer
Petrolia Bldg Hardening | Confidential Client |
Petrolia, Pennsylvania

- Evaluated existing unreinforced masonry control rooms using new loads developed by an outside company and designed new support steel to retrofit the control rooms.

Design Engineer
Everett, MA Terminal | Confidential Client |
Everett, Massachusetts

- Specified a pre-engineered metal building.
- Designed cast in place concrete footings and piers for a pre-engineered steel stormwater treatment building.
- Designed a reinforced concrete masonry unit (CMU) shear wall control room with composite steel and concrete ceiling and cast in place concrete floor.
- Designed cast in place concrete equipment supports and steel equipment access platforms.

- Assisted with design of underground vapor intrusion mitigation system.

Design Engineer
Renewable Energy – Landfill Gas to Energy
Power Plant | Confidential Client | Lockwood,
Nevada

- Designed a special reinforced concrete masonry unit (CMU) shear wall building with steel beam framed roof and cast in place concrete foundation.
- Designed cast in place concrete foundations for mechanical and electrical equipment.
- Designed a cast in place concrete containment area for a vertical tank.

Design Engineer
Limonene Chiller Project | Confidential Client |
Trenton, Michigan

- Specified a pre-engineered metal building for a building addition.
- Designed a cast in place concrete foundation for a building addition and mechanical equipment.
- Designed steel pipe supports with cast in place concrete foundations for elevated piping.

Work history

2007 – present	GHD (formerly Conestoga-Rovers & Associates), Buffalo, New York
----------------	---



Gordon Crone

Senior Electrical Engineer



Qualified: Electrical Engineering, University of Alabama

Connected: Registered Professional Engineer: NY

Professional Summary: Gordon has 50 years of electrical engineering design experience on industrial, commercial, institutional, and municipal projects. He has extensive experience in the design of high and low voltage power supply and distribution systems, UPS systems, motor and motor controls, lighting, grounding, TVSS systems, wiring, and heat tracing systems. He has been lead electrical engineer for numerous projects His duties include engineering studies with particular emphasis on Short Circuit/Protective Device Coordination and Arc Flash Studies, design, cost estimating, equipment procurement, bidding and construction document preparation, construction support and start-up.

Senior Electrical Engineer **Electrical Evaluation | City of Buffalo Water Board | Buffalo, NY**

Gordon is part of a team providing electrical engineering services in association with the planning and coordination of certain repairs and improvements to the existing electrical systems at the City's Water Treatment Plant and Colonel F. G. Ward Pumping Station (Col Ward Facility) and Massachusetts Avenue Pumping Station (Mass Ave PS).

Electrical Consultant **Electrical Improvement Oversight | Niagara Falls Water Board | Niagara Falls, NY**

Gordon provided oversight of the electrical contractor hired by the NFWB to make various electrical repairs to the 115kV substation and systems at the WWTP.

Senior Electrical Engineer **Electrical Substation and SCADA Upgrades | Village of Springville | Springville, NY**

Gordon designed upgrades to the Village's four substations in conjunction with the implementation of a modernized SCADA system for remote monitoring. The project consisted of substation upgrades, including relaying, 115kV circuit switchers, 34.5kV/5kV vacuum circuit breakers/reclosers, load tap changer control, transformer install, voltage regulator install.

Senior Electrical Engineer **WWTP Emergency Repairs | Niagara Falls Water Board | Niagara Falls, NY**

Gordon designed emergency repairs to the main pump motor control centers caused by flooding of the main pump room at the WWTP.

Senior Electrical Engineer **WWTP Rehabilitation Phase 3 | Niagara Falls Water Board | Niagara Falls, NY**

Gordon completed the design of various electrical improvements

Senior Electrical Engineer **WPCC Electrical Renovations | Town of Lewiston | Lewiston, NY**

Gordon completed the design for electrical improvements at the Town's WPCC and five remote pumping stations including:

- Replacement of the standby generators at five remote pump stations with new standardized 60kW diesel generators in weatherproof, sound-attenuated enclosures.
- Supplementation of the main (230kW) standby generator at the WPCC with a new 250kW diesel standby generator in a walk-in weatherproof enclosure.
- Replacement of components in the existing MCCs (circuit breakers and contactors), which were difficult to obtain due to age and the fact that the MCC manufacturer (Arrow-Hart) was no longer in business.
- Upgrade of aging distribution system components in response to anticipated future needs. The existing distribution system consisted of a 13.2kV service from National Grid that feeds two load centers, each consisting of two 750kVA transformers (13.2kV-480V) feeding a double-ended 480V Switchboard.

The upgrades to the WPCC power distribution system included replacement of two of the transformers with new 500 kVA units and elimination of the remaining two units. New indoor double-ended switchboards replaced the existing outdoor switchgear.



**Senior Electrical Engineer
South Buffalo Pumping Station VFD Upgrades |
Buffalo Sewer Authority | Buffalo, NY**

Responsible for secondary 750 KVA transformer with automatic transfer switch, 4160 volt switchgear, and a generator docking station.

**Senior Electrical Engineer
Crescent Avenue Pump Station |
Erie County Division of Sewerage Management |
Hamburg, NY**

Gordon provided electrical improvements including design for a secondary 750 KVA transformer with automatic transfer switch, 4160 volt switchgear, and a generator docking station.

**Senior Electrical Engineer
Parker Pump Station Electrical Upgrades |
Town of Tonawanda | Tonawanda, NY**

Gordon provided electrical controls upgrades at the Parker Pump Station and the new 800 kW standby generator at the pump station.

**Short Circuit/Coordination/Arc Flash
Studies**

**Senior Electrical Engineer
Oak Orchard WWTP Infrastructure
Improvements Arc Flash Analysis | Onondaga
County Department of Water Environment
Protection | Clay, NY**

Gordon was responsible for completing an arc flash analysis of the electrical equipment improvements completed under this project.

**Senior Electrical Engineer
Arc Flash Hazard Analysis Colonel F. G. Ward
High Service Pumping Station | City of Buffalo |
Buffalo, NY**

Gordon conducted an arc flash hazard study, which included a field verification audit and development of one-line diagrams; development of one-line models; a short circuit analysis, a protective device coordination study; and an arc flash hazard analysis. Upon completion, Gordon developed a final report presenting the results of the various analyses and recommendations for mitigation.

**Senior Electrical Engineer
Arc Flash Hazard Study | Niagara County
Sewer District No. 1 | Niagara County, NY**

Gordon conducted an arc flash hazard study at the District's Water Pollution Control Center and seven remote pumping stations. This study includes a field verification audit and development of one-line diagrams; development of one-line models; a short circuit analysis, a protective device coordination study; and an arc flash hazard analysis. Upon completion, Gordon prepared a

final report presenting the results of the various analyses and recommendations for mitigation. GHD prepared labels for the equipment to inform the site personnel of the potential hazards involved and safe working distances around electrical equipment.

**Senior Electrical Engineer
Wastewater Treatment Plant 115 kV
Substation Renovation | Niagara Falls Water
Board | Niagara Falls, NY**

National Grid was in the process of upgrading its transmission system to address voltage and potential thermal loading problems. As a result, WWTP's 115kV circuit switchers needed to be upgraded to accommodate National Grid's projected fault levels. Gordon's design included:

- Upgrading the 115kV circuit switchers interrupting capacity and removing blocking scheme
- Reconditioning of the two main transformers that step power down to 13.8kV
- Installation of new digital relay protection
- Replacement of the secondary main and tie circuit breakers with vacuum type breakers
- Rehabilitation of the switchgear metal enclosure (waterproofing, painting, insulation and HVAC)
- New NiCAD battery system
- Arc flash study and short circuit analysis/coordination

Additional Studies

- Erie County Water Authority - Ball Pumping Station
- Kaleida Buffalo General Hospital
- City of Buffalo Water Authority - Multiple Sites
- SUNY at Buffalo-South Campus - 23 kV Service Upgrade, SUC/AB - Elmwood Campus
- Hudson Correctional Facility, Collins Correctional Facility, Watertown Correctional Facility

Work history

2008 - present	GHD, Buffalo, NY
2002 - 2008	Mach Architecture & Engineering, Buffalo, NY
1978 - 2002	Gordon L. Crone, P.C., Buffalo, NY
1971 - 1978	Wilson Klaes, Brucker, and Warden, P.C., Buffalo, NY
1967 - 1971	Walter H. Sherry, P.C., Buffalo, NY



Amarjog Johal

Electrical Engineer



Qualified: Master of Engineering, Electrical and Computer Engineering, 2010; Bachelor of Technology, Electrical Engineering, 2007, PG Certificate, Wireless Telecommunications, 2009
Connected: Registered Professional Engineer (P. Eng): Professional Engineers Ontario (PEO)
Professional Summary: Amarjog (AJ) has extensive experience in low, medium and high voltage (LV/MV/HV) electrical design, protective relaying and power system studies. He possesses distinguished experience in performing Arc Flash studies in compliance with CSA Z462 and NFPA 70E. His work history includes several engineering evaluations, LV/MV/HV system designs, studies and arc flash and electrical safety instructional trainings for various industrial and municipal/utility clients throughout Canada and the US.

Electrical Engineering Design Projects

Electrical Engineer

Guenther Pump Station Project | Erie County Water Authority | Hamburg, NY

Amarjog is assisting with design for the replacement of the existing 4160 V 1500 hp motors to new 480 V 700 hp motors as part of the ECWA's process improvements to address the specific pumping requirements and to relocate the electrical switchgear to the addition to the existing building housing the pumps. AJ's role in this project includes:

- Developing conceptual designs for the 5kV service switchgear, 480V service switchgear and associated interconnecting cabling, and preparing a report showing comparison of both options.
- Developing a detailed cost estimate for the total cost of the electrical upgrades including engineering fee estimate and the total construction cost estimate.
- Developing design to add a new 480 V 2000 kW generator to feed two 700 hp motors and the auxiliary loads at the Guenther pumping station.

