Wastewater Treatment Facility Improvements

Final Design | City of La Crosse

DONOHUE

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March 9, 2020

Donohue & Associates, Inc.
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Mr. Bernard Lenz, Utilities Manager
City of La Crosse
Utilities Office, City Hall, 5th Floor
400 La Crosse Street
La Crosse, WI 54601

Re: Final Design, Bidding, and Funding | Wastewater Treatment Facility Improvements (Facility)

Dear Mr. Lenz:

Three hard copies and one PDF copy of our Proposal for the referenced Project is enclosed with this cover letter. Proposals often elaborate on *technical* approaches and solutions. We didn't feel that was the right focus for this proposal and its 40 pages. Because we have worked with the City to develop the Facility Plan and Preliminary Design Report, we deliberately used this proposal to provide a detailed Scope of Services, outline a Project schedule, communicate the exceptional credentials of the Donohue Team, and present a detailed accounting of our proposed Project fee. Compelling reasons to hire Donohue are summarized below.

- **Schedule and Resources** – No firm is better equipped to submit Reviewable Bidding Documents to the Wisconsin Department of Natural Resources by the September 30, 2020 funding deadline ($1.75MM in principal forgiveness) and bid the Project in early 2021 (February) when Contractors are aggressively pursuing Work. We built our production schedule around this Project, allocating and preserving the resources to deliver it.
- **Return on Investment** – Donohue has provided engineering services at the Facility since 2008 and developed an unparalleled understanding of the service area, the Facility, City preferences, City requirements, and City initiatives (e.g., sustainability, carbon neutrality, and Exergy). Retaining Donohue maximizes the return on this tremendous City investment and provides the City and this Project the benefit of the knowledge Donohue has acquired.
- **Cost Effectiveness** – We are proposing an extremely competitive and fair fee. Comparable data in the Proposal proves that. We can propose this aggressive fee knowing the quality and integrity of the Project are adequately protected because we have exceptional and unparalleled knowledge of the Project, City preferences, and City requirements.

We welcome an opportunity to discuss any questions you might have as you review our proposal or a competing one, and develop the final scope, schedule, and fee that is included in the Agreement for Final Design, Bidding, and Funding services.

Sincerely,

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UNDERSTANDING, APPROACH, AND SCOPE

DONOHUE

Understanding, Approach, and Scope

Purpose

The purpose of this Project is to implement improvements at the Wastewater Treatment Facility (WWTF or Facility) to enhance safety, reliability, energy efficiency, phosphorus compliance, and solids-processing and solids-reuse capacity and resiliency.

Objectives

The objectives for *our proposed Services* are listed below.

1. **Final Design** – Produce Bidding Documents that accurately and cost-effectively depict the Work required implement the City-selected Facility improvements. Submit Reviewable Bidding Documents to the Wisconsin Department of Natural Resources (WDNR or Department) by the Wisconsin Clean Water Fund's deadline
2. **Bidding** – Foster competitive public bidding that yields an affordable and cost-effective Contract award to the lowest-cost responsive and qualified Bidder.
3. **Funding** – Produce a Wisconsin Clean Water Fund Application and submit it to the WDNR by the Fund's deadline. Secure Focus on Energy Funds for eligible components of the Work.
4. **Construction** – Confirm the Work is performed in accordance with the Contract Documents, provide process training and commissioning services, and produce Record Drawings.

Understanding

Donohue began providing engineering services at the La Crosse Facility in 2008, performing comprehensive Master Planning. Since that initial engagement, Donohue has provided permitting assistance, Facility re-rating, effluent phosphorus compliance, Facility Planning (this Project) and Preliminary Design (this Project) services. To date, the City has invested in 3,350 hours of Donohue engineering services. All of those hours have been devoted to understanding and addressing the unique aspects of the service area, the Facility, City preferences, City requirements, and City initiatives (e.g., Exergy and carbon neutrality). We devote the balance of this Proposal Section to outlining our *general approach* to this Project and providing a *detailed Scope of Services* that is suitable for inclusion in a subsequent Agreement.

Approach

The three most important elements required to reliably and consistently deliver successful projects: 1] experienced and skilled people, 2] a well-developed and well-defined workflow, 3] a keen ability to listen to Owner requirements and preferences, and 4] rigid adherence to a proven and effective Quality Assurance and Control program. With that in mind, our approach to this Project is based on three main tenets:

1. **Exceptional, Relevant Experience** – The Donohue Team will employ senior engineers and operations specialists that have exceptional specialized and real-world experience perfectly relevant to this Project: nearly all of them have already worked on this Project during Planning or Preliminary Design. Senior experts will objectively and efficiently develop and review technical strategies, provide technical guidance, and perform quality reviews of Project deliverables.
2. **A Proven, Collaborative Workflow** – The Donohue Team will execute this Project using a highly-collaborative and efficient workflow that actively engages the City throughout the design. Donohue encourages and embraces the positive evolution of ideas and a Project that comes from deliberate City-Engineer collaboration.
3. **The "Right" Solutions** – The Donohue Team will listen to the City to understand and satisfy your unique requirements, preferences, concerns, and curiosities. We will listen to you, address your concerns, provide information that answers your questions, and develop strategies that meet your

requirements and accommodate your preferences. Moreover, we will ask the right questions of you and hear your answers.

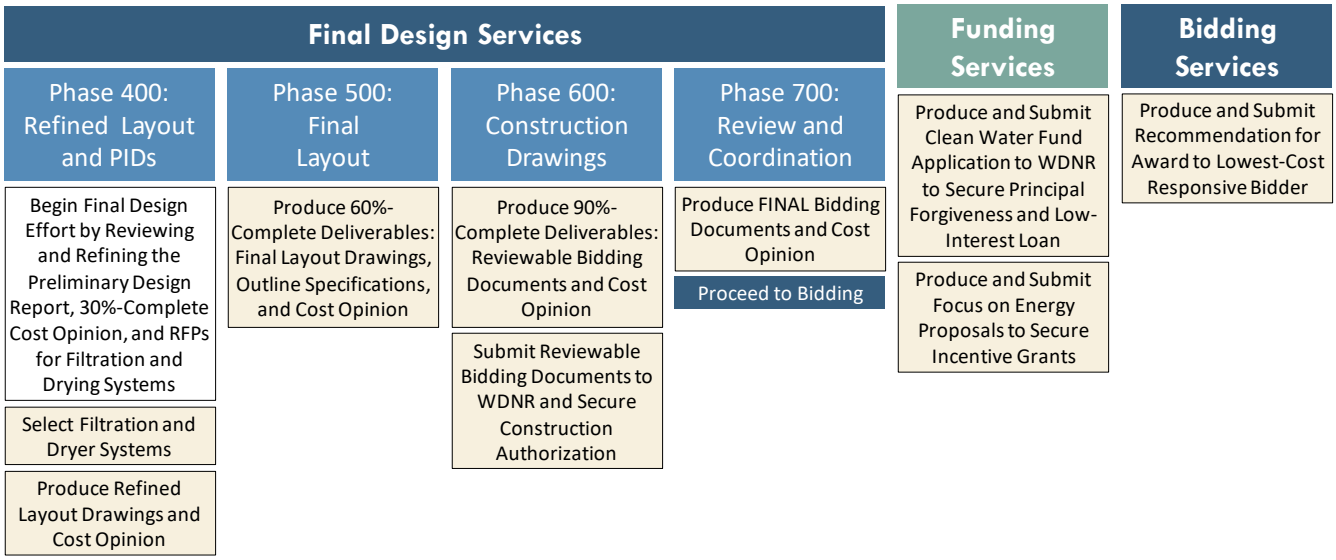
4. **Quality Assurance and Control** – As a specialized wastewater engineering firm, Donohue has developed and rigidly adheres to a comprehensive and effective Quality Assurance and Control program tailored specifically to large treatment facility upgrade projects like this one.

Exceptional, Relevant Experience

This project *demands* a high level of technical experience and expertise. The Donohue Team was deliberately assembled to provide the high-level phosphorus removal, biosolids drying, biogas conditioning, renewable energy recovery, air permitting (SEH), NFPA 820, and general liquid- and solids-train upgrade experience and expertise this Project demands. Our Team Section outlines the experience the Donohue Team will bring to this Project.

A Proven, Collaborative Workflow

Our proposed workflow is summarized in the graphic that follows. It provides a succinct overview of the Phases we will employ to complete the design of this Project and the deliverables each Phase will produce. Donohue will continue to employ formal Workshops and informal on-site or web-based meetings throughout the remaining design Phases to facilitate information sharing; collaboration; and understanding preferences and requirements.



The "Right" Solutions

A Project is only successful if it reflects the preferences and requirements of the people that operate and pay for it. Donohue will collaborate with the City throughout the balance of the Design Phases to 1] produce the reliable, actionable information the City needs to make well-conceived, cost-effective decisions and 2] produce Bidding Documents that conform to City preferences/requirements, outline well-conceived construction sequencing constraints and strategies, and accurately portray the Work to be performed by the Contractor. Much of this collaboration will occur in information-sharing Workshops, on-site meetings, or web-based meetings. Donohue-led sessions like these have proven effective at developing common understandings, exchanging information, identifying and refining design alternatives, and reaching consensus-based decisions.

Quality Assurance and Control (QA/QC)

Donohue will execute this Project in accordance with its QA/QC Policy, reviewing all deliverables before submitting them to the City or other reviewing agency. Reviewers will be senior engineers or operations specialist qualified to perform their respective reviews. All deliverables will be reviewed and issued by the Project Manager. Moreover, QA/QC is continuous throughout the Project – e.g., reviewers participate in internal layout and flowsheet meetings early in design and as these layout and flowsheet concept evolve; equipment sizing calculations are reviewed to assure subsequent design effort is invested properly and wisely; and design concepts for non-process disciplines are reviewed at their earliest stages of development.

Scope of Services

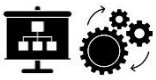
Final Design Services

General Matters Related to Final Design

Task(s)	Description	Services
1	Status Reports	Provide monthly Status Reports. Topics of the Status Reports will include Activities This Period, Near-Term Activities, Outstanding Issues, Budget Position, and Schedule.
2	Meeting Notes	Provide Meeting Notes documenting discussions, decisions, City comments, and City direction.
3	Quality Reviews	Perform quality reviews throughout the duration of the Project.
4	Communication	Conduct informal meetings and conference calls with the City to review progress, get direction, and enhance coordination in advance of or outside of Workshops.
5	Construction Contract	Produce Bidding and, following execution, Contract Documents using the Standard General Conditions of the Construction Contract prepared by the Engineers Joint Contract Documents Committee (EJCDC) and amended by the Supplementary Conditions for the Project

Phase 400 – Refined Layout and PIDs

At this Phase of the Project, Donohue will have provided the City a Preliminary Design Report (PDR) that documents the design progress to this Phase. Drawings will include Preliminary Layout Drawings and Preliminary Layout Process and Instrumentation Drawings (PIDs). The Preliminary Layout Drawings reflect preferences, requirements, and direction provided by the based on cursory reviews in Workshop settings. These Drawings are, as the name implies, preliminary. The Preliminary Layout PIDs included in the PDR are largely schematics showing major equipment, valves, and flow streams without instrumentation, tag numbers, and I/O.

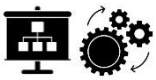
Task(s)	Description	Services
1	Workshop 	Prepare for, conduct, and document a Final Design Workshop. Attendees will review and discuss the Preliminary Design Report in its entirety, focusing largely on the configurations represented in the Preliminary Layout Drawings, operating strategies, and major process equipment selections. We will also bring DRAFT Requests for Proposals (RFPs) for two major systems: the effluent filtration system and the biosolids dryer system. The first purpose of this multi-day Workshop is to collaboratively refine the Layout Drawings, operating strategies, and major process equipment selections to better accommodate and reflect City requirements, preferences, and supplemental information Donohue obtained as the design progressed. The second purpose of this Workshop is to collaboratively review and refine the RFPs. We will send the RFPs to the system manufacturers several days after the Workshop. The responses to these RFPs will provide the base of information the City can and will use to select their preferred system providers.

		Candidate filtration system providers are Kruger and Aqua Aerobics. Attendees will discuss additional filtration systems manufacturers and determine if others warrant consideration and an opportunity to submit a proposal. Candidate dryer system providers are Huber and Kruger. Attendees will discuss additional dryer system styles and manufacturers, and determine if others warrant further consideration. The third purpose of this Workshop will be to define or productively advance towards defining a Facility-wide NFPA 820 compliance strategy. Donohue will prepare exhibits showing present-day NFPA 820 room ratings and potential Facility modifications to enhance compliance and safety.  Meeting Materials Meeting Notes DRAFT RFPs: Filtration System, Dryer System
2	Refine Equipment Selections Web Meeting 	Perform the necessary engineering analyses and work with reputable and/or preferred equipment manufacturers to refine the type and sizing of major process equipment. Types and sizing will reflect City requirements and preferences provided at the previous Workshop. As part of this Task, Donohue will receive the RFPs for the filtration and dryer systems and summarize relevant proposal information in a memorandum. Prepare for, conduct, and document a web meeting to review the RFPs and memorandum. The purpose of this web meeting is to select the preferred filtration and dryer system. From this point in the Project, Donohue will advance the design with the selected systems. The City and Donohue will begin negotiations with the selected system providers and work collaboratively to define the final scope of supply and specifications for these systems. Produce a motor list documenting the motor types and sizes for the major process equipment.  RFP Review Memorandum: Filtration System, Dryer System Meeting Notes
3	Refine and Advance Layout Drawings	Refine the Preliminary Layout Drawings and hydraulic profile to reflect City requirements and preferences provided at the previous Workshop and web meeting. The refined Drawings will reflect the selected filtration system, the selected dryer system, properly sized pieces of major process equipment, the clearances required for unencumbered operating and maintenance activities, and necessary lifting equipment.
4	Refine and Advance PIDs	Refine the Preliminary Layout PIDs to reflect the selected filtration system, the selected dryer system, and City requirements and preferences provided at the previous Workshop and web meeting. Advance the Preliminary Layout PIDs to add instrumentation, tag numbers, and I/O.
5	Refine and Advance Operating Strategies	Refine the mass balance and Operating Strategies to reflect the selected filtration system, the selected dryer system, and City requirements and preferences provided at the previous Workshop and web meeting.