Electrical Design Engineer

Replacement of Tone Telemetry system with Modern Digital Communication System | American Electric Power (AEP), Columbus, Ohio

The purpose of this project was to replace existing tone telemetry system with digital communication system by installing SEL 2411 I/O module and transmission to and from remote stations using different communication medium e.g., Radio and Fiber Optics. The scope of work for this project included functional and detailed design packages for various HV Substations across Midwest and included the following:

- Developed demolition drawings
- Developed DC schematics

- Updated DC and AC panel drawings and Connection Wiring Diagrams
- Performed Battery Load calculations
- Developed cable schedules, cable routing drawings and Bill of materials
- Created SCADA Points lists for various Substations for implementation of Modbus, DNP3 and IEC 61850 protocols as per site specific specifications
- Developed new RTU installation packages for various substations using AEP standardized design modules
- Developed installation specifications for each Substation

Electrical Design Engineer / Project Manager
44kV Substation Design | Recurrent Energy | Waubauskene, Ontario

The purpose of the project was to develop relay settings for the 115kV Third Line Substation. The scope of work for this project included the following:

- Engineering calculations for AC station load sizing, battery sizing, power cable sizing, and instrument transformer sizing
- Prepared the Protection Relay Philosophy document
- Prepared the relay coordination study and settings for the substation protection relay systems, including coordination with HONI as required for the line protection
- Arc flash study for the station services AC systems
- Prepared the substation electrical drawings
- Commissioning Support including testing of relays and SCADA points verification for all three sites



Arc Flash Study Projects

Electrical Engineer

Arc Flash Study | Brewerton Water Pollution Control Plant (WPCP) | Department of Water Environment Protection | Onondaga County, New York

The purpose of the project was to perform Short Circuit, Protective Coordination and Arc Flash Study in accordance with NFPA 70E using IEEE 1584 method. The scope of work for this project included the following:

- Developed Single Line Diagram (SLD) for the whole facility using SKM and AutoCAD
- Performed equipment evaluation, short circuit analysis, protective coordination, and arc flash studies for the facility
- Presented detailed study reports and Arc Flash Labels to the customer

Electrical Engineer

Partial Arc Flash Study | Metropolitan Syracuse WWTP and Oak Orchard WWTP | Department of Water Environment Protection | Onondaga County, New York

The purpose of the project was to perform Short Circuit, Protective Coordination and Arc Flash Study for the upgrades done at both the facilities in accordance with NFPA 70E using IEEE 1584 method. The scope of work for this project included the following:

- Developed Partial Single Line Diagram (SLD) for the upgrades in the facilities using SKM and AutoCAD
- Performed equipment evaluation, short circuit analysis, protective coordination, and arc flash studies for the upgrades in the facilities
- Presented detailed study reports and Arc Flash Labels to the customer

Electrical Engineer

Arc Flash Study at WPCC and Seven Remote Pump Stations | Niagara County Sewer District No. 1 | Niagara County, NY

The purpose of the project was to perform Short Circuit, Protective Coordination and Arc Flash Study in accordance with NFPA 70E using IEEE 1584 method. The scope of work for this project included the following:

- Developed Single Line Diagram (SLD) for the main facility and all Remote Pump Stations using ETAP and AutoCAD
- Developed Location Plan Drawing for the main facility and all Remote Pump Stations using AutoCAD
- Performed equipment evaluation, short circuit analysis, protective coordination, and arc flash

studies for the main facility and all Remote Pump Stations

- Presented detailed study reports to the customer
- Printed and pasted Arc Flash Labels at all the equipment for which study was performed

Other related areas of interest

Recognized (Certifications/Trainings)

- SEL Product Training
- Rugged Switch Basic Training

Software

- GE Enervista
- SEL Acceleator
- EASYPOWER
- SKM
- ETAP
- MATLAB SIMULINK COMSOL

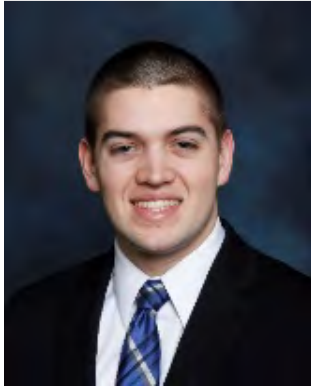
Work history

2017 – present	GHD, Buffalo, NY
2015 – 2016	Schneider Electric, Troy, MI
2014 – 2015	Eaton Corporation,
2011 – 2014	Glendale Heights, IL



Scott Beverly, PE PMSFPE

Fire Protection Engineer



Qualified: University of Maryland-College Park, BS Fire Protection Engineering- 2011, Certified NYS Code Official.

Connected: Registered Professional Engineer (NY, MA), Professional Member of the Society of Fire Protection Engineers (PMSFPE).

Professional Summary: •Scott has 8 years' experience with fire protection, life safety design and building/fire code consulting services and more than 10 years' active fire service allowing him to work effectively with Authorities Having Jurisdiction. Scott's experience includes special hazards analysis, special hazards design and life safety assessments in both new and existing buildings for various occupancy types. Scott has international experience which includes aviation facilities such as aircraft hangars, terminal buildings, control towers, and other associated buildings. He has designed and provided essential guidance on the design of life safety system including alternative fire-suppression systems to address the unique challenges posed by this kind of infrastructure.

Fire Protection Engineer
Construct Addition and Repair Interior,
Building 98 | Nellis AFB | Las Vegas, Nevada

Scott provided fire protection engineering services for this project that included a retrofit of automatic wet-pipe sprinkler system in the existing Building 98 and its proposed addition. The automatic sprinkler system consisted of a design of the wet-pipe sprinkler system fed from the existing base water supply in accordance with UFC 3-600-01. Scott prepared a fire protection design/life safety technical analysis in accordance with UFC 3-600-01.

Fire Protection Engineer
Repair Interior 58 RQS, Building 10202 |
Nellis AFB | Las Vegas, Nevada

Scott provided fire protection engineering services for this project that included modifications of the existing automatic wet-pipe sprinkler system in a Sensitive Compartmented Information Facility in accordance with UFC 3-600-01. A fire protection design/life safety technical analysis was prepared in accordance with UFC 3-600-01.

Fire Protection Engineer
Control Tower Fire Alarm/Fire Suppression |
Nellis AFB | Las Vegas, Nevada

Scott provided fire protection engineering services and project management services for this project that included the retrofit of an automatic wet-pipe sprinkler system in accordance with UFC 3-600-01. To provide the needed water supply to the retrofit sprinkler system, a detached fire pump house with dual electric fire pumps was designed. Scott prepared a fire protection design/life safety technical analysis in accordance with UFC 3-600-01.

Fire Protection Engineer
Terminal Expansion Code Consulting |
Plattsburgh Airport | Plattsburgh, New York

Scott provided code consulting services and was responsible for identifying code deficiencies and fire safety issues. Scott prepared drawings that identified code required life safety features and reviewed drawings prepared by the design team.

Fire Protection Engineer
2060/2070 Hangar Additions | Black Horse
Group | Fort Drum, New York

Scott provided fire protection engineering design and construction services for this project which involved the renovation of one existing hangar and the addition of two new hangars for the maintenance and storage of fixed wing aircraft. Scott prepared drawings, conducted calculations, and selected equipment for pre-action sprinkler and high-expansion foam fire-suppression systems. Scott also witnessed final acceptance testing of the high-expansion foam fire-suppression systems.

Fire Protection Engineer
Sprinkler Design | Carmel Richmond |
New York, New York

Scott provided fire protection engineering on the design of new sprinkler systems and fire alarm systems for this 300-bed, approximate 200,000 sf, six-story nursing home. Systems were designed for compliance with code and CMS Fire Sprinkler regulation. Services include bid assistance and construction administration. Prepared and assisted with documents required for the Limited Review Application CON (certificate of need) for submission to New York State DOH



Fire Protection Engineer
Sprinkler Protection Upgrades |
Kateri Residence | New York, New York

Scott provided fire protection engineering services, design of new sprinkler systems and fire alarm systems / This project involved a 520 bed, 272,000 sf, fifteen-story high-rise skilled nursing and rehabilitation center. The project included design of automatic wet-pipe sprinkler systems and modifications to the existing fire alarm system for monitoring of the sprinkler systems. Systems were designed for compliance with code and CMS Fire Sprinkler regulation. Services include bid assistance and construction administration. Project also included the preparation of documents required for the Limited Review Application CON (certificate of need) for submission to New York State DOH.

Fire Protection Engineer
Verify Fire Sprinkler / Fire Alarm Coverage |
Loretto – The Nottingham |
Syracuse, New York,

Scott provided fire protection engineer services on this project to verify that the fire sprinkler and fire alarm systems comply with New York State Department of Health regulations. For areas of the building not meeting requirements, GHD provided the drawings for supplemental fire sprinkler protection and fire alarm detection.

Fire Protection Engineer
Treatment Plant Upgrades | Binghamton-
Johnson City STP | Binghamton, New York

Scott provided fire protection engineering services for this treatment plant that included four buildings/facilities on site. One office and two process buildings were provided with wet-pipe automatic sprinkler systems. Another facility that included methanol storage and use was provided with several foam-water deluge sprinkler systems. Scott was responsible for the design of the fire alarm system associated with the foam-water deluge sprinkler systems which included heat detectors, infrared flame detectors, and pull stations for system initiation in addition to notification devices.

Fire Protection Engineer
Data Center Upgrade | Upstate Medical
University CWB Data Center |
Syracuse, New York

Scott provided fire protection and fire alarm design for this portion of this project involving the modifications/extension of the existing data center. Fire protection/alarm systems consisted of clean agent (FM-200) and double-interlocked preaction sprinkler system with associated cross-zoned detection. Systems were designed in accordance with the NYS Building and Fire Codes.

Fire Protection Engineer
EH&S HazMat Building | Cornell University |
Ithaca New York

Scott provided building and fire code consulting services for review of an existing one story office and hazardous chemical storage building in accordance with the 2010 New York State Uniform Fire Prevention and Building Code as associated referenced standards. Specific attention was given to the quantities and storage arrangements of various chemicals and chemical waste, fire protection and suppression systems and operational concerns. The purpose of the review was to identify the primary fire and life safety features of the codes to help

Fire Protection Engineer
Code Consulting | Zotos | Geneva, New York

Scott provided fire protection engineering services for this project where GHD performed a code analysis of an existing storage warehouse. GHD also provided a revised life safety and fire protection design based on the change in use and occupancy to high-hazard flammable liquid storage to meet current codes and standards.

Fire Protection Engineer
Composting Building Reconstruction |
Rockland County SWA |
Rockland County, New York

Scott provided fire protection engineering services for a building that had collapsed due to a highly corrosive atmosphere. Scott was responsible for the fire protection design which included specifying products that would withstand the highly corrosive atmosphere.

Fire Protection Engineer
Building Renovation Design Development |
United States Military Academy |
West Point, New York

GHD provided fire protection engineering and building/fire code consulting services for an existing four story, 360,000 sf building consisting of two auditoriums, classrooms and mercantile spaces. Scott was responsible for completing a life safety technical analysis utilizing UFC 3-600-01 to identify deficiencies for this complicated egress arrangement.



Jeffrey Gee

SCADA/Instrumentation/Controls

Qualified: B.S., Electrical and Computer Engineering, 1989

Connected: Registered Professional Engineer: NY, NJ, TX, MI, TN, OH, IA, PA, IL

Professional Summary: Jeff is an Associate at GHD and a Licensed Electrical Engineer and the Buffalo-based Automation Design Group Leader. He has more than 29 years of experience in system evaluation, design, construction, troubleshooting, and project coordination with small and large scale electrical and automation projects. His electrical work has encompassed many industrial 480 Volt system designs inclusive of transformer selection, motor controls, VFD specification, grounding, and coordination. His automation work history spans many hardware and software platforms across several PLC, HMI, SCADA development environments. Key areas of experience include instrumentation specification, communications systems design, upgrades of existing electrical automation architectures, software project management, construction management, Arc Flash Hazard assessments, and computer based Arc Flash Potential studies. In addition he is the GHD Corporate Electrical Safety Captain and has developed an 8-hour Electrical Safety Course based upon NFPA-70E that he regularly delivers internally and externally.

Municipal Water and Wastewater

Project Automation Engineer
SCADA Term Services | Onondaga County
Department of Water Environment Protection
(OCDWEP) | Onondaga County, NY

Under County Instrumentation/Electrical staff supervision, Jeff provides SCADA and PLC programming services to accomplish tasks assigned under a Term Services Agreement, as well as to implement, field test, and verify correctness. Tasks to date have included updates and programming of Cimplicity®, programming of multiple PLC platforms and HMIs, design and development of Cimplicity® and HMI screens, and integration of new or upgraded equipment.

Project Automation Engineer
Various Improvement Projects | OCDWEP |
Onondaga County, NY

Jeff was responsible for the design of instrumentation and control systems for improvements at several OCDWEP wastewater treatment facilities (Metro, Oak Orchard, Brewerton, Meadowbrook-Limestone), including the development of control system architectures, fabrication-level control panel drawings (with Bill of Materials), internal schematics, I/O schematics, and field cable/conduit routings for chlor/de-chlor systems

Automation Engineer
Water Pollution Control Facility (WPCF)
Comprehensive Facility Assessment | Town of
Amherst | Amherst, NY

Jeff performed comprehensive assessments of control systems at the WPCF, including data collection utilizing cutting edge iPad app technology, which was used for the development of a comprehensive condition assessment for the entire facility.

Automation Consultant
Water Pollution Control Center | Niagara
County Sewer District No. 1 | Wheatfield, NY
Jeff provides on-call and emergency services for automation and software system design, modifications, and improvements.

Automation Engineer
Vanderbilt and Depew Pumping Stations and
Overflow Retention Facility Upgrades | Erie
County Department of Environment and
Planning | Depew, NY
Jeff designed the electrical distribution, automation, and controls for an 11.5 mgd wastewater pump/lift station. Project included new instrumentation, PLC, OIT, variable frequency drives (VFDs), and SCADA communications for remote monitoring and control.

Automation Engineer
Controls System Design | City of Auburn |
Auburn, NY
Jeff designed and installed new automation, controls, PLCs, and SCADA software for a 20 mgd wastewater treatment plant located. The project consisted of total system reverse engineering, new control panel designs, I/O schematics, contract documents, software development, startup and debug of six CompactLogix PLCs networked together with four SCADA terminals and a master ControlLogix PLC, specification and installation of new Ethernet base fiber optic communications, and Ethernet switches monitored by PLC and SCADA.



Automation Engineer
PLC and SCADA Development | City of Batavia |
Batavia, NY

Jeff designed and installed a Rockwell Automation and licensed frequency radio based control and data acquisition system for a municipal wastewater plant. Project consisted of the integration of 11 individual PLCs into a centralized Ethernet network for easy monitoring, alarming, and diagnostics of operations by plant personnel.

He also designed and installed a new automation and control system for a municipal water supply plant, including a new monitoring, control, backwashing, and alarming package for 12 sand filters.

Automation Engineer
Communications and Controls System Design |
Global Water Resources | Buckeye, AZ

Jeff designed an Ethernet-based spread spectrum radio communication, SCADA, and automation system that spans 100 square miles for a municipal water provider. System consists of 22 nodes, each with a variety of ControlLogix, CompactLogix, PanelView Plus, and variable speed drive hardware, along with field instrumentation and security.

Environmental

Controls System Engineer
Automation System Design | Confidential
Client | Waterloo, NY

Jeff developed, designed, and installed a redundant PLC architecture for the safe extraction and transportation of landfill gas (LFG) to a power generation facility. Work included design and development of automation control panel, selection of field instrumentation, construction management, PLC software development, on-site startup and debug, and operator training.

Controls System Engineer
Automation System Design | Confidential
Client | Lewiston, NY

Jeff designed and implemented the power distribution, controls, PLC software, and SCADA software for numerous groundwater pumping stations. Work included implementation of spread spectrum radio modems for automated control of data acquisition from remote locations, PLC programming, SCADA software integration, and Ethernet network design and configuration.

Other related areas of interest

Recognized (Certifications/Trainings)

- NFPA 70 Training, 2014
- OSHA 40-hour Hazardous Waste Worker, Refresher, 2000

Presentations

- International Liquid Terminal Association 34th Annual Conference and Trade Show – Arc Flash Hazard Prevention and Compliance with the 2012 NFPA 70E Standards, Houston, TX, 2014

Work history

1998 – present	Associate, GHD (formerly CRA Infrastructure & Engineering, Inc.), Buffalo, NY
	Named Associate, 2008
1999 – 2000	General Motors Powertrain, Tonawanda, NY
1989 – 1999	Keller Technology Corporation, Tonawanda, NY



Richard R. Roll Regulatory/Operations



Qualified: Master of Science, Civil Engineering, 1983; Bachelor of Science, Civil Engineering, 1981

Connected: Registered Professional Engineer: New York; Board Certified Environmental Engineer by the American Academy of Environmental Engineers and Scientists; Water Environment Federation; New York Water Environment Association (Western Chapter Board of Directors); American Society of Civil Engineers

Professional Summary: Rick has spent 30 years of his career serving in a technical leadership role with a utility responsible for water supply, wastewater treatment and stormwater management services. He has planned and directed operations and repair activities under controlled, as well as crisis situations. Rick has developed and implemented projects in accordance with capital improvement plans; he has also taken a lead role in developing programs to comply with regulatory and Order on Consent requirements. Rick is experienced with team building and interest alignment for achieving client/owner needs in difficult situations.

Municipal Engineering Experience

Director of Technical and Regulatory Services
Niagara Falls Water Board | Niagara Falls, NY

Rick served as one of four directors reporting to the Executive Director for this water, wastewater and stormwater utility. His responsibilities included:

- Developing, updating and implementing the capital improvement program
- Coordinating consultants, contractors, utility staff and municipal services during construction projects
- Identifying and implementing treatment process improvements
- Water and wastewater SPDES discharge permit negotiation, reporting and compliance
- Sewer overflow correction and mitigation programs
- Stormwater management compliance
- Supervising engineering, industrial pretreatment, water laboratory and wastewater laboratory staff
- Representing the utility at public meetings, forums, conferences and private meetings
- Advising the Water Board and Authority Board on matters of negotiations, settlements, contracts, strategic planning, operations, budgeting and personnel

Program Coordinator
Wastewater Treatment Plant Rehabilitation Program | Niagara Falls Water Board | Niagara Falls, NY

A strategic wastewater master planning project undertaken by the Water Board determined that the most effective means of future wastewater management for the utility would involve the phased rehabilitation of the existing physical-chemical activated carbon treatment

facility. The \$142 million program was anticipated to take twenty years. Rick was responsible for implementing the program from detailed planning and prioritization through start-up of the associated projects. In addition to the overall coordination of multiple consultants and multiple contractors with facility staff, Rick personally built staff consensus on project and item prioritization, reviewed and refined project details, performed start-up coordination with ongoing treatment operations, and gave individual training on the new equipment and systems. After ten years the rehabilitation program was achieving its goals with the expenditure of \$35 million.

Program Coordinator
Wastewater Treatment Plant Flood Recovery | Niagara Falls Water Board | Niagara Falls, NY

On July 19, 2013 an intense rainfall event surcharged the sewer collection system and flooded many homes in Niagara Falls. It also caused flooding in portions of the wastewater treatment plant, taking it out of service. Rick joined the recovery efforts the night of the flood, and immediately began arranging assistance to plan and conduct repairs. The work required the coordination of staff efforts, consultants, several contractors, and several parties for insurance claim resolution, which ultimately paid about 90 percent of the \$8.3 million loss. The effort continued for four years due to complications in the replacement main pumping system, which have been resolved. Rick also coordinated the preparation of four grant applications for improvements at the plant and in the collection system to mitigate future occurrences. Two of those grant applications were successful and one remains pending.

Project Manager
Wastewater Facilities Knowledge Capture | Niagara Falls Water Board | Niagara Falls, NY

As the facility was facing multiple retirements and a loss of institutional knowledge, Rick volunteered to assemble



collection system and treatment plant information into a presentation geared toward the new employee. The information covers history, predecessor facilities, evolutionary uses, interaction, physical and functional layouts, typical operations, contingency and emergency operations, and common maintenance activities. The product also incorporates specific regulatory requirements and best sampling practices. The format is easily updatable as equipment is changed and replaced.