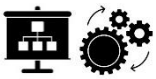
6	Refine and Advance Energy Balance/Strategy	Refine the energy balance/strategy so it is consistent with the refined mass balance and to reflect the selected filtration system, the selected dryer system, and City requirements and preferences provided at the previous Workshop and web meeting. Refine the economic analysis so it is consistent with the energy balance/strategy.
7	Refine Cost Opinion	Update and refine the Construction Cost Opinion to reflect the selected filtration system, the selected dryer system, and City requirements and preferences provided at the previous Workshop and web meeting.
8	Informal On-Site Meetings and Site Visits	Donohue will likely visit the site several times (two trips assumed) during this Task to obtain or verify Facility information. Team members that visit the Facility may review design-related concepts or strategies with Facility staff.
9	Survey	Complete a topographic survey of existing structures, pavement, perimeter fence, gates, utilities, and other topographic features for design and construction. Use the appropriate datum (vertical reference system) for City of La Crosse infrastructure improvements. Establish at least three survey reference markers.
10	Geotechnical	Perform a geotechnical investigation that includes soil borings at the proposed location for new structures. Produce a geotechnical report that includes recommendations for new structure foundations, piping installation, and discusses potential construction difficulties posed by local soil and groundwater conditions.

Phase 500 – Final Layout

Task(s)	Description	Services
1	Complete Manufacturer Selections	Collaborate with the City to negotiate and define the final scope of supply and associated cost for the City-selected filtration and dryer systems. At the completion of this Task, all major process equipment will be sized and defined: dimensions, weights, lifting requirements, access requirements, and utility requirements. Continue to coordinate with electric, natural gas, and water utilities.
2	Produce Final Layout Drawings and PIDs	Develop Final Layout Drawings for all structures affected by the Work of the Project. These drawings will be suitable for a close and thorough review by the City and incorporate City requirements, preferences, and cost-saving measures accepted by the City. The Final Layout Drawings will be developed to a higher degree of completion than the Preliminary and Refined Layout Drawings, and reflect the City-selected approach to address NFPA 820 compliance. In general, these drawings will include or show items like those listed below that were not included on previous drawings. • Site plans with details such as yard piping; grading; sidewalks; and pavement. • Process details such as sample sinks; meters; and equipment water connections. • Structural details such as roof framing; wall and roof types; floor, roof, and wall openings; elevators, overhead doors and lifting equipment; equipment pads; floor hatches; floor slopes; roof drain systems; framing; beams; and columns.

		• HVAC equipment such as ducts; air handling equipment; windows, louvers, intakes, and grilles; fire protection system; and hazardous ratings • Electrical components such as electrical duct banks; panels; and building lighting • Plumbing components such as fixtures; the floor drain system; eyewashes and emergency showers; and fire protection systems. • Electrical one-line diagrams and elevations. • PIDs with instruments, tag numbers, and I/O. • Process Control Network Diagram. At the completion of this Task, the drawings are approximately 60%-complete.
3	Produce Outline Specifications	Produce Outline Specifications that document major equipment sizes/characteristics and potential or already-selected major equipment manufacturers. The Outline Specifications will also define Construction Constraints for the Contractor and summarize a potential Construction Work Sequence. At the completion of this Task, the specifications are approximately 60%-complete.
4	Refine Cost Opinion	Update and refine the Construction Cost Opinion to reflect the design to this point of the Project.
5	Perform Air Permit Evaluation	After the various emitters and their locations are defined, perform an air permitting analysis that considers each of these emitters and determine if the Facility will be eligible for or what measures will make it eligible for a Registration Operating Permit (ROP), avoiding a more exhaustive and onerous Title V Permit. Perform dispersion modeling as part of this analysis. This analysis will be performed by SEH. Donohue has worked with SEH in a similar capacity on similar projects – e.g., Milwaukee MSD and Sheboygan.
6	Workshop 	Prepare for, conduct, and document a Final Design Workshop. Attendees will review and discuss incorporations made to the Final Layout Drawings, PIDs, other design work products, and the Cost Opinion. This is generally considered the best and final opportunity for the City to review the Final Layout Drawings and PIDs before the design advances to produce Reviewable Construction Drawings and Specifications.  Meeting Materials Meeting Notes
7	Incorporate City Revisions	Refine the Final Layout Drawings to reflect City requirements and preferences provided at the previous Workshop. If these work products are acceptable to the City, the design work will advance to the subsequent Phase, producing reviewable Construction Drawings and Specifications.
8	Informal On-Site Meetings and Site Visits	Donohue will likely visit the site several times (two trips assumed) during this Task to obtain or verify Facility information. Team members that visit the Facility may review design-related concepts or strategies with Facility staff.

Phase 600 – Construction Drawings

Task(s)	Description	Services
1	Produce Reviewable Construction Drawings and Specifications	Produce Construction Drawings showing and Specifications defining all Work associated with the Project. A tremendous amount of effort is expending during this Task as, at the completion of this Task, each individual design engineer feels their portion of the Bidding Documents are bid-ready. Of course the Documents are not ready for bidding as the various engineering disciplines have not yet coordinated their designs and they have not yet received a thorough Quality Control review. That critical coordination and Quality Control review happens during the subsequent Phase.
2	Refine Cost Opinion	Update and refine the Construction Cost Opinion to reflect the design to this point of the Project.
3	Submit Reviewable Bidding Documents to the WDNR	Submit Reviewable Bidding Documents to the WDNR by the September 30, 2020 funding deadline. We have a long successful history of submitting Documents at this Phase of a design Project to the WDNR and successfully satisfying the funding requirement. Donohue has always preserved funding eligibility and obtained WDNR approval.
4	Respond to WDNR Comments	If necessary, provide follow-up clarifications/explanations or design modifications in response to WDNR comments.
5	Workshop 	Prepare for, conduct, and document a Construction Drawings Workshop. Attendees will review and discuss the Reviewable Construction Drawings and Specifications, as well as the Cost Opinion.  Meeting Materials Meeting Notes
6	Incorporate City Revisions	Refine the Reviewable Construction Drawings and Specifications to reflect City requirements and preferences provided at the previous Workshop.
7	Informal On-Site Meetings and Site Visits	Donohue will likely visit the site several times (two trips assumed) during this Task to obtain or verify Facility information. Team members that visit the Facility may review design-related concepts or strategies with Facility staff.
8	Refine Cost Opinion	Update and refine the Construction Cost Opinion to reflect City requirement and preferences provided at the previous Workshop.

Phase 700 – Review and Coordination

Task(s)	Description	Services
1	Perform Designer Review	Perform an internal Designer Review and conduct internal Designer Coordination meetings. These coordination meets are particularly important for coordination of process, electrical, and controls elements of the Bidding Documents.
2	Perform Plans-in-Hand Review	Perform on on-site Plans-in-Hand review. Each designer and select Quality Control reviewers visit the site with the near-final drawings in hand. The purpose of this important effort is to field-verify, one final time, that existing structures and equipment are properly represented, removal Work is

		properly defined, and new Work will fit and function as shown on the drawings.
3	Incorporate Designer Review Revisions	Submit Reviewable Bidding Documents to the WDNR by the September 30, 2020 funding deadline. We have a long successful history of submitting Documents at this Phase of a design Project to the WDNR and successfully satisfying the funding requirement. Donohue has always preserved funding eligibility and obtained WDNR approval.
4	Workshop 	Prepare for, conduct, and document a Construction Drawings Workshop. Attendees will review and discuss the Reviewable Construction Drawings and Specifications, as well as the Cost Opinion.  Meeting Materials Meeting Notes
5	Incorporate City Revisions	Refine the Drawings and Specifications to reflect City requirements and preferences provided at the previous Workshop.
6	Perform Final QC Review	Perform a thorough and final Quality Control Review. Senior engineers and technical advisors that did not develop the drawings, specifications, or Cost Opinion closely review the Bidding Documents and Cost Opinion, focusing primarily on their area of expertise – i.e., construction administration, civil, structural, process, mechanical, electrical, and controls. Review comments are distributed to the design team and must be addressed.
7	Incorporate Final QC Revisions	Revise the Bidding Documents to address Quality Control comments.
8	Refine Cost Opinion	Update and refine the Construction Cost Opinion to reflect City requirement and preferences provided at the previous Workshop as well as the Quality Control review comments/revisions.

Funding Services

Task(s)	Description	Services
1	Produce DRAFT Clean Water Fund Application	Produce and submit a DRAFT Clean Water Fund Application. Use information requested of and provided by the City to complete the application. Review and discuss the DRAFT with the City.
2	Produce FINAL Clean Water Fund Application and Submit to WDNR	Produce a FINAL Clean Water Fund Application that addresses City comments related to the DRAFT. Submit the FINAL Clean Water Fund Application to the WDNR by September 30, 2020.
3	Secure Focus on Energy Funds and energy-rebates	Produce and submit a proposal for Focus on Energy incentive grants for eligible components of the Work. We will collaborate with the City and Focus on Energy to determine the most favorable time to secure these grants [Sep 2020 or Jan 2021].

Bidding Services

Task(s)	Description	Services
1	Advertise the Project and Provide Hardcopies	Advertise the Project on QuestCDN and using other venues requested or required by the City. Provide the City with three hardcopy sets of the Bidding Documents.
2	Conduct Pre-Bid Conference	Prepare for, conduct, and document a Pre-Bid Conference to review the Project and Bidding Documents.
3	Respond to Questions	Respond to questions posed by Bidders.
4	Issue Addenda	Issue necessary Addenda.
5	Provide a Recommendation	Review the Bids and provide a written recommendation for award. This recommendation will consider the Project budget, the base bid prices, and the alternate prices.

Construction Services

We understand the Services outlined below will not be included in the Final Design Contract. The Scope of Services language that follows is for review, discussion, and refinement with the City. The proposed Construction Services fee included in a subsequent section of this proposal is based on the Construction Services delineated below.

Summary

Donohue will perform Construction Phase Services consistent with those of the "Engineer" as delineated in the Bidding and Contract Documents, which specifically list Donohue as the Engineer. The Bidding and Contract Documents for this Project use the Standard General Conditions of the Construction Contract prepared by the Engineers Joint Contract Documents Committee (EJCDC) and amended by the Supplementary Conditions for the Project. The Standard General Conditions and Supplementary Conditions represent the Standard Terms and Conditions (STC).

Roles

Construction Contract Administrator (CCA) - The Construction Contract Administrator (CCA) is a Donohue employee that provides Contract administration among the Project participants. These participants may include the City, the on-site Resident Project Representative (RPR), the Operations Specialist (OS), Donohue design team members, the Contractor, the WDNR, and various other agency representatives. The CCA administers the contract between the City and the Contractor. The STC included in the Bidding and, after execution, Contract Documents, are part of the Contractor's contract with the City. As established in the STC, documentation from the Contractor and City are routed through the CCA. The CCA possesses a high level of experience with and understanding of the STC. The CCA takes an active role in the interpretation of the Contract Documents, enforcement of the Contract Documents, problem resolution, and conflict resolution.

■ Prepare Contract Documents for execution by the City and Contractor. ■ Review and comment on the construction schedule provided and maintained by the Contractor. ■ Review and comment on the Contractor's schedule of values that forms the basis of payment applications. ■ Prepare for and conduct the Pre-Construction Conference. ■ Attend the Contractor's monthly progress meetings and special, more frequent, progress meetings during particularly active construction periods. ■ Provide guidance in the application of the STC by the contracting parties. ■ Review, comment on, and process the monthly payment applications submitted by the Contractor. Address any known lien waiver issues and subcontractor payment concerns. ■ Evaluate and respond to Contractor claims related to differing subsurface or physical conditions. ■ Evaluate and respond to the presence of unforeseen hazardous environmental site conditions. ■ Support City with

questions related to the Contractor's issuance of project bonding requirements. ■ Manage the shop drawing technical review process. Receive, log in/out, complete technical review, and make formal distribution of reviewed copies to the City and Contractor. ■ Manage the technical review of proposed equipment substitutions submitted by the Contractor. ■ Review, evaluate, and authorize minor variations from the Contract requirements that do not involve an adjustment to the Contract price or time. ■ Confer with the RPR, and receive input from design team members, as it may relate to the rejection of defective Work. Issue appropriate correspondence to the Contractor. ■ Schedule site visits by design team members, as appropriate, for more detailed and specialized review of the Contractor's Work. ■ Address changes in the Work. Determine if the change is a compensable change. If it is, evaluate the Contractor's cost for acceptability. If found acceptable, prepare the proper change orders to the Contract and process through the City and Contractor. Help negotiate with the Contractor on cost appropriateness and differences of opinion on submitted cost claims. ■ Administer the request for information (RFI) process. Receive the RFI from the Contractor, forward to appropriate designers for resolution and response, and makes formal distribution of the completed RFIs. ■ Assist in the evaluation of Contractor claims. ■ Addresses Contractor claims related to delay circumstances. Evaluate the merits of the delay claim and issue recommendation on acceptance or denial of the claim. ■ Manage the Project commissioning process and systems demonstration. ■ Manage the Project completion closeout process. ■ Manage circumstances related to suspension of Work or termination of Work. ■ Issues Certificates of Substantial Completion when the Contractor has met the contract requirements for substantial completion.

Resident Project Representative (RPR) – The Resident Project Representative (RPR) is an on-site Donohue employee that acts as a liaison between the City, Contractor, the CCA, and the design team members. The RPR provides services related to making sure the Contractor adheres to the technical requirements of the Contract in terms of Workmanship, adherence to schedule, and adherence to the specification requirements The RPR is the first response to field questions, obtains background evidence related to unforeseen conditions, consults with the design team members on matters of design interpretation, provides input into acceptability of contract payment applications, and prepares appropriate reports documenting the construction activities and progress. A foremost objective of the RPR is to facilitate the Project progressing efficiently. If for any reason the Contractor is obstructed or delayed in the progress of his Work, the Contractor may submit claims to the City for lost time and money resulting from disruptions in the Work.