Program Coordinator
LaSalle Sanitary Sewer Overflow Abatement Program | Niagara Falls Water Board | Niagara Falls, NY

Rick worked with technical, legal, field and financial staff in negotiating an Order on Consent with the NYSDEC to mitigate sanitary sewer overflows in the LaSalle service area. The 18 year, \$6.5 million program was aimed at identifying, prioritizing, and removing collection system I/I and improving system reliability to address basement backups, overflows to receiving waters, and wet weather related labor expenses. Specific measures included cross connection elimination, water main leak repairs, spot excavations and sewer replacement, spot cured in place pipe, sectional cured in place pipe, and manhole rehabilitations. Recurring hiatuses in the program were planned to measure sewer system responses to wet weather events in order to access effectiveness of the various measures.

Program Coordinator
Combined Sewer Overflow Long Term Control Plan | Niagara Falls Water Board | Niagara Falls, NY

About two-thirds of the Niagara Falls sewer system is comprised of combined sewers, which incorporated multiple overflow reliefs. In response to NYSDEC requirements, Rick directed the LTCP through planning, implementation, constructed improvements, and post construction compliance. The effort eliminated two overflow locations, increased system storage, and installed floatables retention devices. Water quality sampling and analysis, which verified water quality goal attainment, is now on a 5-year cycle of reverification. Rick had also been responsible for implementing and annual reporting on the utility's best management practices for CSOs.

Project Coordinator
SPDES Permit Negotiations | Niagara Falls Water Board | Niagara Falls, NY

Rick led a utility negotiation team during four successive rounds of SPDES permit technical reviews and modifications. Team members represented analytical, operational, legal and environmental disciplines. The team was successful in removing certain permit limitations, removing certain sampling locations, reducing the monitoring frequency of other parameters, and performing

studies as standalone projects rather than under permit compliance schedules.

Utility Management and Operational Assistance

Program Advisor
WWTP Order on Consent Compliance | Niagara Falls Water Board | Niagara Falls, NY
Rick worked with a large team assisting the utility with the multiple concurrent requirements of a NYSDEC Order on Consent. His contributions on program elements are in the areas of wet weather facility and collection system responses, overflow measurement and reporting, sewer collection system modelling, operations and maintenance manual creation, and facility operations training materials.

Utility Operations Advisor
Operational Assistance | Niagara Falls Water Board | Niagara Falls, NY
Rick assisted the utility with a wide variety of capital and operational issues. These included SPDES planning and compliance issues, collection system management, capital project planning, financial planning, and treatment facility background, modifications and operations.

Other related areas of interest

Recognized (Certifications/Trainings)

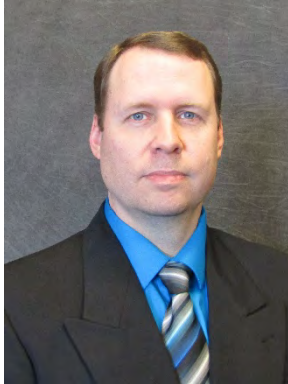
- Rad Worker I & II Training (Instructor), Niagara Falls Water Board, August 2016
- U.S. Department of Homeland Security / FEMA Critical Infrastructure Response Training, July 2011

Work history

2017 – present	GHD, Buffalo, NY
2003 – 2017	Niagara Falls Water Board, Niagara Falls, NY
1987 – 2003	City of Niagara Falls, New York
1985 – 1987	Nussbaumer & Clarke, Inc., Buffalo, NY
1983 – 1985	Metcalf & Eddy, Inc., Arlington Heights, IL



Matthew Skuse Mechanical Engineer



Qualified: B.S., Mechanical Engineering Technology, 2001; A.A.S., Computing Graphics Technology, 1999

Connected: LEED AP® BD+C; American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)

Professional Summary: Matt has 16 years of experience in design and construction of municipal, water, and wastewater facility process systems, roofing systems, and HVAC systems. Matt has been involved in several engineering evaluations, studies, and inspections for municipal facility related improvements.

Water Treatment Facilities, Supply and Storage

Mechanical Engineer

West 1 Plant Master Plan | Shoremont Water Treatment Plant | Monroe County Water Authority | Monroe County, NY

Project was a plant wide facility assessment and evaluation of multiple process areas at the West 1 Plant. Matt was responsible for HVAC system evaluation, which included ventilation systems, hot water boiler system, dehumidification system, and heating systems.

Project Coordinator/Engineer
Ellis Drive Pump Station Improvements |
Town of Aurora | Aurora, NY

Matt provided overall project coordination for the design and contract document development for the replacement of an existing underground hydro-pneumatic pump station with a new aboveground pre-packaged hydro-pneumatic booster pump station.

Project Coordinator/Engineer
Water System Tank and Pump Station
Improvements Project | Town of Eden |
Eden, NY

Matt provided overall project coordination for the design and development of contract documents, which included but was not limited to replacement of valves, piping, pumps, and facility lighting at multiple tank and pump station sites. The project also included a replacement FRP building for electrical equipment and a new building addition for chemical storage.

Project Engineer
Water System Facilities Improvements |
City of Buffalo | Buffalo, NY

Coordination and development of contract documents for a new 20-mgd high service pump at the Colonel Ward Pumping Station and Massachusetts Avenue Pump

Station cone valve actuators, water system SCADA monitoring and control narrative, water system facilities lighting and weatherization improvements, and Colonel Ward and Filter Plant HVAC improvements.

Engineer
Water Age Analysis | Town of Tonawanda |
Tonawanda, NY

Matt was responsible for updating and evaluating the Town's existing water system model with WaterCAD software. He modeled the water system operation to determine the water age at various points in the water system to assist the Town in their water quality sampling program.

Mechanical Engineer
High Service Pumping System Improvements |
City of Buffalo | Buffalo, NY

Responsible for assisting with contract document development for the high service station's two new 20-mgd high service pumps. Responsible for NYSEDA performance program documents, which provided funding for the project based on documented energy savings from the new high service pumps.

Engineer
High Service Pumping Station Energy
Feasibility Study | City of Buffalo | Buffalo, NY

Matt performed a data analysis to establish pumping station energy consumption and an evaluation of alternatives to lower energy use. Report conclusions showed a significant annual energy savings by installing smaller pumps and motors to supply the City's water system.

Engineer
Water System Improvements-Filtration
Evaluation | City of Geneva | Geneva, NY

Performed evaluation of the City's existing diatomaceous earth filters with replacement membrane filters.



Mechanical Engineer
Water Treatment Plant Filter Gallery
Rehabilitation | City of Buffalo | Buffalo, NY

Matt assisted in contract document development for various upgrades to the plant's filter gallery. Upgrades included replacement of 240 butterfly valves ranging from 4-inch to 36-inch in size complete with electric actuators, as well as replacement of 40 filter venturis and three new flow venturis for the backwash system. Matt designed new glass enclosures for isolation of the filter beds; four new direct-fired heating units; new ventilation fans and louvers for the filter building; and new dehumidifiers for the pipe gallery.

Mechanical Engineer
Water Treatment Plant Emergency Pipe Repair
and Sample System Improvements |
City of Buffalo | Buffalo, NY

Matt was responsible for contract document development for the replacement of the water sampling system, including new pumps, piping, lab sinks and faucets. The project also included replacement of the plant's existing chemical metering pumps.

Work history

2003 – present	GHD (formerly CRA Infrastructure & Engineering, Inc.), Buffalo, NY
2003	R&D Engineering, Inc. (acquired by CRA in 2003), Buffalo, NY



Daniel J. Kolkmann

Construction Contract Administrator



Qualified: A.S., Engineering, 1984; A.A.S, Construction Technology, 1982

Professional Summary: Dan leads our Buffalo construction services group and has more than 35 years of experience in the inspection, contract administration, and construction management of municipal water and wastewater facility and infrastructure projects.

Responsibilities have included: review of bid proposals, overseeing receipt/responses to requests for information from prospective bidders, advising/making recommendations to the Client regarding contract award, overseeing the construction of Projects. Dan also manages contractor progress payment recommendations, shop drawing review/processing, and provides consultation relative to substitutions and design modifications, construction claims, and litigation.

Municipal Water Systems

Construction Manager

Electrical Upgrades Colonel Ward Water Treatment and Pumping Facility and Massachusetts Avenue Pumping Station | City of Buffalo | Buffalo, NY

Dan provided contract administration, oversight of inspection and construction management services for initial load bank and live load testing of the City's two existing two 2.25 MW Kohler and one 600 kW Caterpillar standby generators.

Construction Manager

Colonel Ward High Service Pumping System Improvements | City of Buffalo, Division of Water | Buffalo, NY

Contract Administrator overseeing improvements being completed under a performance contract with Siemens Industry, Inc. Improvements include the installation of two new 750 HP 20 mgd vertical centrifugal pumps, installation of a new 48-inch suction header pipe, new flow control rotoválves, several motorized butterfly valves, new discharge piping, and SCADA control upgrades. The project also includes upgrades to the existing 50 mgd high service pumps to improve the priming system, discharge check valve, and automate the pump changeover procedures.

Construction Manager

Mountain View Drive Water System Improvements | Town of Lewiston | Lewiston, NY

Contract Administrator providing supervision for the installation of 11,260 LF of 8-inch PVC watermain and associated appurtenances. Construction took place in a very affluent area within the Town consisting of multi-million dollar homes with special features that needed to be taken into consideration. Restoration was a key concern and it was imperative that construction had

as little negative impact on the area and its residents as possible.

Construction Manager

Water District 18 Water System Improvements | Town of Aurora | Aurora, NY

Dan managed nine contractors during the construction and installation of two water storage tanks, four booster pump stations, and approximately 185,000 LF of new water transmission and distribution mains that provided water to the southern portion of the Town.

Construction Manager

Colvin Water Storage Tank | Erie County Water Authority | City of Tonawanda, NY

Dan provided Contract Administration for the construction of a 1.25 million gallon elevated water storage tank. Project included installation of caissons for this 205-foot tall structure, and special coordination/ considerations associated with adjacent power facilities.

Contract Administrator

Treatment Facilities Expansion (Contracts 14 and 15) | Niagara County Water Authority | Niagara Falls, NY

Dan managed all on site Contract Administration services, including supervision of a four person inspection team overseeing 13 separate construction contracts. The project included a \$16 million expansion of water treatment and pumping capacity for the District's Williams Road Treatment Plant, including installation of three new 1500 HP, 18 mgd vertical turbine pumps with VFDs, two new coagulation basins, and four new automatic backwash sand filters. Work also included modification and expansion of disinfection facilities.