■ Schedule: Review the progress schedule prepared by the Contractor for compliance with the Contract. Monitor the Contractor's progress as it relates to the schedule and provide written documentation related to the events that may be disrupting the Contractor's progress, whether within the control of the Contractor or outside his control. ■ Conferences: Attend the pre-construction conference and Contractor's monthly and weekly progress meetings. Provide input as necessary and appropriate. ■ Liaison: Serve as Donohue's liaison with the Contractor working principally through the Contractors superintendent. Assist Donohue in obtaining from the City additional details or information, when required, for proper and efficient execution of the Work. ■ Approvals: Obtain from the Contractor a list of proposed suppliers and subcontractors. ■ Samples: When required, assist Donohue in obtaining field samples of materials delivered to the site and keep record of actions taken by Donohue. ■ Shop Drawings: Receive approved shop drawings and other submissions from Donohue, maintain a file of the drawings and submissions, and check construction for compliance with them. The RPR checks the Contractor's Work against the shop drawing information. Alert the Contractor's superintendent when the RPR observes materials or equipment being installed before approval of shop drawings or samples, where such are required, and inform the CCA when the RPR believes it is necessary to disapprove Work as failing to conform to the Contract Documents. ■ Review of Work, Inspections, and Tests: Conduct on-site observations of the Work in progress for Donohue as a basis for determining that the Project is proceeding in accordance with the Contract Documents, and report to the CCA whenever the RPR believes that any Work should be rejected or specially tested, or that the Work should be stopped to ensure that the completed Project will comply with the requirements of the Contract Documents. ■ Verify that tests, including equipment and systems startup, which are required by the Contract Documents are conducted and that the Contractor maintains adequate records thereof; observe, record, and report to the CCA appropriate details relative to the test procedures and startups. ■ Acknowledge visiting inspectors representing public or other

agencies having jurisdiction over the Project and report their presence to the CCA. ■ Modifications: Consider and evaluate Contractor's suggestions for modifications in drawings or specifications and report them with recommendations to the CCA. ■ Records: Maintain at the job site orderly files for correspondence, reports of job conferences, shop drawings, and other submissions, reproductions of original Contract Documents including Addenda, Change Orders, Field Orders, and additional drawings issued subsequent to the award of the Contract, Donohue's interpretations of the Contract Documents, progress reports, and other Project related documents. Keep a diary or log book, recording hours on the job site, weather conditions in general, and specific observations in more detail as in the case of observing test procedures. Record names, addresses, and telephone numbers of contractors, subcontractors, and major material suppliers. Maintain a set of drawings on which authorized changes are noted and deliver to the design team at the completion of the Project. ■ Reports: Furnish to the CCA periodic reports, as required, of progress of the Project and the Contractor's compliance with approved progress schedule. Consult with the CCA in advance of scheduled major tests, inspections, or start of important phases of the Project. ■ Completion: Prior to inspection for Substantial Completion, submit to the Contractor a list of observed items requiring correction. Conduct final inspection in the company of the design team members and the City and prepare a final list of items to be corrected. Verify that the items on the final list have been corrected and make recommendations to the CCA concerning acceptance. ■ Except upon written instructions from the CCA, the RPR: Shall not authorize any deviation from the Contract Documents; Shall not undertake any of the responsibilities of the Contractor, the subcontractors, or the Contractor's superintendent; Shall not expedite the Work for the Contractor; Shall not advise on or issue directions relative to any aspect of the means, methods, techniques, sequences, or procedures of construction, unless such is specifically called for in the Contract Documents; Shall not authorize the City to occupy the Project in whole or in part; Shall not participate in specialized field or laboratory tests; Shall not participate in or be a part of any OHSA construction inspections of the Contractors Work process; and Shall not in any way be involved in the Contractor's safety program, monitoring of the safety program or the execution of the Contractor's safety program.

Operations Specialist (OS) – The OS is a certified operator and/or process engineer. This individual develops documents related to hands-on operations, systems training, startup planning, and systems startup. The OS provides training to the City using vendor equipment information, Donohue-developed control strategies, and the design intent of the process systems.

■ Help the Contractor develop startup plans based on the Contract Documents and Contractor's schedule. ■ Review manufacturer Operation and Maintenance materials for compliance with the Contract Documents. ■ Prepare appropriate Process Training Modules. ■ Present Process Training Modules to the City. ■ Prepare Standard Operating Procedures (SOP's). ■ Conduct SOP training concurrent with manufacturer training. ■ Provide City with FINAL SOP's after each system has operated for several months, incorporate operations changes and City comments. ■ Review vendor training materials for compliance with Contract Documents. ■ Assist City with selected process startups. ■ Troubleshoot process and equipment issues. ■ Work with City and Applications Engineer/Programmer to request controls modifications.

Design Team Members – Designers will remain involved in the Project during the Construction Phase.

■ Conduct a technical review of the Contractor's shop drawings and submittals, as it relates to their portion of the design, to determine that the design intent of the Project is achieved. ■ Answer Contractor-submitted contract clarification requests and other field questions related to their portion of the design to assure the design intent of the Project is achieved. ■ Assist the RPR by answering his questions related to the Project's design intent, help the RPR in clarifying the design plans and specifications, and help the RPR address unknown and unforeseen site conditions. ■ Assist the CCA in addressing changes to the Contract. ■ Assist in evaluating whether a changed condition is compensable, help develop technical guidance on proposed changes, and help assist in the cost evaluation of changes. ■ Provide periodic visits to the site to assist in providing on-site inspection of specific completed Work; especially at the time of when the punch list stage is underway. ■ Assist the RPR in the inspection of the completed Work and in developing system specific punch lists of corrective Work.

Services: Exclusive of Resident Project Representative (RPR)

Construction Contract Document Execution: Support the City with the preparation of Contract Documents for signature by the Contractor and the City. Support the City with the issuance of a Notice to Proceed with Construction upon satisfactory submission of bonds and insurance by the Contractor. ■ Provide hardcopies and electronic PDFs to the City and Contractor of the final conformed Contract Documents. ■ **General Administration of Construction Contract**: Consult with City and act as the City's representative as provided in the STC of the Contract Documents as included in the Project manuals. The extent and limitations of the duties, responsibilities and authority of Donohue as assigned in the STC shall not be modified, except as Donohue and City agree in writing. ■ **Pre-Construction Conference and Progress Meetings**: Attend and conduct a Pre-Construction Conference for the Project prior to commencement of Work at the Project site. Also attend the monthly and weekly construction progress meetings, conducted by the Contractor, for the Project. Donohue shall prepare and distribute minutes for the Pre-Construction Conference and the Contractor shall prepare and distribute all progress meeting minutes. ■ **Visits to Site and Observation of Construction**: Perform the services delineated below in connection with observations of Contractor's Work in progress for the Project. ■ Make visits to the Site at intervals appropriate to the various stages of construction, as Donohue deems necessary, in order to observe as an experienced and qualified design professional the progress and quality of the Work. Such visits and observations by Donohue and the RPR are not intended to be exhaustive or to extend to every aspect of a Contractor's Work in progress or to involve detailed inspections of a Contractor's Work in progress beyond the responsibilities specifically assigned to Donohue in this Agreement and the Contract Documents, but rather are to be limited to spot checking, selective sampling, and similar methods of general observation of the Work based on Donohue's exercise of professional judgment as assisted by the RPR. Based on information obtained during such visits and such observations, Donohue will determine in general if the Contractor's Work is proceeding in accordance with the Contract Documents, and Donohue shall keep the City informed of the progress of the Work. ■ The purpose of Donohue's visits to, and representation by the RPR at the Project site, will be to enable Donohue to better carry out the duties and responsibilities assigned to and undertaken by Donohue during the Construction Phase. Donohue shall not, during such visits or as a result of such observations of the Contractor's Work in progress, supervise, direct, or have control over a Contractor's Work, nor shall Donohue have authority over or responsibility for the means, methods, techniques, sequences, or procedures of construction selected by a Contractor, for safety precautions and programs incident to a Contractor's Work, or for any failure of a Contractor to comply with Laws and Regulations applicable to Contractor's furnishing and performing the Work. Accordingly, Donohue neither guarantees the performance of any Contractor nor assumes responsibility for any Contractor's failure to furnish and perform its Work in accordance with the Contract Documents. ■ **Defective Work**: Recommend to the City that the Contractor's Work be disapproved and rejected while it is in progress if, on the basis of such observations, Donohue believes that such Work will not produce a completed Project that conforms generally to the Contract Documents or that it will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents. ■ **Clarifications, Interpretations, and Field Orders**: Issue clarifications and interpretations of the Contract Documents as appropriate to the orderly completion of the Contractor's Work. Donohue may issue Field Orders authorizing minor variations from the requirements of the Contract Documents. ■ **Change Orders and Work Change Directives**: Recommend Change Orders and Work Change Directives to the City and prepare Change Orders and Work Change Directives for approval by the City as required. In addition, Donohue shall prepare documentation that appropriate governmental authorities having jurisdiction over the Project may require for review and approval of the Change Orders. ■ **Shop Drawings and Samples**: Provide a technical review and approve or take other appropriate action in respect to shop drawings, samples, and other data that the Contractor is required to submit, but only for conformance with the information given in the Contract Documents and compatibility with the design concept of the Project as a functioning whole as indicated in the Contract Documents. Such reviews and approvals or other action will not extend to means, methods, techniques, sequences or procedures of construction or to safety precautions and programs incident thereto. Develop and manage a procedure to efficiently obtain and consider City review comments. ■ **Manufacturer Operation and Maintenance Manuals**: Review submitted manufacturer manuals for compliance with Contract Document requirements. Reviewed manual submittals that comply with the Contract Document requirements will be forwarded to the City. ■ **Substitutes**: Evaluate and

determine the acceptability of substitute or "or-equal" materials and equipment proposed by the Contractor. ■ **Inspections and Tests**: As appropriate and at the request of the City in conformance with the hours allocated to the On-Site Review Services line items, witness special inspections or tests of a Contractor's Work required by the Contract Documents. Receive and review all certificates of inspections, tests, and approvals required by the Contract Documents. Donohue's review of such certificates will be for the purpose of determining that the results certified indicate compliance with the Contract Documents and will not constitute an independent evaluation that the content or procedures of such inspections, tests, or approvals comply with the requirements of the Contract Documents. Donohue shall be entitled to rely on the results of such tests. ■ **Disagreements between City and Contractor**: Render formal written decisions on claims of City and Contractor relating to the acceptability of Contractor's Work or the interpretation of the requirements of the Contract Documents pertaining to the execution and progress of Contractor's Work. In rendering such decisions, Donohue shall be fair and not show partiality to City or Contractor and shall not be liable in connection with any decision rendered in good faith in such capacity. ■ **Substantial Completion**: Promptly after written notice from the Contractor that the Contractor considers the entire Work, or portions of the completed Work, are ready for its intended use, in company with the City, and Contractor, conduct a review to determine if the Work is Substantially Complete. Donohue shall prepare a list of any observed deficiencies during the review. At the direction of the City, Donohue shall prepare and deliver a certificate of Substantial Completion to City and the Contractor. ■ **Startup and Training Services**: An OS or process engineer shall provide startup services for the Project. The startup services shall be timed to assist the City and the Contractor with operation of the project-related systems. Prepare Startup Plan Checklists to coordinate the responsibilities of the Contractor for the Project and the City at the time when construction is Substantially Complete and the facilities are ready for operation. Submit the Startup Plan Checklists to the City and the Contractor for review. Respond to questions and incorporate recommended changes into each Startup Plan Checklist up to two times, as a result of the reviews. Training will occur before startup of specific systems. The OS will provide training using portions of the vendor Operation and Maintenance materials and the Standard Operating Procedures prepared by Donohue. Each training session will be on site with the City and a Contractor's trainers. The sessions will be both classroom and hands-on as appropriate. ■ **Final Notice of Acceptability of the Work**: Conduct a final inspection to determine if the completed Work of the Contractor is acceptable so that Donohue may recommend, in writing, final payment to a Contractor. ■ **Record Documents**: Receive annotated record documents from the Contractor, which are to be assembled by the Contractor in accordance with the Contract Documents to obtain final payment. Prepare Record Drawings showing appropriate record information based on the Project annotated record documents received from the Contractor. The completed Record Drawing deliverables for the Project shall consist of an electronic set in PDF and DWG (AutoCAD) format. ■ **Project Certification**: Submit appropriate documentation to the WDNR as may be requested by them for the close-out of the Project. ■ **Post-Startup Training and Optimization**: After Substantial Completion, Donohue will provide training specific to and work with the City to enhance the performance and cost-effectiveness of commissioned systems. ■ **Limitation of Responsibilities**: Donohue shall not be responsible for the acts or omissions of the Contractor, or of any of its Subcontractors, Suppliers, or of any other individual or entity performing or furnishing any of the Work. Donohue shall not be responsible for failure of the Contractor to perform or furnish the Work in accordance with the Contract Documents.

Services: Resident Project Representative (RPR)

Donohue shall furnish a full-time RPR to assist Donohue in observing progress and the quality of the Work. The nature of the Work may require a part-time RPR to supplement the full-time RPR. ■ **Observations**: Through observations of Contractor's Work in progress and field checks of materials and equipment by the RPR, Donohue shall endeavor to provide further protection for the City against defects and deficiencies in the Work. However, Donohue shall not, during such visits or as a result of such observations of the Contractor's Work in progress, supervise, direct, or have control over the Contractor's Work nor shall Donohue have authority over or responsibility for the means, methods, techniques, sequences, or procedures selected by the Contractor, for safety precautions and programs incident to the Contractor's Work in progress, for any failure of the Contractor to comply with Laws and Regulations applicable to Contractor's performing and furnishing the Work, or responsibility of construction for the Contractor's failure to furnish and perform the Work in

accordance with the Contract Documents. ■ **Duties, Responsibilities, and Authority of the RPR:** RPR is Donohue's agent at the Project site, acting as directed by and under the supervision of the CCA. RPR's dealings in matters pertaining to the Contractor's Work in progress shall in general be with Donohue and Contractor, keeping the City advised as necessary. RPR's dealings with subcontractors shall only be through or with the full knowledge and approval of the Contractor. RPR shall generally communicate with the City with the knowledge of and under the direction of the CCA. ▸ Review the progress schedule, schedule of shop drawing and sample submittals, and schedule of values prepared by the Contractor. ▸ Attend meetings with Contractor, such as the Pre-Construction Conference, monthly progress meetings, weekly job conferences or progress meetings, and other Project-related meetings. ▸ Conduct on-site observations of Contractor's Work in progress to assist Donohue in determining if the Work is in general proceeding in accordance with the Contract Documents. ▸ Report to the CCA whenever RPR believes that any part of the Contractor's Work in progress will not produce a completed Project that conforms generally to the Contract Documents or will prejudice the integrity of the design concept of the completed Project 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; and advise the CCA of that part of Work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval. ▸ When the RPR is present on the Project site, prepare a daily report or keep a diary or log book, recording the Contractor's hours on the site, weather conditions, data relative to questions of Change Orders, Field Orders, Work Change Directives, or changed conditions, site visitors, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures. ■ **Project Completion:** Before Donohue issues a Certificate of Substantial Completion for the Project, submit to the Contractor a list of observed items requiring completion or correction. ▸ Observe whether a Contractor has arranged for inspections required by laws and regulations, including but not limited to those to be performed by public agencies having jurisdiction over the Work. ▸ Participate in a final inspection in the company of the City and the Contractor and prepare a final list of items to be completed or corrected. ▸ Observe whether all items on the final list have been completed or corrected and make recommendations concerning the final acceptance of the Work.

SCHEDULE

DONOHUE

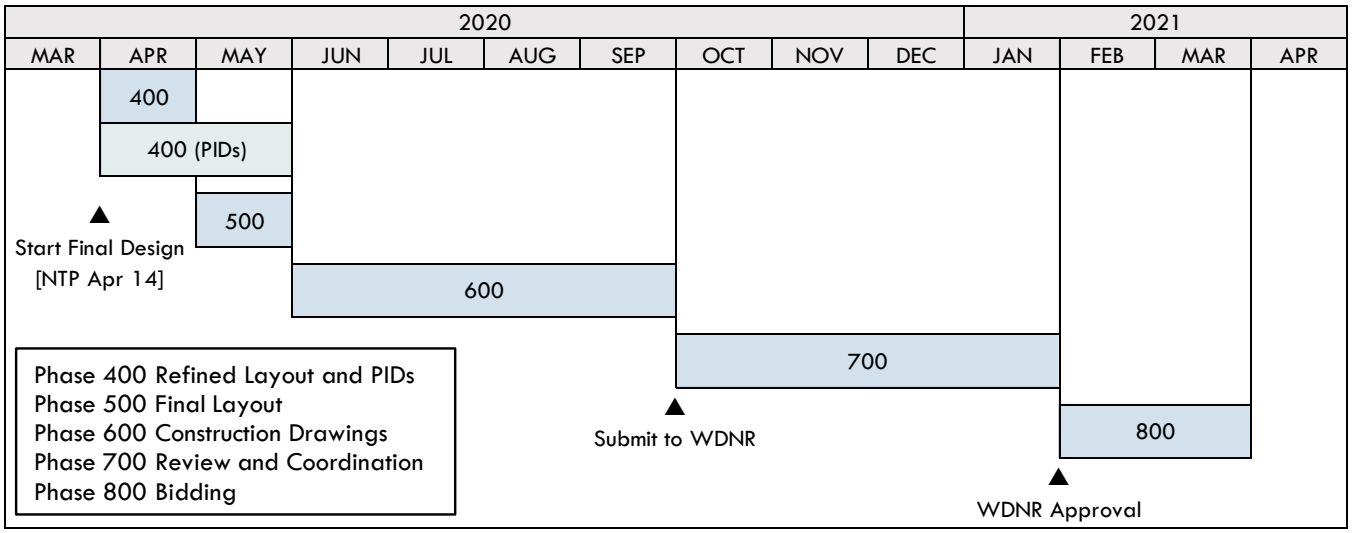
Schedule

Final Design, Bidding, and Funding

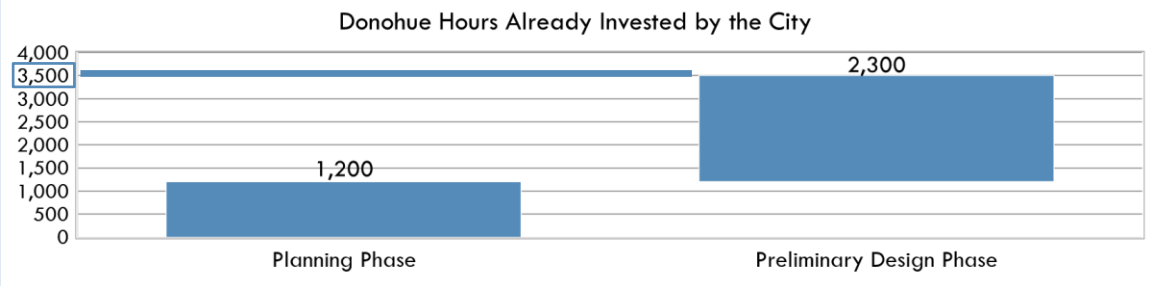
A *proposed* Final Design and Bidding schedule is provided below. The schedule assumes Final Design beginning on or before April 1, 2020. We are prepared to get to work on Final Design if/when we learn we are the selected consultant and before Council approval and a Notice to Proceed (April 14, 2020). The schedule is aggressive and we would like to use the first two weeks in April.

Reviewable Bidding Documents and a Wisconsin Clean Water Fund Application will be submitted to the Wisconsin Department of Natural Resources (WDNR) for review and approval on or before the September 30, 2020 funding deadline. Satisfying this deadline preserves the City's eligibility for $1.75MM in principal forgiveness: $1MM to help fund low-level phosphorus compliance and $0.75MM for hardship assistance.

Proposed Final Design and Bidding Schedule



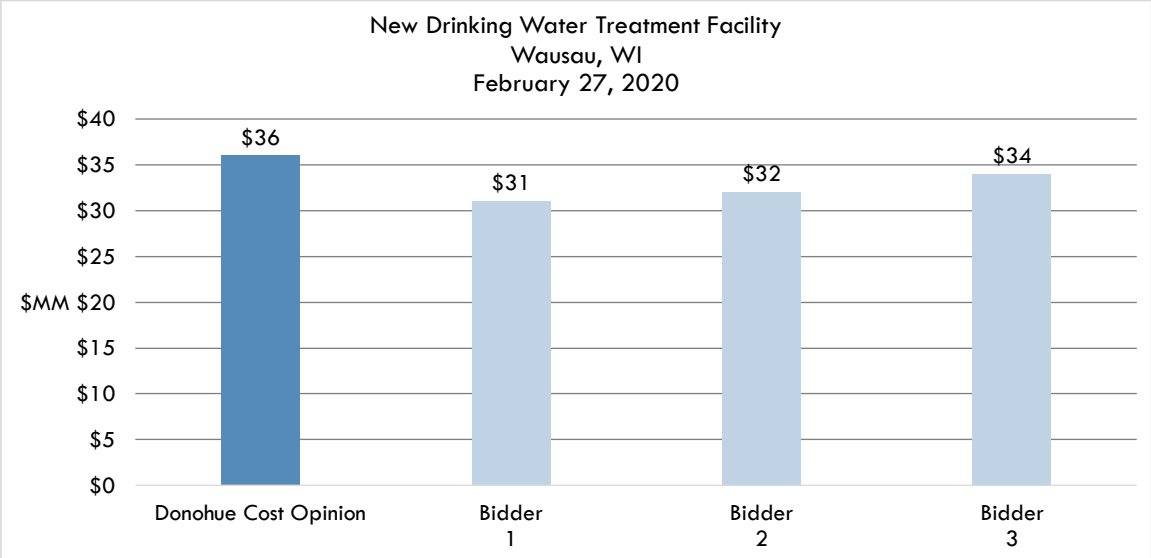
The stakes are high: a tremendous amount of design work must be done, and done well, before the September 2020 funding deadline for $1.75MM in principal forgiveness. Donohue is well and uniquely equipped to meet this challenge: the time, energy, and money the City has already invested in Donohue during planning and preliminary design (see figure below) greatly enhances our ability to meet this aggressive schedule, secure the City's eligibility for principal forgiveness, and produce accurate and reliable bidding documents.



The Bidding schedule assumes the WDNR will approve the Bidding Documents for construction by the February 1, 2021 bid advertisement date. On recent large wastewater projects, the WDNR has requested extensions

to their 90-day review period. Bidding the project in February increases the likelihood that the WDNR will have adequate time to approve the Bidding Documents, construction, and Clean Water Fund loan closing.

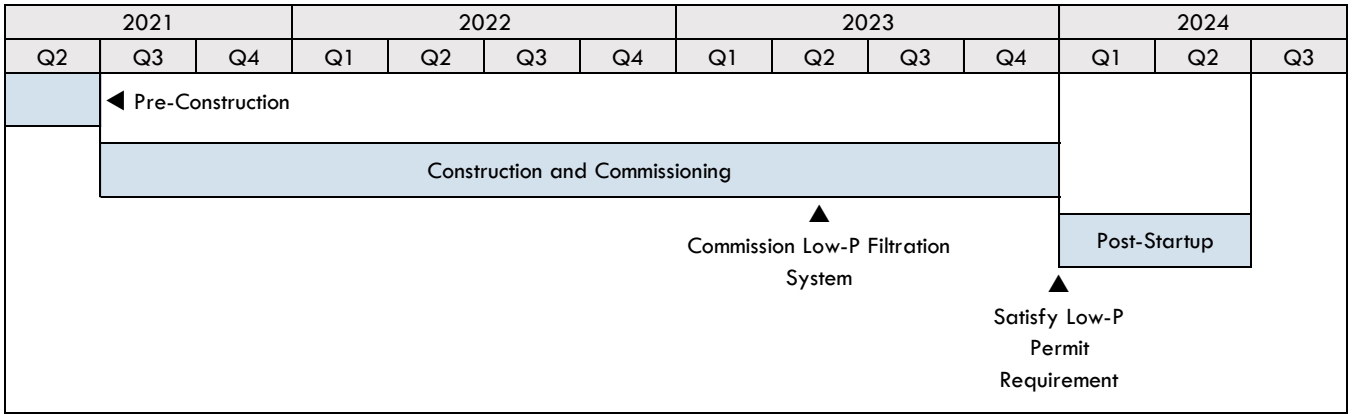
Good time to bid: February is an excellent time to bid a large complex project like this one. Donohue recently opened Bids for a new drinking water treatment facility in Wausau, WI (February 27, 2020). Our construction cost opinion for the base bid was $36MM. The low base bid was $31MM. The City received three competitive bids from three well-qualified bidders (see figure below). The Owner will likely authorize construction for the Base Bid work and all eight Alternates, including a much needed O&M Building.



Construction

A *proposed* Construction schedule is provided below. The schedule assumes a construction Notice to Proceed will be issued by June 1, 2021. This schedule allows ample time for the Contractor to have the low-level phosphorus system commissioned by May 2023, more than six months before the City must begin complying with the low-level phosphorus limit (January 1, 2025).

Proposed Construction Schedule

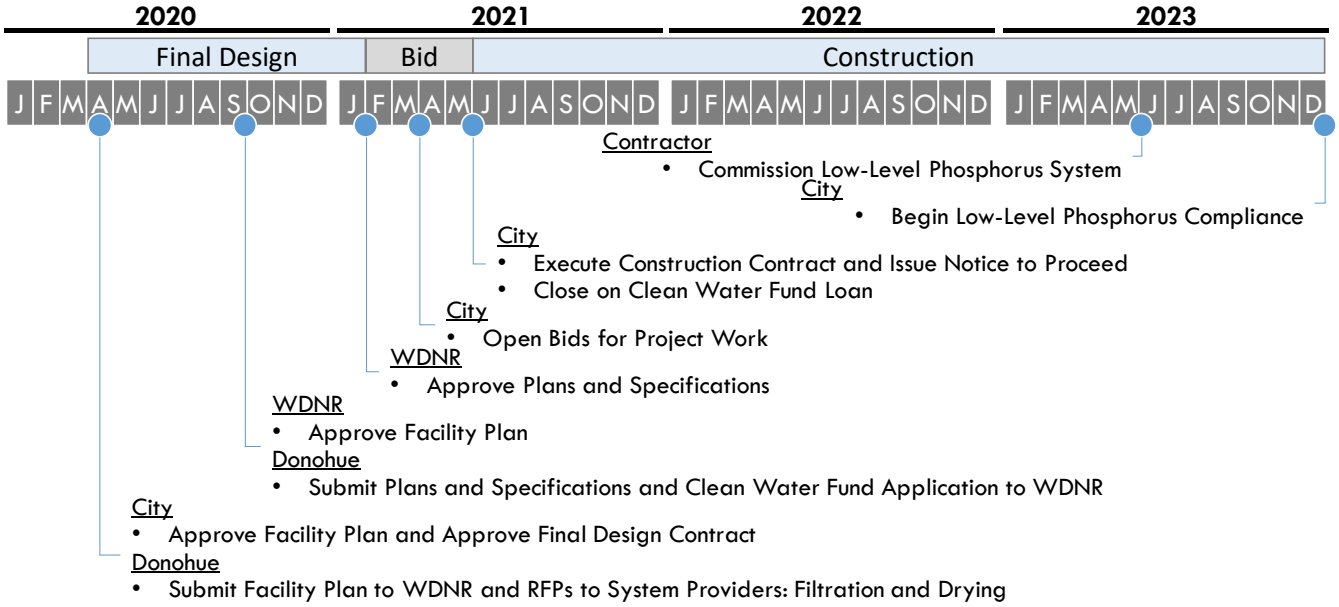


The construction schedule is comfortable: this schedule provides ample time for the Contractor to build and commission the low-level phosphorus filtration system and the balance of the Work. The City will realize the benefit of this favorable schedule on bid day.

Practice makes perfect: the City wants time to operate the low-level phosphorus system before the Permit requires compliance. Our Bidding Documents will require the Contractor commission this system *at least* six months before the low-level phosphorus compliance deadline (January 1, 2025), providing the City time to understand and optimize this system before it needs to consistently reduce effluent phosphorus to less than 0.1 mg-TP/L.

The Project Schedule

A *proposed* Project schedule is provided below with critical milestones.



TEAM

DONOHUE

Firm Backgrounds

Donohue: Wastewater-Focused Firm Built to Deliver

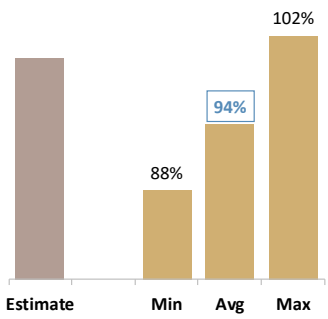
Donohue & Associates, Inc. is an award-winning, employee-owned wastewater specialty firm that large Midwest clients repeatedly trust to deliver their most challenging wastewater improvement projects. We have worked on over 2,700 water/wastewater projects for more than 300 Midwest clients since forming in 1997. We currently have 115 employees in 11 Midwest offices.

Donohue Work Split

Our impressive track record of successfully delivering complex projects is attributed to the technical excellence of our project managers and engineers, our acute attention to detail, our adherence to our rigorous Quality Control program, and our collaborative culture that demands we listen to and work closely with all of our clients' departments: management, engineering, operations, maintenance, procurement and diversity.

Reliable Bidding and Construction Documents

Donohue has produced bidding and construction documents for more than **$2 Billion** worth of wastewater infrastructure since 2000. Our systematic collaborative design workflow has proven effective at producing reliable Bidding and Construction Document for our clients and their contractors.