Senior Resident Inspector
Water Treatment Plant, Filtered Water Conduit Replacement | City of Buffalo | Buffalo, NY
Dan was the Senior Resident Inspector during the installation of 900 LF of 90-inch reinforced concrete cylindrical pipe (RCCP) filtered water conduit, 400 LF of 72-inch RCCP conduit, and 200 LF of 48-inch RCCP backwash interceptor sewer. Clearwell wet tapping and tie-ins to existing tunnel conduits required design of substantial temporary facilities and special coordination with plant operations.

Operating Engineer
Van De Water Intake Project | Erie County Water Authority | Tonawanda, NY
Dan was the Operating Engineer during construction of 1.5 miles of sub-aqueous rock tunneling by TBM, installation of shafts, and associated intake structure.

Work history

2003 – present	GHD (formerly CRA Infrastructure & Engineering, Inc.), Buffalo, NY
1986 – 2003	R&D Engineering (acquired by CRA in 2003), Buffalo, NY
1977 – 1985	Stimm Associates, Inc., General Contractors and Engineers, Buffalo, NY



Dustin Steiner

Resident Inspector



Qualified: B.S., Environmental Science, 1993

Professional Summary: Dustin possesses skills that give clients confidence their construction and capital improvement projects are being carefully managed and constructed according to the specifications. Effective project oversight and construction administration, targeted communication, good organization, excellent people skills—Dustin demonstrates them all. His work history spans 25 years in municipal/industrial construction, environmental investigation and reporting, and health and safety. His areas of experience encompass resident inspection, construction management, health and safety, and environmental investigation and monitoring.

Municipal Water

Resident Inspection/Construction Supervisor
Water Treatment Plant Filter Rehabilitation |
City of Buffalo, Division of Water | Buffalo, NY

Dustin is overseeing the replacement of approximately 7,000 feet of process piping, wall penetrations, filter media, internal expansion joint repairs, pump station replacement, forcemain replacement, as well as concrete repair and wall penetration repairs.

Resident Inspection/Construction Supervisor
Screens Replacement and Building
Improvements | City of Buffalo, Division of
Water | Buffalo, NY

Dustin oversaw the replacement of two large traveling water screens, wash pump and piping, and two large sluice gates. The project also included structural modifications to the large screen well, new building roofing system, doors, windows, and new heating and ventilation system.

Resident Inspection/Construction Supervisor
Colonel Ward and Filtration Plant
Improvements Project | City of Buffalo,
Division of Water | Buffalo, NY

Resident inspection, supervision, and coordination of a capital improvement project at a potable water drinking plant. Project included asbestos abatement, demolition and construction of an onsite updated laboratory, demolition of existing office spaces and construction of a new conference room and new office space, demolition and construction of existing HVAC duct work and new HVAC equipment and HVAC controls, demolition and construction of electrical panels, conduit, and wiring. The project also included the demolition and replacement of 18 exterior windows and exterior brick repointing.

Resident Inspector/Construction Supervisor
Colonel Ward Energy Savings Project | City of
Buffalo, Division of Water | Buffalo, NY

Resident inspection, supervision, and coordination of a performance contract at a potable drinking water plant. The project included the installation of a 20 mgd pump and piping, 40+ gas-fired unit heaters and duct work, three rooftop split units and duct work, HVAC controls, three 60 hp boilers, high efficiency lighting, and a major update to the existing SCADA system.

Resident Inspector/Construction Supervisor
Water Treatment Plant Residuals Handling
Facility | Bradford City Water Authority |
Bradford, PA

Dustin provided resident inspection, supervision, and coordination during construction of capital improvements at a potable water filtration plant. The project included installation of two concrete storage tanks complete with mixing units and tube settlers; a sludge pump station complete with sludge pumps and associated electrical equipment; a centrifuge building and associated equipment; a solids dewatering centrifuge and appurtenances; underground potable water piping and waste sludge piping, high and low voltage electrical equipment, two chemical dosing stations, and general construction.

Resident Inspector/Construction Supervisor
Filter Gallery Rehabilitation | City of Buffalo,
Division of Water | Buffalo, NY

- 2006 - 2009: Resident inspection, supervision, and coordination for a capital improvement project at a potable water filtration plant including the installation of 280 valves, 280 electric actuators, a brand new steam heating system, a new natural gas heating system, plant dehumidification, new windows and electric louvers, new store front style enclosures with enclosed walkways, three new FRP stairways, miscellaneous electrical monitoring equipment, a new



battery back-up electrical system (UPS), a new electrical power distribution system, a new automated filter washing system, new plant lighting, painting throughout the plant, and general construction.

- 2004 - 2005: Resident inspection, supervision, and coordination for the filter rehabilitation, valve replacement, actuator replacement, electrical upgrades, asbestos abatement, and general construction.

Municipal Wastewater

Resident Inspector/Construction Supervisor
Water Pollution Control Center Electrical
Upgrades | Town of Lewiston | Lewiston, NY

Dustin provided resident inspection, supervision, and coordination during construction for plant wide electrical improvements at the water pollution control center. Construction included the addition of two high voltage distribution centers, 500 KVA transformers, six fully enclosed standby generators, dry type transformers, automatic transfer switches, eight rebuilt motor control centers, and general electrical construction. Dustin received a letter of commendation from the client for services provided during the project.

Resident Inspector/Construction Supervisor
Hamburg Drain Floatables Control Facility |
Buffalo Sewer Authority | Buffalo, NY

Dustin provided resident inspection, supervision, and coordination during the construction of 800 linear feet of cast-in place concrete sewer (13 feet x 16 feet) including two interconnections to a 100-year old sewer. Construction included a solids (floatables) control facility complete with mechanical bar screens, standby generation equipment, odor control equipment, submersible pump installation, installation of natural gas, potable water, and a traveling bridge crane. The project also included electric utilities to the new facility, installation of high and low voltage equipment and panels.

Work history

2005 – present	GHD (formerly CRA Infrastructure & Engineering, Inc.), Buffalo, NY
1994 – 2005	Conestoga-Rovers & Associates, Niagara Falls, NY



James I. Milks Resident Inspector



Qualified: A.A.S., Civil Technology, 1982, Certificate, Electronics Technology, 1988, Certified with the Nuclear Regulatory Commission

Professional Summary: Jim has more than 40 years of experience in the construction and design industry dealing with water, wastewater and site improvements. Clients have confidence with his abilities to complete projects on time and under budget. Jim has a one on one approach with any Client or Agency he deals with to make them at ease and comfortable. He is always requested by clients to perform repeat business.

Municipal Water Systems

Resident Inspector

Erie County Water Authority, NY

Provided supervision, coordination of various Contractors and daily discussions for the construction of a new 75 MG Jerome D. Van DeWater water treatment plant, new raw water intake tunnel and structure bored under the Niagara River, raw water pumping station and 72-inch transmission main to feed the new plant.

Resident Inspector

Erie County Water Authority | Erie County, NY

Jim provided inspection during the complete rehabilitation of six water storage tanks and construction of three new water storage tanks, ranging in size from 200,000 gallon to 4.6 million gallon capacities.

- Sturgeon Point - exterior painting including new shell and roof manholes, new vents, new ladders, and other associated work.
- Scherff Road – Interior and exterior painting including new shell and roof manholes, new vents, new ladders, and other associated work.
- Cole Road - exterior painting including new shell and roof manholes, new vents, new ladders, and other associated work.
- Eden III - exterior painting including new shell and roof manholes, new vents, new ladders, and other associated work.
- Eden IV - exterior painting including new shell and roof manholes, new vents, new ladders, and other associated work.
- Vukelich – Rehabilitation of a 4.0-million-gallon steel ground storage tank, including interior and exterior painting.

- Broadway Tank – New 4.6-million-gallon steel ground storage tank in Lancaster, New York, including interior and exterior painting.
- Sand Ridge Tank – New 1.5-million-gallon hydropillar which included interior and exterior painting.
- Wehrle Tank – New 1.5-million-gallon hydropillar, including painting.

Other responsibilities for these projects were preparation of payments to Contractors, Close out documents and discussions with the Client on a daily basis.

Resident Inspector

Erie County Water Authority | Amherst, NY

Oversaw the construction of a new 1.5 million gallon elevated storage tank, painting, and all piping arrangements to tie-in a 16-inch diameter feed line. Valve vault and pressure altitude valve chamber was incorporated under the floor of the tank to utilize space savings on the site. This tank is commonly referred to as the blue water tower at the 290 and Thruway intersection. Other responsibilities included all payments, scheduling and daily Client discussions.

Resident Inspector

Village of Lyndonville / Town of Yates, NY

Jim provided inspection services during the construction of a new water treatment plant utilizing mixed media and sand filtration along with chlorine injection facilities and 25 miles of new transmission main. This system serves over 6,000 customers. Coordinated all efforts between the Town and Village and attending weekly board meetings for each.



Municipal Wastewater Systems

Resident Inspector
Wastewater Treatment Plant Bio-Clarifier
Rehabilitation | Town of Tonawanda |
Tonawanda, NY

Jim provided inspection services during the demolition and replacement of equipment for four 100 ft. diameter clarifiers at their wastewater treatment plant. Included in this project were electrical component replacement for class 1, division 1, explosion proof areas. Rebuild of concrete center pier replacement and installation of stainless steel concrete covers to protect the existing concrete from further deterioration.

Other responsibilities included constructability review, coordination of shut downs, restarts and training of Owners personnel of new equipment operations. Jim handled all payments and administrative duties between Owner and Contractor.

Resident Inspector
Wastewater Treatment Plant Screens
Replacement Project | Town of Tonawanda |
Tonawanda, NY

Jim is providing complete inspection services for the replacement of three traveling bar screens with washer/compactors and a new belt conveyor for discharge of collected solids to a dumpster. This Project also contains new upstream and downstream level sensors, work on existing sluice gates and install of electric actuators. This Project will contain new control panels, electrical work and all systems will be able to be operated through SCADA in the Operators control room. All work in this area is considered an explosion class 1, division 1 area.

Other responsibilities include review of submittals for specified equipment, coordination of plant shutdowns and restarts and all administrative duties to the conclusion of the work.