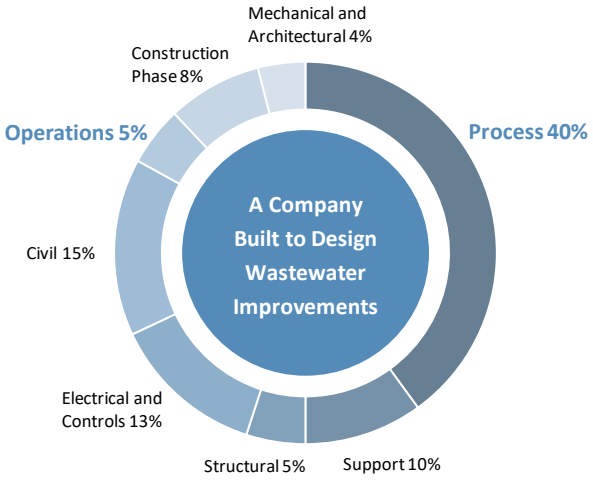


Our Systematic Workflow and Experienced Design Teams Produce **Reliable** Documents

Low Bids Average 94% of Our Estimates on Wastewater Treatment Projects > $20M

Design-Related Change Orders Average < 1% on These Wastewater Projects

We have all the required engineering design disciplines in-house; however, our relatively high percentage of Process Engineers and design-focused Operations Specialists reveals our focus and commitment to wastewater treatment. All of our design teams include Operations Specialists. Their design role is essential to our ability to produce safe, practical, operable, and flexible solutions. The figure below is our staffing by discipline, expressed as a percent of our total.



As an employee-owned firm, our owners are active Donohue employees, a number of whom will be involved leading this project. We feel that this is important because our ownership is invested in ensuring the success of the company and our projects.

La Crosse WWTF Familiarity

Many of our proposed project team members are very familiar with the La Crosse WWTF; this familiarity was gained through recent projects. The individuals on the graphic that follows are currently working on the preliminary design and are assigned to the final design team should Donohue be selected.

Preliminary Design Team Members Proposed for Final Design

- Mike Gerbitz
- Chris Lockett
- Eric Lynne
- Bill Marten
- Wendy Raisbeck
- Aric Bergstrom
- David Goecks
- Mike Stohl
- Shawn Reimes
- Joe Holzwart
- Craig Schuenemann
- Susan Wojtkiewicz

Donohue's Familiarity with La Crosse

SEH: Local, Air Quality and Environmental Experts

SEH is comprised of experienced engineers, scientists, architects, and planners who provide an array of professional services throughout the central United States and Rocky Mountain regions. Founded in 1927, SEH has grown to a well-diversified staff of more than 700 employees in 30 offices, with approximately 150 employees in nine offices strategically located throughout Wisconsin, which includes a La Crosse office.

One of SEH's unique qualifications is their experience providing air quality services to wastewater treatment plants. They have a firm understanding of the continually changing world of air quality regulations and extensive experience solving air quality issues at large wastewater treatment plants. Lead air quality engineer Tom Henning, PE, previously worked at the MCES plant in St. Paul, MN, gaining an in-depth understanding of the operations at a WWTP. Their team of air quality engineers, air dispersion modelers, and scientists have provided air quality related services to nearly every large wastewater plant in Wisconsin.

ISG: Local, Experienced Surveyors

ISG stands as a multi-disciplinary design engineering firm founded in 1973. ISG has 10 offices with over 315 employees throughout the Midwest, including an office in La Crosse with 25 employees.

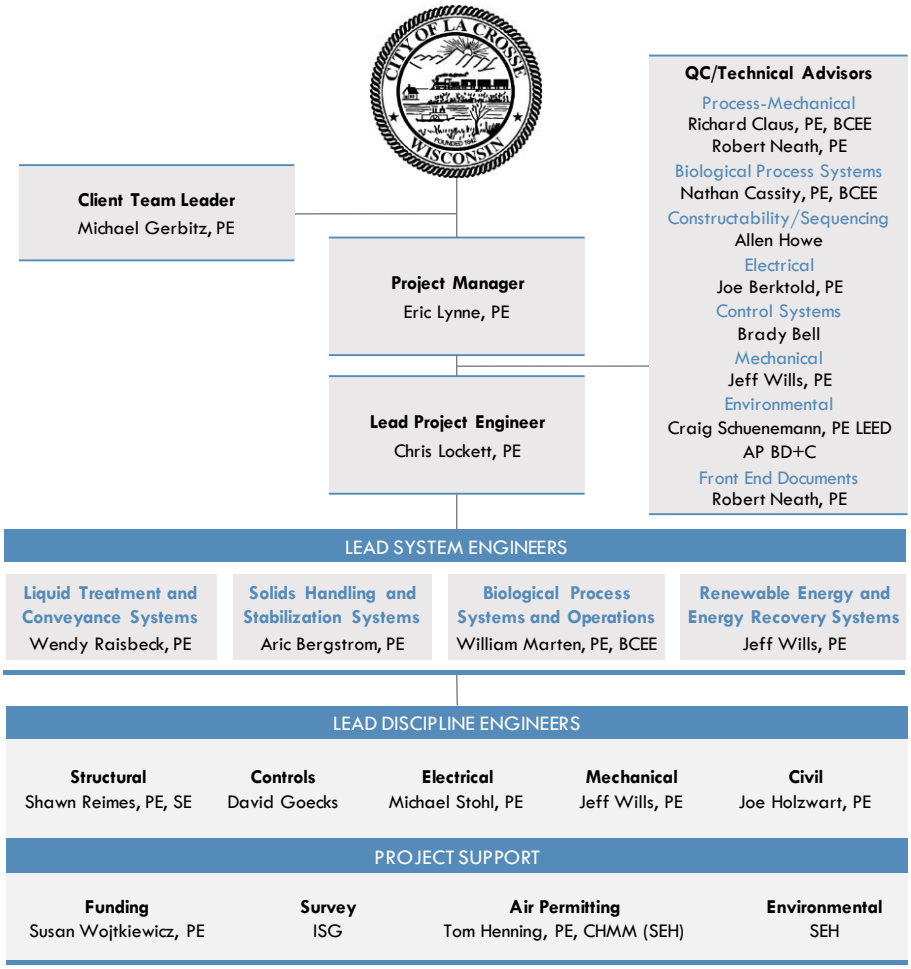
ISG's land survey group uses both traditional surveying methods and state-of-the-art 3D scanning technology and drone services to gather accurate site data. From ALTA and topographic surveys to complete platting services, ISG's licensed and experienced survey team helps get each project off to a safe and solid start by providing dependable, highly focused site and facility conditions data.

City of La Crosse + ISG Project Snapshot

- La Crosse Replacement Housing
- La Crosse Streetscaping
- Market Square Analysis + Reconstruction
- City of La Crosse Fire Department
- 6th Street Reconstruction
- 3rd and Vine Parking Structure
- Kane Street – St. James Street ALTA
- Market Street ALTA Survey
- West Avenue Development
- City of La Crosse City Hall
- City of La Crosse Police Station
- La Crosse Center
- IH90 Culvert Bike/Pedestrian Feasibility Study
- Grandma's Gateway Trail
- City of La Crosse Dive Unit
- Great River Festival Grounds
- City of La Crosse Chamber of Commerce Education Center
- La Crosse Airport
- La Crosse County Landfill
- La Crosse Center Renovation

Project Team

We offer a team of familiar names with proven abilities to La Crosse. Led by Client Team Leader Michael Gerbitz, Project Manager Eric Lynne, and Lead Project Engineer Chris Lockett, the vast majority of your project design will be completed in Donohue's Sheboygan office, where 45 multi-discipline engineers and specialists focus solely on water and wastewater projects in an efficient and coordinated approach. Brief qualifications of our proposed personnel follow. An estimate of the percent of the work each team member will perform is included in the Fee History and Structure section. Resumes are included in the Appendix.



Mike Gerbitz, PE
Client Team Leader

30 Years of Experience

- Proven senior wastewater engineer and project manager with 30 years of experience. Deep experience with large Facility-wide improvement projects throughout the Upper Midwest. Regularly serves as a Reviewer or Technical Advisor on Donohue's largest and most complex projects
- Awarded WEF's notable George Bradley Gascoigne Medal for Research in Wastewater Treatment Plant Operational Improvement

Eric Lynne, PE
Project Manager — 13 Years of Experience

- Eric has developed a strong role as a project manager and lead wastewater process engineer, working closely with owners to ensure that his projects meet the plant's needs both in terms of performance and cost.
- Eric has been involved in nine disc filtration pilot-testing projects across Wisconsin. As lead process engineer at Medford, he was involved with the rehab project to replace deep bed sand filters with disc filters for 0.075 mg/L TP limits.
- Has received numerous CSWEA awards: WEA Service Award, WI Section Service Award, Young Professional of the Year, and 7S membership; currently serves as a CSWEA WEF Delegate
- As Project Manager, Eric will be responsible for schedule, budget, and City/Donohue interactions. He will develop the detailed project schedule, then manage compliance. He will plan the need for necessary resources to assure availability. His goal in City interactions is to maximize efficient input and eliminate "surprises" in the final product.

Chris Lockett, PE
Lead Project Engineer — 18 Years of Experience

- Chris is a highly skilled and respected Senior Project Manager credited with 18 years of experience and knowledge in civil and process mechanical engineering.
- His engineering experience includes process flow development, detailed process mechanical design, civil pipeline design, hydraulics, equipment specification, construction management and start-up services.
- Has lead water/wastewater treatment facility design and design-build projects, having strengths that include project team coordination, client interactions, communication and mentoring/training. He works to build strong, trusting owner/engineer relationships that benefit both current and future projects.

Richard Clause, PE, BCEE
QC/Technical Advisor - Process Mechanical — 22 Years of Experience

- Richard has 22 years of project management and engineering experience in the planning, design and construction administration of water and wastewater facilities. Areas of expertise include the detailed design of treatment plants and pump stations. Served in a key role for the following projects:
  - Project Manager and Lead Process Engineer: WWTP Capacity Upgrade - Phase II
  - Process Engineer: Grit Removal System Evaluation, Elkhart, IN
  - Lead Project Engineer: WPCF Phase 2 Improvements, Muncie, IN
  - Lead Process Engineer: WWTF Phosphorus Removal Improvements, Vincennes, IN
  - Lead Process Engineer: Wastewater Treatment Plant Hydraulic Model Development, Metropolitan Sewer District of Greater Cincinnati, OH

Robert Neath, PE
QC/Technical Advisor - Process Mechanical — 28 Years of Experience

- Robert is a Senior Project Manager and Vice President who has 28 years of experience in the design and construction management of water and wastewater treatment and pump station projects. He is a skilled senior project and construction manager able to communicate effectively with and build consensus among clients, regulators, contractors, and community.
- Robert is currently leading several Metropolitan St. Louis Sewer District projects for Donohue, including a Redundant Sludge Acceptance and Belt Filter Press design project at the 300 mgd Bissell WWTP.
- He gained significant experience serving as Program Manager (5 years) and Engineering Manager (4 years) at Fort Campbell, KY and Fort Irwin, CA, where he was responsible for round-the-clock operations, maintenance, design, and construction of the water and wastewater systems and infrastructure.

Nathan Cassity, PE, BCEE
QC/Technical Advisor – Biological Process Systems — 21 Years of Experience

- Nathan has been involved in an array of projects involving filtration planning, pilot-testing, and/or design at Brookfield, Tyson Foods (New London), Howards Grove, Medford, Janesville, and Whitewater.
- He has performed numerous evaluations and designs for wastewater facilities, including primary and secondary treatment, disinfection, odor control, and handling, treatment, and disposal of biosolids.
- Specializing in process modeling using BioWin and GPS-X process simulators. Some of his recent projects include detailed design and evaluations of biological nutrient removal, facility planning, and capacity studies.

Al Howe
QC/Technical Advisor – Constructability/Sequencing — 25 Years of Experience

- Regarded as one of Donohue's most accomplished detail design engineers with and exceptional attention to detail, Al is a senior process mechanical engineer experienced in all facets of wastewater treatment facilities, particularly plant piping systems.
- Al brings extensive wastewater design experience to your project including process sizing and design hydraulic modeling, preparation of construction plans and specifications, construction cost opinions for facilities throughout the Midwest. Wastewater design upgrades include Appleton, WI; Fort Wayne, IN; Decatur, IL; Marquette, MI; Eau Claire, WI; Stevens Point, WI; Sun Prairie, WI; Sheboygan, WI; Two Rivers, WI; Kenosha, WI; and Evansville, IN.
- Over the past decade, Al has focused on construction administration and observation, where he applies his strict attention to detail to the construction process. This includes wastewater treatment construction projects at NEW Water-Green Bay, Sheboygan, Appleton, Manitowoc, Stevens Point, Kenosha, and Whitewater, WI and Joliet, IL.

Joe Berktold
QC/Technical Advisor - Electrical — 32 Years of Experience

- Joe has 32 years of progressive experience designing electrical systems for water and wastewater treatment facilities.
- He is Donohue's Practice Leader for Electrical Systems. He has given numerous presentations at the national and regional level regarding electrical systems and safety issues related to water and wastewater facilities. This includes arc flash hazards, identifying hazardous classified locations using NFPA 820, and testing plant electrical systems without impacting operations.
- He serves on the National Fire Protection Association's NFPA 820, Standard for Fire Protection in Wastewater Treatment and Collection Facilities technical committee as the WEF representative. Thus, he is very knowledgeable on NFPA compliance and changes made to the standard in the new 2020 version.

Brady Bell
QC/Technical Advisor – Control Systems — 14 Years of Experience

- Mr. Bell has significant experience with all facets of instrumentation and control systems in wastewater treatment. His background includes design, application software, and field services, ranging from software development through startup and owner training.
- Has led recent SCADA/control system upgrades and/or programming at West Chicago, Tuscola, and Galesburg, IL; Coldwater, Battle Creek, Hillsdale, Genesee County, and Wyoming, MI; and Columbia City, Goshen, and Fort Wayne, IN.

Jeff Wills, PE
QC/Technical Advisor – Mechanical — 26 Years of Experience

- Donohue's Practice Leader for *Mechanical Systems and Energy Recovery*.
- 24-year career focused on the planning and design of process-mechanical and energy systems for wastewater treatment facilities. Lead roles include:
  - Willmar, MN Facility Planning and new WWTF

- WLSSD-Duluth Energy Master Plan and related design improvements; Oxygen Supply Facility Plan and Design
- Faribault, MN Facility Planning and WWTF Improvements
- St. Cloud, MN Resource Recovery+Energy Efficiency Evaluation, Biogas System Design, Nutrient Removal and Recovery System Design
- Eau Claire, WI Facility Planning and $40M Plant Upgrade
- Stevens Point, WI Biogas Conditioning, Utilization, and Digester Mixing

Craig Schuenemann, PE, LEED AP BD + C
QC/Technical Advisors - Environmental — 23 Years of Experience

- Craig's experience includes the structural assessment and design of water/wastewater treatment plants. Expertise includes reinforced concrete tanks, reservoirs, foundations, structural steel, reinforced concrete and masonry buildings, pile foundations, and retaining walls.
- Recent tertiary filtration projects include Brookfield, Wausau, Medford, and Howards Grove, WI.
- As LEED AP certified, Craig has an up-to-date understanding of current green building principles and practices.

Wendy Raisbeck, PE
Liquid Treatment and Conveyance Systems — 16 Years of Experience

- Wendy is a wastewater process engineer who specializes in hydraulics and has provided planning, design, and construction phase engineering services on wastewater treatment plants up to 300 mgd.
- Detailed hydraulics analyses include these projects: 10-mgd Disk Filters for CSO Treatment, Rushville, IN; 1.06-bgd WPCP Wet Weather Pump Station Addition, Fort Wayne, IN; 950-mgd WPCP Wet Weather Pump Station and Screenings Building Improvements, Fort Wayne, IN; 300-mgd MMSD South Shore WRF Prelim. and Secondary Capacity Improvements, Milwaukee, WI; 100-mgd WPCP Wastewater Pumps and Clarifier Hydraulic Improvements, Fort Wayne, IN; 95-mgd Coldwater Creek WWTF Final Clarifiers Replacement, St. Louis MSD, MO; and 50-mgd Disinfection System Upgrade, Brookfield, WI.

Aric Bergstrom, PE
Solids Handling and Stabilization Systems — 18 Years of Experience

- Aric has dual experience as a Process Engineer and Control Systems Engineer.
- Has designed major wastewater upgrades for Wausau, Grafton, Stevens Point, WalCoMet SD, Sheboygan, Howards Grove, Cassville, and Onion River WW Commission, WI; and North Shore Water Reclamation District-Gurnee, IL
- His experience includes the planning, design, and specification/documentation of treatment processes and equipment and the associated control systems utilizing PLCs, HMIs, and VFDs.

William Marten, PE, BCEE
Biological Process Systems and Operations — 40+ Years of Experience

- Bill's expertise includes researching, planning, designing, starting up, analyzing, and troubleshooting wastewater treatment systems. He is Donohue's Practice Leader for *Wastewater Biological Processes and Nutrient Removal*.
- Bill has been an operator, a wastewater utility engineer, and has managed a 15-mgd activated sludge plant, giving him a "real world" perspective on every project. In addition, he emphasizes training and learning including providing tools to help staff understand, control and optimize plant processes.
- Significant facility-wide and focused (e.g., nutrient removal, biosolids treatment and handling, capacity assessment, operations assistance, new technology evaluation) experience, including locations such as La Crosse, Beloit, Milwaukee, Sheboygan, Brookfield, Eau Claire, Superior and Sun Prairie, WI; Fort Wayne and Gary, IN; North Shore WRD, Decatur, and Rantoul, IL; Marquette, MI; and Faribault, Willmar, and Becker, MN.
- Awarded WEF's notable George Bradley Gascoigne Medal for Research in Wastewater Treatment Plant Operational Improvement, WWOA's prestigious Koby Crabtree Award, and CSWEA's Academic Excellence Award and 7S Society membership.

Shawn Reimes, PE, SE
Structural — 13 Years of Experience

- Shawn's experience includes the structural assessment and design of wastewater plants. He has experience working on both private and public projects.
- The projects involved the assessment and design of reinforced concrete tanks, reservoirs, foundations, structural steel, reinforced concrete and masonry buildings, pile foundations, and retaining walls.

David Goecks
Controls — 31 Years of Experience

- Dave is a Control Systems Engineer in the Process Control environment, as well as experience as an Electrical Design Engineer in the Industrial environment.
- Experience includes the design, specification/ documentation, and programming of relay and automated power and control systems utilizing PLCs, HMIs, and VFDs.

Michael Stohl, PE
Electrical — 14 Years of Experience

- Mike is a senior electrical design engineer and project manager whose career has focused on the design and construction of electrical systems for the unique demands of water and wastewater facilities.
- Recent project work includes: Design Manager and Electrical Engineer for 340 mgd Lemay Pump Stations 1 and 2 for Metropolitan St. Louis Sewer District, MO. Switchgear replacement with new arc resistant, automated substation switchgear, 1,250 hp VFDs, and 4.16 kV distribution; Project Manager/Design Manager for Main Station Electrical Upgrade, Illinois American Water, Peoria; Electrical distribution system conversion from 2.4 to 13.2 kV at 21 mgd facility, looped distribution with sectionalizing equipment, and 2.0 MW generation; Lead Electrical Engineer for emergency power at dozens of facilities throughout the Upper Midwest.

Joe Holzwart, PE
Civil — 15 Years of Experience

- Joe has expertise in civil/site layout for water/wastewater facilities, sanitary sewers, interceptors, force mains, roadways, and storm sewers.
- Design engineer for NEW Water Dutchman Creek/Scott Bayshore Interceptor, Eastside Interceptor Rehabilitation, and Charles Street Interceptor Improvements.
- In addition to civil and site layout, Joe will oversee survey services provided by ISG.

Susan Wojtkiewicz, PE
Funding — 25 Years of Experience

- Susan is Donohue's funding expert, most recently helping Medford secure a $1,000,000 grant for their wastewater treatment plant. She has also provided funding assistance for projects in Wausau, Stevens Point, Superior, Waukesha, Hingham Sanitary District, and Adell.
- Susan has served as Secretary of the Wisconsin Wastewater Operators Association Northwest Chapter since 2015, working with local operators to support training and professional development opportunities.

Tom Henning, PE, CHMM (SEH)
Air Permitting — 35 Years of Experience

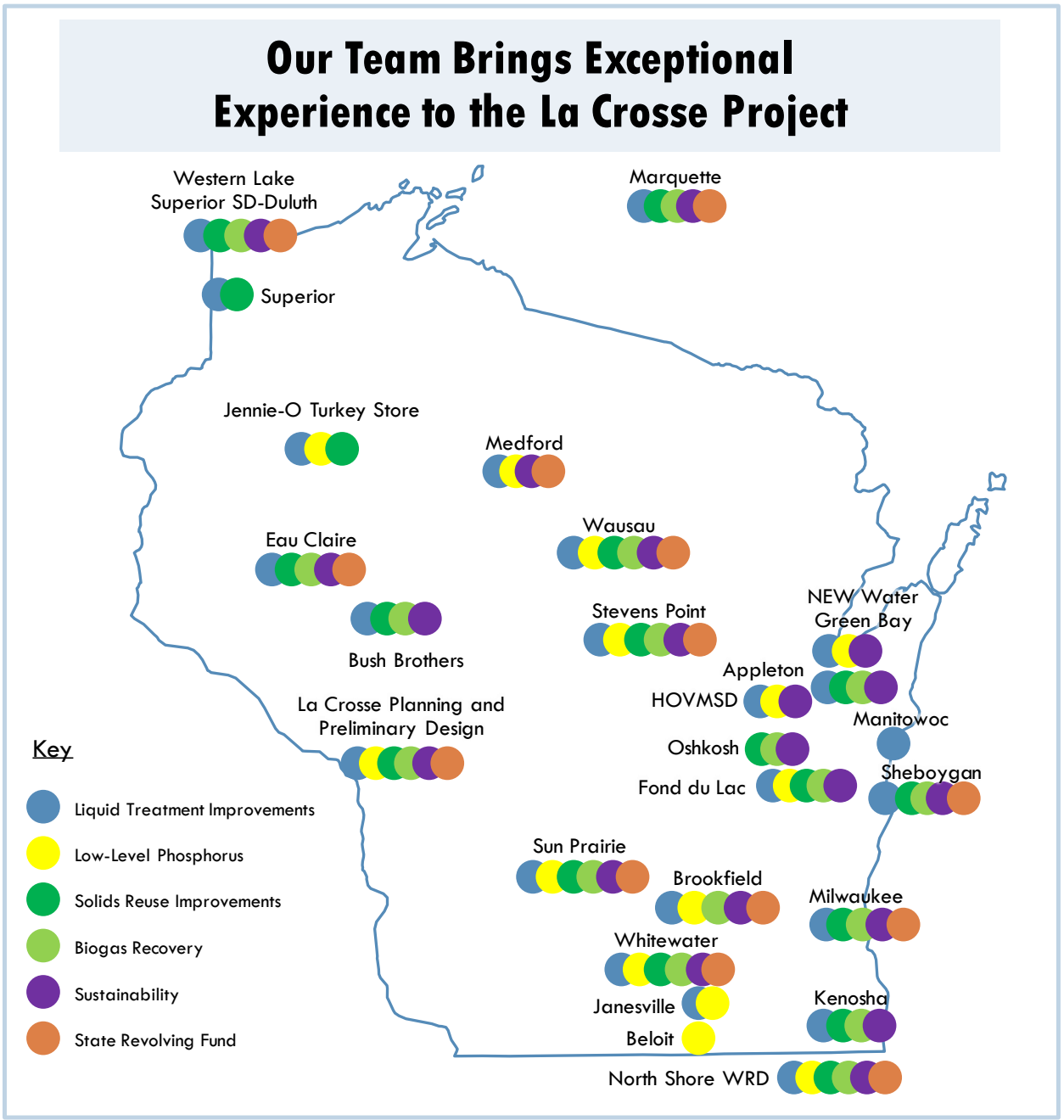
- Tom has expertise in Environmental Engineer work in a variety of different areas such as project management, air permit negotiations, regulatory compliance, and air emissions control.
- Prepared more than 300 air permit applications, compliance evaluations, and air dispersions modeling analyses for facilities located in Wisconsin.
- Recent projects include: Air Quality Compliance Services at MMSD, Air Permit for R2E2 Project (NEW Water/GBMSD), Madison MSD, Racine WWTP, DePere WWTP, and Sheboygan WWTP.

EXPERIENCE

DONOHUE

Experience

The map, matrix, and project writeups that follow are a sampling of our overall company and staff experience selected to highlight the depth of our experience relative to the needs of your project.



EVALUATION, DESIGN & OPERATIONS EXPERIENCE: ANAEROBIC DIGESTION AND RESOURCE RECOVERY FACILITIES

DONOHUE

COMMUNITY/SANITARY DISTRICT	Anaerobic Digestion	Class A Biosolids	Odor Control	Pre/Post Digestion Treatment	Multiple Digesters in Parallel or Series	Digestion Process Operations/Correction	Solids Handling and Recovery	Nutrient Management & Recovery	Anaerobic Digester Mixing	Digester Gas Handling	Biogas Energy Utilization	Combined Heat & Power	Heat Recovery	High Strength Waste Receiving	High Strength Waste Digestion	Key Personnel Involved
Appleton, WI	■				■		■			■	■	■			■	Howe, Wills, Cassity, Gerbitz, Berktold
Becker, MN		■	■	■			■						■			Marten, Wills, Berktold
Beloit, WI	■				■		■	■					■			Marten
Brookfield, WI	■		■		■	■	■		■	■	■	■	■			Schuenemann
Bush Brothers Co. – Augusta, WI	■		■				■	■	■	■	■	■	■	■	■	Marten, Wills, Howe, Gerbitz, Bergstrom, Berktold
Columbia City, IN	■				■	■	■		■	■			■			Berktold
Sanitary District of Decatur, IL	■	■	■	■	■		■		■	■	■	■	■	■	■	Marten, Lynne, Wills, Berktold
East Lansing, MI	■	■		■	■		■		■	■	■	■	■	■	■	Harvey, Gerbtiz, Cassity, Marten, Wills
Evansville, IN – Eastside WWTF	■		■		■		■		■	■	■		■			Gerbitz, Wills, Howe
Eau Claire, WI	■		■		■	■	■	■	■	■	■	■	■	■		Marten, Gerbitz, Wills, Berktold
Faribault, MN	■		■		■	■	■		■	■	■		■			Marten, Gerbitz, Lynne, Wills, Howe, Bergstrom, Berktold
Fort Wayne, IN	■				■	■	■	■	■	■		■	■			Marten, Howe, Wills, Gerbitz, Heisel, Berktold
Gary SD, IN							■		■							Marten, Gerbitz, Wills, Berktold
Goshen, IN	■				■		■		■	■			■			Marten, Wills
Grafton, WI	■				■	■	■	■	■		■					Marten, Lynne, Bergstrom, Gerbitz, Wills
Holland, MI	■	■	■	■		■	■		■	■	■	■	■			Cassity, Howe, Marten, Reimes, Stohl, Wills
NEW Water-Green Bay MSD, WI							■	■								Cassity
Jackson, WI	■				■	■			■	■	■					Marten, Howe, Gerbitz
Kenosha, WI		■		■								■		■	■	Cassity, Wills, Gerbitz, Howe, Berktold
Kiel, WI	■	■	■				■		■	■		■		■	■	Wills, Gerbitz, Lynne, Marten, Cassity
Little Falls, MN			■				■									Wills, Howe, Berktold
Madison MSD, WI	■	■	■	■	■		■		■	■	■		■			Marten, Gerbitz, Howe
Marquette, MI	■				■		■	■	■	■	■	■	■			Marten, Howe, Wills, Gerbitz, Marten, Bergstrom, Schuenemann
Milwaukee MSD – S. Shore, WI	■				■		■			■		■		■	■	Wills, Bergstrom, Marten, Berktold
Naperville, IL		■	■	■			■					■	■			Berktold
North Shore WRD, Gurnee, IL	■	■	■	■	■		■	■		■		■				Marten, Gerbitz, Lynne, Wills, Berktold
Omaha, NE														■	■	Gerbitz
Rantoul, IL	■						■		■	■			■			Marten, Bergstrom
Sheboygan, WI	■				■	■	■	■	■	■	■	■		■	■	Gerbitz, Wills, Bergstrom, Howe, Marten, Berktold
Sioux City, IA	■	■		■	■		■		■				■			Wills, Marten, Howe, Bergstrom
St. Charles, MO – Mississippi Plant			■				■									Wills, Marten, Howe, Bergstrom
St. Cloud, MN	■	■		■					■	■	■	■	■			Cassity, Gerbitz, Lynne, Wills, Bergstrom, Howe, Schuenemann, Berktold
Stevens Point, WI	■	■		■	■		■		■	■	■	■		■	■	Wills, Lynne, Marten
Sun Prairie, WI	■				■		■	■	■	■	■	■	■			Marten, Howe, Wills, Gerbitz
Superior, WI	■				■		■	■					■			Marten, Wills, Lynne, Bergstom, Howe, Berktold
Topeka, KS	■	■		■	■		■	■	■	■	■	■	■	■	■	Gerbitz, Marten, Wills
Two Rivers, WI	■				■		■		■	■			■			Howe, Wills, Marten
WalCoMet SD – Delavan, WI	■		■		■		■		■	■			■			Wills, Howe, Bergstrom, Berktold
Wausau, WI	■	■		■	■		■		■	■	■	■	■			Gerbitz, Wills, Bergstrom, Marten, Howe, Berktold
Western Lake Superior SD, Duluth, MN	■		■					■		■	■	■	■	■	■	Gerbitz, Wills, Bergstrom, Howe, Berktold, Schuenemann
Whitewater, WI			■				■							■		Gerbitz, Cassity, Wills, Howe, Marten
Willmar, MN			■				■							■		Gerbitz, Wills, Lynne, Howe, Bergstrom, Marten, Berktold

Each of the project write-ups include the following icons that denote those components that are similar to your project.