Resident Inspector
Wastewater Treatment Plant Rehabilitation,
Phase 1 | Niagara Falls Water Board |
Niagara Falls, NY

Jim provided inspection services during the installation of new 30-inch piping, butterfly valves, sluice gates and refurbishing 14 carbon filters, as well as new HVAC, replacement of electrical components and SCADA operational equipment.

Other responsibilities included coordination of all plant shut downs, restarts and training Owners personnel on operation and maintenance of the new equipment. Handled all administrative issues between the Owner and Contractor.

Resident Inspector
Wastewater Treatment Plant Rehabilitation,

Phase 2 | Niagara Falls Water Board |
Niagara Falls, NY

Installation of new 30-inch piping, butterfly valves, sluice gates and refurbishing remaining 14 carbon filters. New HVAC, replacement of electrical components and SCADA operational equipment. 28 new flow meters were added to the filter effluent lines, which included the first 14 filters under Phase 1.

Other responsibilities included coordination of all plant shut downs, restarts and training Owners personnel on operation and maintenance of the new equipment. Handled all admin. Issues between the Owner and Contractor.

Resident Inspector
Gorge Pump Station Rehabilitation |
Niagara Falls Water Board | Niagara Falls, NY

Jim provided inspection services during the rebuild of three 500 hp pumps, rewinding and baking of motors, replacing the existing variable speed drives, adding a new programmable logic controller (PLC) and SCADA upgrades. Work also included the installation of new 24-inch suction lines, check valves and level controls. New influent channel grinders, concrete restoration gas monitoring and security systems were also installed.

Other related areas of interest

Recognized (Certifications/Trainings)

- Electrical Safety and National Fire Protection Association NFPA 70 E, Arc Flash Training Certificate
- Permit Required Confined Space Certificate
- OSHA 40-hour Hazardous Waste Worker, Refresher, 2007

Work history

2015 – present	GHD (formerly CRA Infrastructure & Engineering, Inc.), Buffalo, NY
1988 – 2015	R&D Engineering PC (acquired by CRA in 2003), Buffalo, NY
1974 – 1988	Malcolm Pirnie, Inc.



Appendix B
Required Forms

Appendix B

FORM A

**Offerer's Affirmation of Understanding of, and Agreement to Comply
with, the Permissible Contact Requirements During the Restricted Period**

Instructions:

The Erie County Water Authority (the "Authority") is a government entity, as that term is defined in State Finance Law §§ 139-j(1)(a) and 139-k(1)(a). The Authority must obtain a written affirmation of understanding and agreement to comply with procedures regarding permissible contacts with the Authority in the restricted period for a procurement contract in accordance with State Finance Law §139-j and §139-k. It is required that this affirmation be obtained as early as possible in the procurement process, but no later than when the Offerer submits its proposal.

Offerer affirms that it understands and agrees to comply with the procedures of the Authority relative to permissible contacts as required by State Finance Law §139-j(3) and §139-j(6)(b).

By: Robert P. Lannon Jr. Date: January 29, 2020

Name: Robert P. Lannon Jr., PE

Title: Vice President

Contractor Name: GHD Consulting Services Inc.

Contractor Address: 285 Delaware Avenue, Suite 500

Buffalo, New York 14202

FORM B

**Offerer's Certification of Compliance
With State Finance Law §139-k(5)**

Instructions:

The Erie County Water Authority (the "Authority") is a government entity, as that term is defined in State Finance Law §§ 139-j(1)(a) and 139-k(1)(a). The Authority must obtain a Certification that the information submitted for a procurement contract is complete, true, and accurate regarding any prior findings of non-responsibility, such as non-responsibility pursuant to State Finance Law §139-j. The Offerer must agree to sign the Certification, under penalty of perjury, and to provide the Certification to the Authority. The Certification should be obtained as early as possible in the process, but no later than when an Offerer submits its proposal.

Offerer Certification:

I certify that all information provided to the Authority relating to the awarding of a procurement contract is complete, true, and accurate.

By: Robert P. Lannon Jr. Date: January 29, 2020

Name: Robert P. Lannon Jr., PE

Title: Vice President

Contractor Name: GHD Consulting Services Inc.

Contractor Address: 285 Delaware Avenue, Suite 500

Buffalo, New York 14202

FORM C**Offerer's Disclosure of Prior
Non-Responsibility Determinations****Background:**

The Erie County Water Authority (the "Authority") is a government entity, as that term is defined in State Finance Law §§ 139-j(1)(a) and 139-k(1)(a). New York State Finance Law §139-k(2) obligates the Authority to obtain specific information regarding prior non-responsibility determinations with respect to State Finance Law §139-j. In accordance with State Finance Law §139-k, an Offerer must be asked to disclose whether there has been a finding of non-responsibility made within the previous four (4) years by any Governmental Entity due to: (a) a violation of State Finance Law §139-j; or (b) the intentional provision of false or incomplete information to a Government Entity.

The terms "Offerer" and "Governmental Entity" are defined in State Finance Law §§139-j(1) and §139-k(1). These sections also set forth detailed requirements about the restrictions on contacts during the procurement process. A violation of State Finance Law §139-j includes, but is not limited to, an impermissible contact during the restricted period (for example, contacting a person or entity other than the designated contact person, when such contact does not fall within one of the exemptions).

As part of its responsibility determination, State Finance Law §139-k(3) mandates consideration of whether an Offerer fails to timely disclose accurate or complete information regarding the above non-responsibility determination. In accordance with law, no Procurement Contract shall be awarded to any Offerer that fails to timely disclose accurate or complete information under this section, unless a finding is made that the award of the Procurement Contract to the Offerer is necessary to protect public property or public health safety, and the Offerer is the only source capable of supplying the required Article of Procurement, as that term is defined in State Finance Law §§ 139-j(1)(b) and 139-k(1)(b), within the necessary timeframe. See State Finance Law §139-j(10)(b) and §139-k(3).

Instructions:

The Authority must include a disclosure request regarding prior non-responsibility determinations in accordance with State Finance Law §139-k in its solicitation of proposals or bid documents or specifications or contract documents, as applicable, for procurement contracts. The attached form is to be completed and submitted by the individual or entity seeking to enter into a Procurement Contract. It shall be submitted to the Authority conducting the Governmental Procurement no later than when the Offerer submits its proposal.

FORM C (Continued)

Offerer's Disclosure of Prior Non-Responsibility Determinations

Name of Individual or Entity Seeking to Enter into the Procurement Contract:

GHD Consulting Services Inc.

Address: 285 Delaware Avenue, Suite 500

Buffalo, New York 14202

Name and Title of Person Submitting this Form: Robert P. Lannon Jr., PE, Vice President

Contract Procurement Number: ECWA Project No. 202000021

Date: January 29, 2020

1. Has any Governmental Entity made a finding of non-responsibility regarding the individual or entity seeking to enter into the Procurement Contract in the previous four years? (Please circle): No Yes

If yes, please answer the next questions:

2. Was the basis for the finding of non-responsibility due to a violation of State Finance Law §139-j (Please circle): No Yes

3. Was the basis for the finding of non-responsibility due to the intentional provision of false or incomplete information to a Governmental Entity? (Please circle) No Yes

4. If you answered yes to any of the above questions, please provide details regarding the finding of non-responsibility below.

Governmental Entity: _____

Date of Finding of Non-Responsibility: _____

Basis of Finding of Non-Responsibility: _____

(Add additional pages as necessary)

FORM C (Continued)

5. Has any Governmental Entity or other governmental agency terminated or withheld a Procurement Contract with the above-named individual or entity due to the intentional provision of false or incomplete information? (Please circle): No Yes

6. If yes, please provide details below.

Governmental Entity: _____

Date of Termination or Withholding of Contract: _____

Basis of Termination or Withholding:

(Add additional pages as necessary)

Offerer certifies that all information provided to the Erie County Water Authority with respect to State Finance Law §139-k is complete, true, and accurate.

By: Robert P. Lannon Jr. Date: January 29, 2020
Signature

Name: Robert P. Lannon Jr., PE

Title: Vice President

SECTION 139-L OF THE STATE FINANCE LAW
STATEMENT RELATING TO SEXUAL HARASSMENT POLICY

1. "Bidder" has the same meaning as the term, "Offerer," as that term is defined in State Finance Law § 139-k(1)(h), and includes anyone who submits a bid or proposal.
2. Every proposal or bid hereafter made and submitted to the Erie County Water Authority, where competitive bidding or a sealed proposal is required by statute, rule or regulation, for work or services performed or to be performed or goods sold or to be sold, shall contain the following statement subscribed by the Bidder and affirmed by such Bidder as true under penalty of perjury:

SEXUAL HARASSMENT BIDDING CERTIFICATION

- (a) "By submission of this bid/proposal, EACH BIDDER AND EACH PERSON SIGNING ON BEHALF OF ANY BIDDER CERTIFIES, AND IN THE CASE OF A JOINT BID EACH PARTY THERETO CERTIFIES AS TO ITS OWN ORGANIZATION, under penalty of perjury, that the Bidder has and has implemented a written policy addressing sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all its employees. Such policy shall, at a minimum, meet the requirements of Section two hundred one-g of the Labor Law."
3. A bid/proposal shall not be considered for award nor shall any award be made to a Bidder who has not complied with subdivision one of this section; provided, however, that if in any case the Bidder cannot make the foregoing certification, the Bidder shall so state and shall furnish with the bid/proposal a signed statement which sets forth in detail the reasons therefore.

The undersigned CERTIFIES, under penalty of perjury, that he is authorized to make this bid/proposal and execute this statement on sexual harassment; that he is familiar with the statements contained in ¶2(a) of this document, as well as the provisions of State Finance Law §139-L and Labor Law §201-g, and such statements are true and have been complied with by the Bidder.

GHD Consulting Services Inc.
(Name of Individual, Partnership or Corporation)

By Robert P. Lannon Jr.
(Person authorized to sign)

(SEAL)

Robert P. Lannon Jr., PE, Vice President

END OF BID FORM SUPPLEMENTS

A large, dark blue geometric shape, resembling a trapezoid or a triangle with a slanted top edge, occupies the left side of the page. It has a lighter blue shadow or gradient effect on its right side, creating a 3D or layered appearance.