Liquid Treatment Improvements

Low-Level Phosphorus

Solids Reuse Improvements

Biogas Recovery

Sustainability

SRF Loans/Grants

Resource Recovery and Renewable Energy Production

City of St. Cloud, Minnesota

Key Personnel: Nathan Cassity, Mike Gerbitz, Eric Lynne, Jeff Wills, Aric Bergstrom, Al Howe, Craig Schuenemann, Joe Berktold

Reference: Ms. Tracy Hodel, Public Utilities Director | 320.255.7200 | thodel@ci.stcloud.mn.us

The 18-mgd-average (44-mgd-peak) St. Cloud Wastewater Treatment Facility has full biological nutrient removal through a modified Johannesburg process. Primary sludge and waste activated sludge (WAS) are co-thickened on a gravity belt thickener, solids are anaerobically digested and the liquid biosolids are land applied.

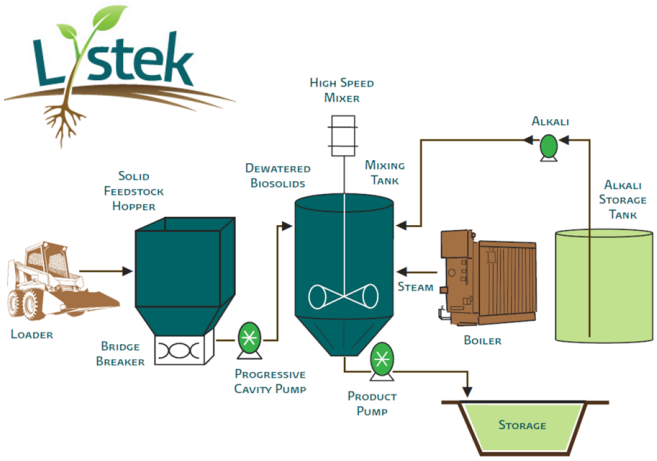
A Resource Recovery and Energy Efficiency (R2E2) Master Plan completed by Donohue developed sound energy practices, short- and long-term objectives, and implementation strategies related to energy efficiency, energy production, nutrient recovery, and biosolids reuse. The Plan resulted in two major capital improvements projects: Energy Efficiency and Biogas (E2B) and the Nutrient Recovery and Reuse (NR2) Project.

The City retained Donohue provide design and construction related services for the Biogas Utilization Project. The Project included biogas conditioning and combined heat and power (CHP) improvements. The CHP units are fueled by the WWTF's digester gas. The project was constructed and is fully functional.

The E2B project received a 2018 ACEC Minnesota Grand Award in 2018.

Donohue was then retained to develop the NR2 contract documents. The NR2 project included a new membrane biogas storage dome, dewatering centrifuge, biosolids cell lysis, WAS phosphorus release, and struvite recovery. Donohue assisted the City in further evaluation of struvite harvesting technologies via site visits, a proposal process, and life cycle assessment. The technologies evaluated included AirPrex, NuReSys, Multiform Harvest, and Ostara. Ultimately, the City selected Ostara.

Donohue included an allowance in the project bid for the process and assisted the City with developing a struvite off-take agreement. The City and Donohue also worked collaboratively to evaluate cell lysis through site visits and a life cycle assessment. The City decided to move forward with design of the Lystek process and included an allowance in the project bid. The Lystek process is the first publically owned installation in the United States. The NR2 project was bid and Donohue is providing construction related services. The construction is ongoing.



Resilient, Robust, and Sustainable WWTP Improvements

City of Eau Claire, Wisconsin

Key Personnel: Bill Marten, Mike Gerbitz, Jeff Wills, Joe Berktold
Reference: Mr. Jeff Pippenger, Community Services Director | 715.839.4917|jeff.pippenger@eauclairewi.gov

The City of Eau Claire owned and operated an aging 30-year-old fixed film wastewater treatment facility. Over a decade ago, the City retained Donohue to implement a multi-phase improvement strategy. The first phase expanded biosolids storage and achieved cost-effective compliance of an effluent ammonia limit (by pH adjustment).

The second phase involved a comprehensive upgrade to the liquid and solids trains. The fixed film process was replaced with an advanced biological nutrient removal (nitrogen and phosphorus) activated sludge system, and the rest of the unit processes were upgraded to address age-related deficiencies and improve performance. The improvements included significant upgrade/rehab of the plant's final clarifiers, expansion and upgrade of the laboratory facilities, implementation of an advanced SCADA automation and monitoring system, and addition of significant odor capture and control facilities. The plant now has the ability to go from 24-hour operations to single shift operations.

Mixed liquor suspension in the anaerobic and anoxic basins is achieved with energy-efficient Invent mixers. The new aeration system incorporates high-efficiency single-stage turbo compressors and an ammonia-based aeration control strategy.

Digestion improvements were aimed at addressing age-related deficiencies and enhancing performance. Improvements included improved primary sludge debris removal, new digester covers, linear motion digester mixing, digester heating system improvements, more effective biogas storage, and new digestion system pumps, piping, and valves. The pre-upgrade digester mixing system was inoperable and the biogas storage system precluded efficient biogas utilization.

Biogas improvements enhanced biogas utilization, producing renewable electricity and reclaiming the generation-related heat. Improvements included biogas conditioning (H2S removal, moisture removal, siloxane removal, and compression), biogas storage, two dual-fuel 240kW engine-driven generators, heat recovery, two 2.5-MMBTU/hr biogas-fueled boilers, and new biogas piping.

The campus heating system includes a cost-effective and simple effluent-heat recovery system. That has reduced the campus-wide heat load by 20%.

In addition to design and construction phase services, Donohue assisted the City in obtaining a Clean Water Fund low interest loan with principal forgiveness.

Since startup in early 2015, the facilities have provided excellent effluent water quality. The project received an ACEC WI Engineering Excellence Best of State Award in 2017.

Tertiary Filtration Evaluation, Pilot Testing and Design at 51 MGD WPCC

Brookfield, Wisconsin

Key Personnel: Craig Schuenemann

Reference: Mr. Tom Grisa, Superintendent| 262.782.9650 ext. 6644 | grisa@ci.brookfield.wi.us

The City of Brookfield operates a 12.5 mgd (51 mgd peak) advanced wastewater treatment plant serving portions of Brookfield and six other area communities. The City retained Donohue to plan, pilot-test, and design improvements to the treatment plant to meet future low-level (0.075 mg/l) effluent phosphorus limits.

The planning effort included an evaluation of tertiary filtration upgrades to meet the low-level phosphorus limits. The evaluation identified installation of new disc filters into Brookfield's existing sand filter building as the most cost-effective solution for permit compliance.

Pilot testing demonstrated effluent quality in compliance with the 0.07 mg/L future phosphorus limit.

Donohue is currently designing the filtration improvements. Upstream rapid mixing, coagulation, and flocculation basins will be sized to treat the entire secondary flow (i.e., 31.2 mgd) to maximize operational flexibility of the system and bypasses. Four disc filters will be provided with a treatment capacity of 20 mgd. Flows above 20 mgd will be directed to existing deep bed sand filters following chemical conditioning. Additional space is provided to increase the filter capacity to treat the entire secondary flow in the future. The design also includes a new chemical storage and feed system.

36 MGD Wastewater Treatment Plant Upgrade

Wausau, Wisconsin

Key Personnel: Mike Gerbitz, Jeff Wills, Aric Bergstrom, Bill Marten, Allen Howe, Joe Berktold,

Reference: Mr. Eric Lindman, Director of Public Works| 715.261.6740 | eric.lindman@ci.wausau.wi.us

Donohue is leading improvements to Wausau's 8-mgd average/36-mgd peak wastewater treatment facility. As part of comprehensive facilities planning, Donohue evaluated the condition and capacity of the plant's existing tertiary sand filters to meet future flows, waste load allocated BOD limits, and impending phosphorus TMDL. The City selected to proceed with disc filtration and activated sludge improvements that support enhanced bio-P.

Other improvements include a new administration building, raw wastewater screening and pumping improvements, grit system improvements, primary flow splitting improvements, primary treatment and solids pumping improvements, primary effluent conduit improvements, anoxic/anaerobic selectors for biological phosphorus removal, aeration basin configuration and efficiency improvements, aeration system improvements, secondary flow splitting improvements, effluent pumping, secondary effluent pumping, UV disinfection, primary solids screening, primary thickening, WAS thickening, digestion system enhancements, DSD dewatering, biosolids drying, and biosolids storage improvements. The activated sludge modifications will enhance bio-P and mixed liquor settling performance. Solids train improvements will increase sidestream VFA production and decrease sidestream phosphorus loadings.

Low Level P Filtration Design and Implementation

Medford, Wisconsin

Key Personnel: Eric Lynne, Dave Goecks, Craig Schuenemann, Susan Wojtkiewicz
Reference: Mr. Ben Brooks, Superintendent| 715.748.4122 | bbrooks@medford.wi.us

The City of Medford's wastewater treatment plant was faced with equipment issues and future low level (0.075 mg/l) effluent phosphorus limits that could not be met with their existing 4-cell deep bed sand filter system.

Donohue provided planning and design engineering services for a chemical feed system to achieve low effluent phosphorus including rapid mix and flocculation facilities and a disk filtration system to replace their existing sand filter system. The filter improvements are integrated into the plant SCADA system, with active control based on two ortho-phosphate analyzers and dedicated chemical dosing pumps. The new filter has less restrictive hydraulic requirements and omits the need for effluent pumping. The design retains use of the clearwell for non-potable water supply.

This facility is the first in the state to merge rapid mix coagulation, flocculation with polymer, and physical separation of the precipitous before disk filtration to achieve high quality effluent.

2-Month Average: .04 mg/L TP

The solution developed also extends existing equipment's useful life, fits within existing buildings, and reduces power consumption. Most importantly to the City, the new system does not require additional operator attention or compromise permit compliance during maintenance. Prior to this project, the City's 10-year effluent phosphorus average was 0.64 mg/l; they are now averaging 0.04 mg/l and have met new permit limits five years ahead of schedule. Donohue's funding efforts resulted in a $1M grant for the City. The project is recognized with an ACEC Wisconsin 2020 Engineering Excellence Best of State award.

Biosolids Improvements

Holland Board of Public Works (HBPW), Holland, MI

Key Personnel: Nathan Cassity, Al Howe, Bill Marten, Shawn Reimes, Mike Stohl, Jeff Wills
Reference: Mr. Theo VanAken, WWTP Superintendent| 616.355.1288 | tvanaken@hollandbpw.com

The Holland Water Reclamation Facility receives and treats an average flow of 9 million gallons per day (mgd) and has a permitted capacity to treat an average flow of 12 mgd. Although HBPW had recently upgraded their solids treatment equipment, increased solids loading and challenges in biosolids disposal were causing their existing solids storage tanks to reach capacity. Furthermore, landfilling fees were increased while the annual quantity of biosolids accepted by the local landfill was decreasing. HBPW decided to evaluate biosolids treatment and disposal alternatives to determine the most sustainable and cost effective investment for future biosolids handling, storage and disposal. The analysis determined that the most cost-effective, long-term solution for biosolids management was anaerobic digestion.

Donohue is currently designing the biosolids improvements. The project consists of modified primary and WAS thickening, pasteurization (to achieve Class A biosolids) prior to the digester, an egg-shaped anaerobic digester, post aerobic digestion (PAD) to control ammonia and revisions to the solids dewatering prior to load out to either land application or landfill. Other important components are odor control and biogas utilization. Funding includes an SRF loan with large debt forgiveness.

Class A Biosolids Upgrade and Other Solids Handling Improvements

Kenosha Water Utility, Wisconsin

Key Personnel: Nathan Cassity, Jeff Wills, Mike Gerbitz, Al Howe, Joe Berktold

Reference: Mr. Curt Czarnecki, Utility Manager | 262.653.4306 | cczarnecki@kenosha.org

Donohue and the Kenosha Water Utility completed an innovative project that reduces energy and solids handling costs 20%, reduces dependence on fossil fuel energy by 40%, removes 10,000 tons annually from landfills, and produces a Class A biosolids product that allows for the annual reuse of 500 tons of nitrogen and 250 tons of phosphorus.

Donohue's design included anaerobic digestion, medium-temperature thermal biosolids drying, combined heat and power (CHP) energy recovery, and North America's first Pondus thermal-chemical hydrolysis system to enhance energy recovery.

Other plant upgrades include major enhancements to the Solids Handling Building; centrifuge for primary sludge thickening prior to anaerobic digestion; pump and nozzle mixing system to three existing anaerobic digesters; digester gas conditioning system; modifications to the existing digested sludge dewatering centrifuge; Installation of primary sludge, waste activated sludge, thickened sludge, and dewatered cake pumping; architectural, structural, HVAC, plumbing and electrical modifications to existing facilities; two combined heat and power (CHP) system skid units used to convert biogas to electrical and thermal energy; biosolids dryer system utilizing waste heat from CHP units; exhaust air odor control system with a scrubber; chemical systems, hot water systems, sludge grinding and pumping systems, and ancillary support systems.

Wastewater Treatment Plant Upgrades and CHP/Energy Improvements

City of Marquette, Michigan

Key Personnel: Bill Marten, Al Howe, Jeff Wills, Mike Gerbitz, Bill Marten, Aric Bergstrom, C. Schuenemann

Reference: Mr. Curt Goodman, Director of Municipal Utilities | 906.228.0485 | cgoodman@mqtcty.org

Donohue designed a host of improvements to Marquette's wastewater treatment plant as part of an overall upgrade, including:

- Replacement of the primary sludge pumps to maximize capacity of existing anaerobic digesters
- Enhanced bio-P activated sludge
- New gravity belt thickener/belt filter press
- New progressing cavity thickened TWAS pumps
- Anaerobic digester feed and mixing system improvements
- New biosolids storage tank
- Digester heating system improvements
- Biogas handling system improvements

Most recently, Donohue designed the installation of two 100 kW engine generators (CHP) and gas cleaning system to utilize the biogas generated onsite to create electrical and heat energy for the facility. The generators can also use natural gas to offset energy and heating costs. The gas conditioning system is designed to remove hydrogen sulfide and siloxanes.