Appendix C
Certificate of
Insurance

Appendix C



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
11/22/2019

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Willis of Massachusetts, Inc. c/o 26 Century Blvd P.O. Box 305191 Nashville, TN 372305191 USA	CONTACT NAME: PHONE (A/C No, Ext): 1-877-945-7378 FAX (A/C, No): 1-888-467-2378	
	E-MAIL ADDRESS: certificates@willis.com	
INSURED GHD Consulting Services Inc. 2055 Niagara Falls Blvd., Suite 3 Niagara Falls, NY 14304	INSURER(S) AFFORDING COVERAGE NAIC #	
	INSURER A: Allied World Assurance Company US Inc 19489	
	INSURER B: Zurich American Insurance Company 16535	
	INSURER C: Beazley Insurance Company Inc 37540	
	INSURER D: Lloyd's Syndicate 2623 (Beazley Furlong Li C2166	
INSURER E:		
INSURER F:		

COVERAGES

CERTIFICATE NUMBER: W13952882

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:	Y	Y	0310-4497	12/01/2019	12/01/2020	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 1,000,000 MED EXP (Any one person) \$ 25,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 \$
B	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input checked="" type="checkbox"/> HIRED AUTOS ONLY <input checked="" type="checkbox"/> AUTOS ONLY Coll Ded: \$500 <input checked="" type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS ONLY Comp Ded: \$250	Y	Y	BAP 3757423-04	07/01/2019	07/01/2020	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ Hired Physical Damag \$ 100000
A	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED RETENTION \$			0310-4498	12/01/2019	12/01/2020	EACH OCCURRENCE \$ 1,000,000 AGGREGATE \$ 2,000,000 \$
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A	WC 0380936-04	07/01/2019	07/01/2020	<input checked="" type="checkbox"/> PER STATUTE OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
C	Professional Liability			V29594190101	12/01/2019	12/01/2020	Each Claim: \$2,000,000 Aggregate: \$2,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

SEE ATTACHED

CERTIFICATE HOLDER

CANCELLATION

To Whom It May Concern-GHD Consulting Services Inc

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

© 1988-2016 ACORD CORPORATION. All rights reserved.



ADDITIONAL REMARKS SCHEDULE

AGENCY Willis of Massachusetts, Inc.		NAMED INSURED GHD Consulting Services Inc. 2055 Niagara Falls Blvd., Suite 3 Niagara Falls, NY 14304	
POLICY NUMBER See Page 1		EFFECTIVE DATE: See Page 1	
CARRIER See Page 1	NAIC CODE See Page 1		

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,
 FORM NUMBER: 25 FORM TITLE: Certificate of Liability Insurance

Additional Insured status can be granted as above only where required by contract or agreement.

General Liability policy can be Primary and Non-contributory with any other insurance in force for or which may be purchased by Additional Insured where required by contract or agreement.

Waiver of Subrogation can be applied as above in favor of Certificate Holder where required by written contract, agreement or permit where permissible by law or statute.

Umbrella/Excess Liability Follows Form over General Liability, Auto Liability and Employer's Liability.

INSURER AFFORDING COVERAGE: Lloyd's Syndicate 2623 (Beazley Furlong Limited) NAIC#: C2166
 POLICY NUMBER: W29657190101 EFF DATE: 12/01/2019 EXP DATE: 12/01/2020

ADDITIONAL INSURED: Y

TYPE OF INSURANCE:	LIMIT DESCRIPTION:	LIMIT AMOUNT:
Pollution Liability	Each Occurrence:	\$2,000,000
	Aggregate:	\$2,000,000

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**ADDITIONAL INSURED – OWNERS, LESSEES OR
CONTRACTORS – SCHEDULED PERSON OR
ORGANIZATION**

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

<p>Name of Person or Organization:</p> <p>Where required by written contract</p>

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

A. Section II – Who Is An Insured is amended to include as an insured the person or organization shown in the Schedule, but only with respect to liability arising out of your ongoing operations performed for that insured.

B. With respect to the insurance afforded to these additional insureds, the following exclusion is added:

2. Exclusions

This insurance does not apply to "bodily injury" or "property damage" occurring after:

- (1) All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the site of the covered operations has been completed; or
- (2) That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.



THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**ADDITIONAL INSURED – OWNERS, LESSEES OR
CONTRACTORS – COMPLETED OPERATIONS**

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name of Person or Organization: Where required by written contract
Location And Description of Completed Operations: Where required by written contract
Additional Premium: N/A

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

Section II – Who Is An Insured is amended to include as an insured the person or organization shown in the Schedule, but only with respect to liability arising out of "your work" at the location designated and described in the schedule of this endorsement performed for that insured and included in the "products-completed operations hazard".

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

PRIMARY AND NON-CONTRIBUTORY

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

Notwithstanding any other provision of this policy to the contrary, the insurance afforded to an additional insured under this policy will be primary to, and non-contributory with, any other insurance available to that person or organization in the event a contract or agreement you enter into requires you to furnish insurance to that person or organization of the type provided by this policy.

WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

SCHEDULE

Name Of Person Or Organization:

Where required by written contract

Where required by written contract Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

The following is added to Paragraph 8. **Transfer Of Rights Of Recovery Against Others To Us** of Section IV – Conditions:

We waive any right of recovery we may have against the person or organization shown in the Schedule above because of payments we make for injury or damage arising out of your ongoing operations or "your work" done under a contract with that person or organization and included in the "products-completed operations hazard". This waiver applies only to the person or organization shown in the Schedule above.



Coverage Extension Endorsement

Policy No.	Eff. Date of Pol.	Exp. Date of Pol.	Eff. Date of End.	Producer No.	Add'l. Prem	Return Prem.
BAP 3757423-04	7/1/2019	7/1/2020	7/1/2019		---	---

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

This endorsement modifies insurance provided under the:

**Business Auto Coverage Form
Motor Carrier Coverage Form**

A. Amended Who Is An Insured

1. The following is added to the **Who Is An Insured** Provision in **Section II – Covered Autos Liability Coverage**:

The following are also "insureds":

- a. Any "employee" of yours is an "insured" while using a covered "auto" you don't own, hire or borrow for acts performed within the scope of employment by you. Any "employee" of yours is also an "insured" while operating an "auto" hired or rented under a contract or agreement in an "employee's" name, with your permission, while performing duties related to the conduct of your business.
- b. Anyone volunteering services to you is an "insured" while using a covered "auto" you don't own, hire or borrow to transport your clients or other persons in activities necessary to your business.
- c. Anyone else who furnishes an "auto" referenced in Paragraphs **A.1.a.** and **A.1.b.** in this endorsement.
- d. Where and to the extent permitted by law, any person(s) or organization(s) where required by written contract or written agreement with you executed prior to any "accident", including those person(s) or organization(s) directing your work pursuant to such written contract or written agreement with you, provided the "accident" arises out of operations governed by such contract or agreement and only up to the limits required in the written contract or written agreement, or the Limits of Insurance shown in the Declarations, whichever is less.

2. The following is added to the **Other Insurance** Condition in the Business Auto Coverage Form and the **Other Insurance – Primary and Excess Insurance Provisions Condition** in the Motor Carrier Coverage Form:

Coverage for any person(s) or organization(s), where required by written contract or written agreement with you executed prior to any "accident", will apply on a primary and non-contributory basis and any insurance maintained by the additional "insured" will apply on an excess basis. However, in no event will this coverage extend beyond the terms and conditions of the Coverage Form.

All other terms, conditions, provisions and exclusions of this policy remain the same.

agent, servant or employee of the "insured" to notify us of any "accident", claim, "suit" or "loss" shall not invalidate the insurance afforded by this policy.

Include, as soon as practicable:

- (1) How, when and where the "accident" or "loss" occurred and if a claim is made or "suit" is brought, written notice of the claim or "suit" including, but not limited to, the date and details of such claim or "suit";
- (2) The "insured's" name and address; and
- (3) To the extent possible, the names and addresses of any injured persons and witnesses.

If you report an "accident", claim, "suit" or "loss" to another insurer when you should have reported to us, your failure to report to us will not be seen as a violation of these amended duties provided you give us notice as soon as practicable after the fact of the delay becomes known to you.

P. Waiver of Transfer Of Rights Of Recovery Against Others To Us

The following is added to the **Transfer Of Rights Of Recovery Against Others To Us** Condition:

This Condition does not apply to the extent required of you by a written contract, executed prior to any "accident" or "loss", provided that the "accident" or "loss" arises out of operations contemplated by such contract. This waiver only applies to the person or organization designated in the contract.

Q. Employee Hired Autos – Physical Damage

Paragraph **b.** of the **Other Insurance** Condition in the Business Auto Coverage Form and Paragraph **f.** of the **Other Insurance – Primary and Excess Insurance Provisions** Condition in the Motor Carrier Coverage Form are replaced by the following:

For Hired Auto Physical Damage Coverage, the following are deemed to be covered "autos" you own:

- (1) Any covered "auto" you lease, hire, rent or borrow; and
- (2) Any covered "auto" hired or rented under a written contract or written agreement entered into by an "employee" or elected or appointed official with your permission while being operated within the course and scope of that "employee's" employment by you or that elected or appointed official's duties as respect their obligations to you.

However, any "auto" that is leased, hired, rented or borrowed with a driver is not a covered "auto".

R. Unintentional Failure to Disclose Hazards

The following is added to the **Concealment, Misrepresentation Or Fraud** Condition:

However, we will not deny coverage under this Coverage Form if you unintentionally:

- (1) Fail to disclose any hazards existing at the inception date of this Coverage Form; or
- (2) Make an error, omission, improper description of "autos" or other misstatement of information.

You must notify us as soon as possible after the discovery of any hazards or any other information that was not provided to us prior to the acceptance of this policy.

S. Hired Auto – World Wide Coverage

Paragraph **7a.(5)** of the **Policy Period, Coverage Territory** Condition is replaced by the following:

- (5) Anywhere in the world if a covered "auto" is leased, hired, rented or borrowed for a period of 60 days or less,

T. Bodily Injury Redefined

The definition of "bodily injury" in the **Definitions** Section is replaced by the following:

"Bodily injury" means bodily injury, sickness or disease, sustained by a person including death or mental anguish, resulting from any of these at any time. Mental anguish means any type of mental or emotional illness or disease.

WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. (This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.)

This agreement shall not operate directly or indirectly to benefit anyone not named in the Schedule.

Schedule

ANY PERSON OR ORGANIZATION FOR WHOM YOU ARE REQUIRED BY WRITTEN CONTRACT OR AGREEMENT TO OBTAIN THIS WAIVER OF RIGHTS FROM US

This endorsement changes the policy to which it is attached and is effective on the date issued unless otherwise stated.

(The information below is required only when this endorsement is issued subsequent to preparation of the policy.)

Endorsement Effective

Policy No: WC 0380936-04

Endorsement No.

Insured: GHD Inc.

Premium \$

Insurance Company: Zurich American Insurance Company

Countersigned By

Leigha Thomas

STATE OF NEW YORK
WORKERS' COMPENSATION BOARD

CERTIFICATE OF NYS WORKERS' COMPENSATION INSURANCE COVERAGE

<p>1a. Legal Name & Address of Insured (Use street address only) GHD Inc. GHD Services Inc. GHD Consulting Services Inc. GHD Consulting Engineers, LLC One Remington Park Drive Cazenovia, NY 13035</p> <p><i>Work Location of Insured (Only required if coverage is specifically limited to certain locations in New York State, i.e., a Wrap-Up Policy)</i></p>	<p>1b. Business Telephone Number of Insured</p> <p>1c. NYS Unemployment Insurance Employer Registration Number of Insured 917814561</p> <p>1d. Federal Employer Identification Number of Insured or Social Security Number 98-0425935, 15-0430700, 16-1229774</p>
<p>2. Name and Address of the Entity Requesting Proof of Coverage (Entity Being Listed as the Certificate Holder)</p> <p style="text-align: center;">PER CERTIFICATE HOLDER LISTED ON ACORD CERTIFICATE</p>	<p>3a. Name of Insurance Carrier Zurich American Insurance Company</p> <p>3b. Policy Number of entity listed in box "1a" WC0380936</p> <p>3c. Policy effective period 7/1/2019 to 7/1/2020</p> <p>3d. The Proprietor, Partners or Executive Officers are <input checked="" type="checkbox"/> included. (Only check box if all partners/officers included) <input type="checkbox"/> all excluded or certain partners/officers excluded.</p>

This certifies that the insurance carrier indicated above in box "3" insures the business referenced above in box "1a" for workers' compensation under the New York State Workers' Compensation Law. (To use this form, New York (NY) must be listed under **Item 3A** on the **INFORMATION PAGE** of the workers' compensation insurance policy). The Insurance Carrier or its licensed agent will send this Certificate of Insurance to the entity listed above as the certificate holder in box "2".

The Insurance Carrier will also notify the above certificate holder within 10 days IF a policy is canceled due to nonpayment of premiums or within 30 days IF there are reasons other than nonpayment of premiums that cancel the policy or eliminate the insured from the coverage indicated on this Certificate. (These notices may be sent by regular mail.) Otherwise, this Certificate is valid for one year after this form is approved by the insurance carrier or its licensed agent, or until the policy expiration date listed in box "3c", whichever is earlier.

Please Note: Upon the cancellation of the workers' compensation policy indicated on this form, if the business continues to be named on a permit, license or contract issued by a certificate holder, the business must provide that certificate holder with a new Certificate of Workers' Compensation Coverage or other authorized proof that the business is complying with the mandatory coverage requirements of the New York State Workers' Compensation Law.

Under penalty of perjury, I certify that I am an authorized representative or licensed agent of the insurance carrier referenced above and that the named insured has the coverage as depicted on this form.

Approved by: Leighton Thomas
(Print name of authorized representative or licensed agent of insurance carrier)

Approved by:  6/1/2019
(Signature) (Date)

Title: Account Manager

Telephone Number of authorized representative or licensed agent of insurance carrier: _____

Please Note: Only insurance carriers and their licensed agents are authorized to issue Form C-105.2. Insurance brokers are NOT authorized to issue it.

Workers' Compensation Law

Section 57. Restriction on issue of permits and the entering into contracts unless compensation is secured.

1. The head of a state or municipal department, board, commission or office authorized or required by law to issue any permit for or in connection with any work involving the employment of employees in a hazardous employment defined by this chapter, and notwithstanding any general or special statute requiring or authorizing the issue of such permits, shall not issue such permit unless proof duly subscribed by an insurance carrier is produced in a form satisfactory to the chair, that compensation for all employees has been secured as provided by this chapter. Nothing herein, however, shall be construed as creating any liability on the part of such state or municipal department, board, commission or office to pay any compensation to any such employee if so employed.

2. The head of a state or municipal department, board, commission or office authorized or required by law to enter into any contract for or in connection with any work involving the employment of employees in a hazardous employment defined by this chapter, notwithstanding any general or special statute requiring or authorizing any such contract, shall not enter into any such contract unless proof duly subscribed by an insurance carrier is produced in a form satisfactory to the chair, that compensation for all employees has been secured as provided by this chapter.



CERTIFICATE OF INSURANCE COVERAGE DISABILITY AND PAID FAMILY LEAVE BENEFITS LAW

PART 1. To be completed by Disability and Paid Family Leave Benefits Carrier or Licensed Insurance Agent of that Carrier

1a. Legal Name & Address of Insured (use street address only)
GHD CONSULTING SERVICES INC
285 DELAWARE AVENUE, SUITE 500,
BUFFALO, NEW YORK 14202
Work Location of Insured (Only required if coverage is specifically limited to certain locations in New York State, i.e., Wrap-Up Policy)

1b. Business Telephone Number of Insured
1c. Federal Employer Identification Number of Insured or Social Security Number
150430700

2. Name and Address of Entity Requesting Proof of Coverage (Entity Being Listed as the Certificate Holder)
2. Erie County Water Authority, 295 Main Street, Suite 350, Buffalo, NY 14203

3a. Name of Insurance Carrier
ShelterPoint Life Insurance Company
3b. Policy Number of Entity Listed in Box "1a"
DBL600540
3c. Policy effective period
01/01/2020 to 12/31/2020

4. Policy provides the following benefits:
[X] A. Both disability and paid family leave benefits.
[] B. Disability benefits only.
[] C. Paid family leave benefits only.
5. Policy covers:
[X] A. All of the employer's employees eligible under the NYS Disability and Paid Family Leave Benefits Law.
[] B. Only the following class or classes of employer's employees:

Under penalty of perjury, I certify that I am an authorized representative or licensed agent of the insurance carrier referenced above and that the named insured has NYS Disability and/or Paid Family Leave Benefits insurance coverage as described above.

Date Signed 1/8/2020 By [Signature]
(Signature of insurance carrier's authorized representative or NYS Licensed Insurance Agent of that insurance carrier)

Telephone Number 516-829-8100 Name and Title Richard White, Chief Executive Officer

IMPORTANT: If Boxes 4A and 5A are checked, and this form is signed by the insurance carrier's authorized representative or NYS Licensed Insurance Agent of that carrier, this certificate is COMPLETE. Mail it directly to the certificate holder.
If Box 4B, 4C or 5B is checked, this certificate is NOT COMPLETE for purposes of Section 220, Subd. 8 of the NYS Disability and Paid Family Leave Benefits Law. It must be mailed for completion to the Workers' Compensation Board, Plans Acceptance Unit, PO Box 5200, Binghamton, NY 13902-5200.

PART 2. To be completed by the NYS Workers' Compensation Board (Only if Box 4C or 5B of Part 1 has been checked)

State of New York Workers' Compensation Board

According to information maintained by the NYS Workers' Compensation Board, the above-named employer has complied with the NYS Disability and Paid Family Leave Benefits Law with respect to all of his/her employees.

Date Signed _____ By _____
(Signature of Authorized NYS Workers' Compensation Board Employee)

Telephone Number _____ Name and Title _____

Please Note: Only insurance carriers licensed to write NYS disability and paid family leave benefits insurance policies and NYS licensed insurance agents of those insurance carriers are authorized to issue Form DB-120.1. Insurance brokers are NOT authorized to issue this form.





about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

Paul J. McGarvey, PE
paul.mcgarvey@ghd.com
716-242-6931

www.ghd.com



LEVEL OF EFFORT

**Powder Activated Carbon Improvements
Van de Water & Sturgeon Point Treatment Plant
ECWA Project No. 20200021
GHD Project 11208890**

TASK DESCRIPTION	Project Manager	QA/QC	Sr. Electrical/ Structural Engineer	Sr. Project Engineer	Engineer	Electrical & Instrumentation Engineer	Structural Engineer	Sr. CADD	CADD	RPR	Administrative Assistant	Total Hours	Subcontractor Costs	Expenses	Total Cost
	McGarvey Kolkmann	Castro Waldvogel	Crone Thornton	Story Angle	Hamlin Skuse	Johal Gee Josa	Regan	DiFrancisco	Galley	Steiner Milks	Staff				
1 Basis of Design Report													\$0	\$1,155	\$30,500
Evaluation, PFD, & Schematics	8	2	2	17	26	16		8	45			124			
BODR Preparation	4	1		8	32	2					12	59			
Meetings, Project Management	6			10	10	6					2	34			
2 Design													\$0	\$4,935	\$113,300
Process Mechanical	20	7		72	176				241		10	526			
Electrical, Instrumentation & Controls			6			113		81			8	208			
Structural			4				9				4	17			
HVAC					36						4	40			
Meetings, Project Management	18			13	2	13						46			
3 General Services													\$0	\$3,780	\$72,700
Bidding	8			12	8	8					8	44			
Submittals	22		2	34	56	24	4				52	194			
RFI and Changes	32	6	4	40	4	8					24	118			
Meetings, Project Management	10			104							16	130			
4 Resident Inspection (6 months @ 40hrs/wk)										1040		1,040	\$0	\$0	\$130,000
5 Record Drawings	1			8				8	40			57	\$0	\$525	\$6,600
6 Special Services												0	\$0	\$0	\$20,000
Total Hours	129	16	18	318	350	190	13	97	326	1,040	140	2,637	\$0	\$10,395	\$373,100
Typical Classification Rates (\$/HR)	205	240	205	155-170	135	155-170	135	120	100	125	70				