Energy Efficiency and Anaerobic Digester Improvements at 300-mgd Plant

South Shore WRF, Milwaukee Metropolitan Sewerage District, Wisconsin

Key Personnel: Jeff Wills, Aric Bergstrom, Bill Marten, Joe Berktold

Reference: Mr. Cary Solberg, Senior Project Manager | 414.272.5100 | csolberg@mmsd.com

The South Shore Water Reclamation Facility (SSWRF) was originally commissioned in 1970 and included anaerobic digesters, dual-fuel engine driven aeration blowers, and dual-fuel engine generators. In recent years, the aeration blowers and engine generator's energy center had become unreliable.

Following an extensive evaluation of alternatives, Donohue developed construction documents for the addition of high-efficiency electric motor-driven blowers and dual (digester and natural) gas 925-kW engine-driven generators.

Donohue also developed an energy "model" to guide the operation of the new systems. The model provides information and analysis that supports the daily/shift operation, routine monthly planning, and annual strategic planning. The model encompassed an evaluation of multiple operating scenarios that include electrical and natural gas energy pricing, plant energy use, on-peak and off-peak generated energy, digester gas production, heat demand and heat recovery. Despite the now higher plant electric demand and higher electric rates, the overall purchased electricity and natural gas cost has been reduced 15%.

A great deal of effort was required to integrate the new systems into the existing facility. Donohue developed a well-conceived and detailed construction sequence to maintain plant operation and performance. Since the new equipment was to be located in the same footprint as the existing equipment, the construction project needed to demolish, build and commission simultaneously.

As a separate project, Donohue evaluated and upgraded the SSWRF six active single-stage, high rate anaerobic digesters. This includes four large digesters (125-foot diameter x 38 feet deep) and two smaller digesters (110-foot diameter x 21 feet deep). The four large digesters were originally constructed with a compressed digester gas draft tube (Atara) mixing system. The two smaller digesters had four top-mounted draft tube style mechanical propeller mixers. Both of these digester mixing systems provide poor mixing, resulting in a low volatile solids reduction rate (VSR) and impacting performance.

Donohue evaluated the digestion process and tested digester mixing alternatives. The mixing systems on two of the larger digesters were replaced: linear motion mixing in Digester 10 and pump and nozzle mixing in Digester 12. Both systems provide effective and reliable digester mixing, but the linear motion mixing system demands less energy for mixing. The improved mixing and associated improved digestion performance has provided the following benefits:

- Significantly increase VSR to reduce biosolids mass
- Increase digester loading capacity and capacity to receive high strength wastes
- Increase digester gas production to generate more electrical power on-site

Based on the recent experience, the District is designing replacement of the mixing systems in the two smaller digesters with linear motion mixers, with the two larger digesters scheduled for the future.

FEE HISTORY AND STRUCTURE

DONOHUE

Fee History

Final Design, Bidding, and Funding Services

To help illustrate the range of engineering fees, Donohue obtained data from the Wisconsin Clean Water Fund (CWF). Figure 1 shows engineers fees for planning, design, bidding, and funding services as a % of construction cost for all wastewater treatment facility and pumping station projects exceeding $1MM funded by the CWF for State Fiscal Years 2015 – 2019 [Note: Milwaukee MSD projects were omitted because of their uniqueness]. Funding services are typically provided in the pre-construction phase of a project, during design and bidding.

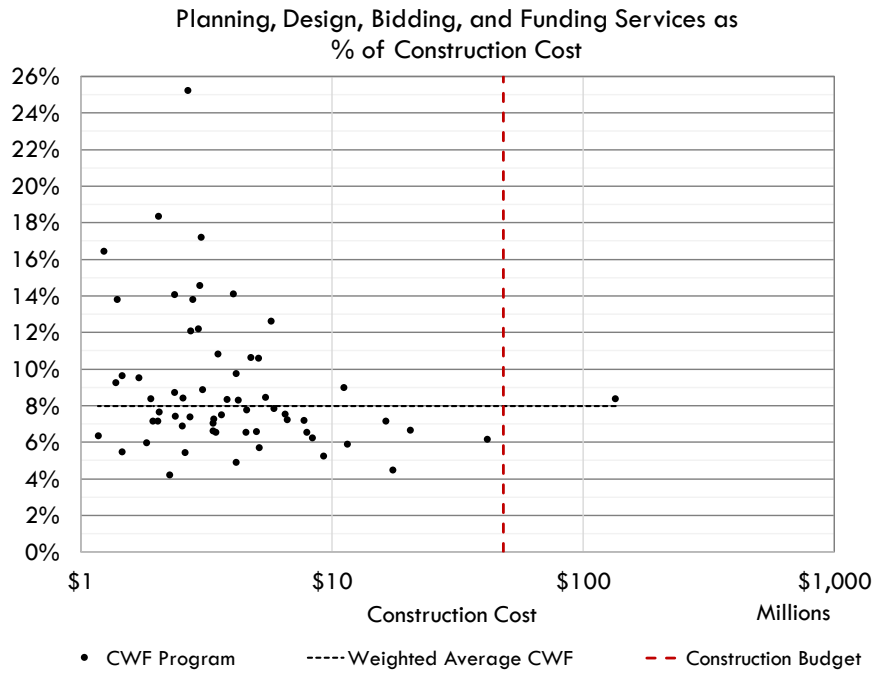


Figure 1 – Planning, Design, Bidding, and Funding Fees as % of Construction Cost. This figure shows design fees as a % of construction for all CWF-funded wastewater treatment and pumping station projects exceeding $1MM. The data was provided by the Clean Water Fund. The weighted average is 8% of construction. The dashed red vertical line is the construction budget for the La Crosse project. [Note: Milwaukee MSD projects omitted].

Table 1 shows Donohue fees for 12 recent and representative projects. Each is a relatively large wastewater treatment facility project (>$10MM construction) in the upper Midwest, seven are large Wisconsin projects. The average Donohue fee for planning, design, bidding, and funding of these representative projects was 6.14%.

The average fee for construction-phase services on these 12 representative projects was 5.83%; however, the variability is much larger than that for planning, design, bidding, and funding. This variability is attributed to a host of project-specific factors, including the construction-phase duration and the role of the Owner during construction.

Table 1 also provides a comparison of Donohue's construction cost opinions (Engineer's Estimate) relative to the lowest Bids. On average, the low Bid was 94.5% of the Donohue cost opinion and only exceeded the estimate by any relevant amount on one project.

Figure 2 shows the Donohue fees to plan, design, bid, and fund the 12 projects listed in Table 1, as well as the CWF data presented previously. The planning, design, and bidding fees for the Donohue projects lie below the horizontal dashed line representing the weighted average of the CWF data.

Table 1 – Representative Engineering Fees for 12 Upper Midwest Donohue Wastewater Treatment Projects

Project Location	Estimate versus Bid			Planning, Design, Bidding, and Funding Fee						Construction Fee	
	Estimate	Low Bid	% of Estimate	Plan	Design	Bid	Fund	Total Fee	% of Low Bid	Total Fee	% of Low Bid
Wausau, WI	71,211,000	Out for Bid	N/A	129,000	4,218,465	90,000	15,000	4,422,465	6.23%	4,351,831	6.11%
Willmar, MN[1]	50,500,000	49,100,000	97.23%	250,000	2,627,021	85,950	50,000	3,012,971	6.03%	3,520,920	7.17%
Eau Claire, WI	44,000,000	40,349,750	91.70%	90,492	2,218,890	89,000	12,000	2,386,382	5.94%	2,271,080	5.63%
Faribault, MN	26,925,000	22,681,000	84.24%	157,024	1,156,343	65,000	10,000	1,366,367	6.08%	1,462,901	6.45%
St. Cloud, MN[2]	20,600,000	20,322,972	98.66%	137,630	1,018,175	34,925	0	1,190,730	5.86%	1,299,513	6.39%
WalcoMet, WI	20,600,000	20,400,000	99.03%	116,768	1,272,000	30,000	10,000	1,408,768	6.95%	1,030,737	5.05%
Whitewater, WI	20,359,434	20,522,309	100.80%	56,000	1,281,600	30,000	12,000	1,355,600	6.66%	1,519,742	7.41%
WLSSD (Duluth), MN[2]	18,349,000	16,984,000	92.56%	133,187	904,030	27,390	0	1,064,607	6.27%	1,179,180	6.94%
Bush Brothers, WI[3]	17,900,000	14,186,000	79.25%	52,550	857,600	23,000	N/A	933,150	6.58%	961,810	6.78%
Stevens Point, WI	16,530,000	17,645,500	106.75%	108,029	650,950	25,000	10,000	773,979	4.44%	643,000	3.64%
Marquette, MI	15,126,000	14,764,994	97.61%	75,000	776,555	25,000	10,000	866,555	5.94%	903,149	6.12%
Sheboygan, WI	13,640,000	12,485,417	91.54%	175,000	639,189	20,000	10,000	824,189	6.68%	287,131	2.30%
Average			**94.49%**						**6.14%**		**5.83%**

1 - Pursued State and Federal funding. Received funds from State Revolving Fund and US Corps of Engineers.

2 - Owner provided funding services.

3 - Did not pursue State or Federal funding. Industrial client.

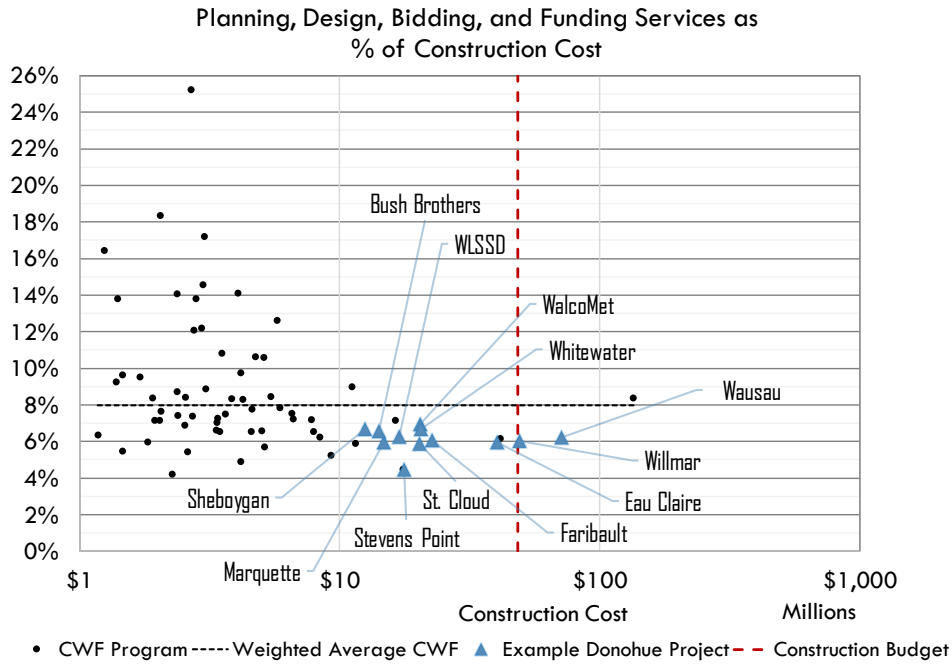


Figure 2 – Planning, Design, Bidding, and Funding as % of Construction Cost for the 12 Donohue Projects Presented in Table 1. This figure reveals that Donohue fees are consistently below the horizontal dashed line representing the weighted average of the CWF data set (8%). The data was provided by the Clean Water Fund. The dashed red vertical line is the construction budget for the La Crosse project. [Note: Milwaukee MSD projects omitted].

Figure 2 shows Donohue consistently provides planning, design, and bidding services for a competitive fee. Not only is this true when comparing Donohue to the entire field of consulting firms, as shown in Figure 2, but this is also true when comparing Donohue to firms that regularly provide these services in the wastewater sector. Figure 3 shows the Donohue projects and highlights projects delivered by other firms that consistently work in this sector.

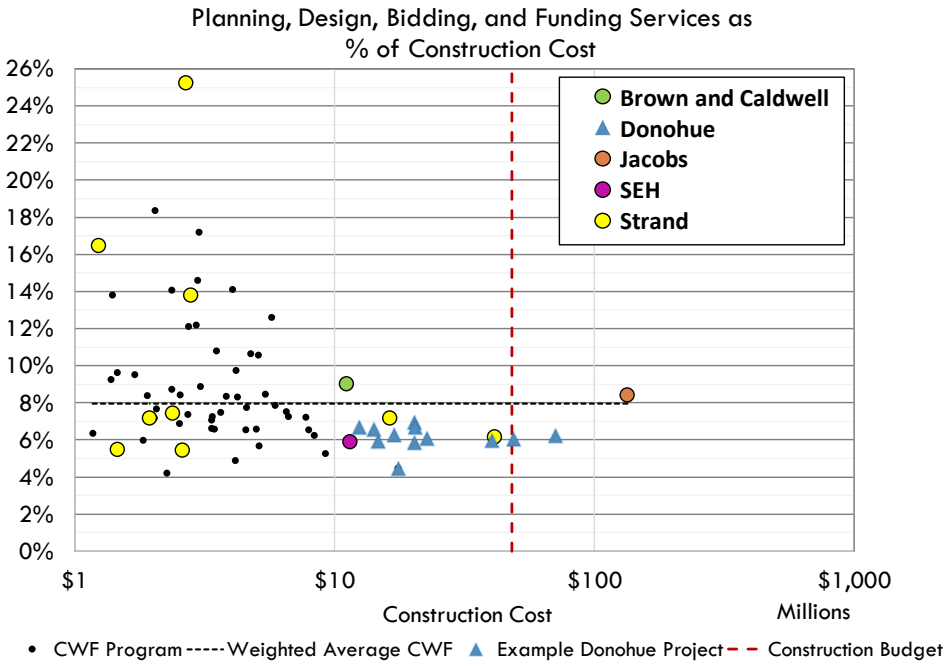


Figure 3 – Planning, Design, Bidding, and Funding as % of Construction Cost for the 12 Donohue Projects Presented in Table 1 and Several Firms that Regularly Work in the Wastewater Sector. This figure reveals Donohue is not only competitive relative to the entire consulting field, but also with firms that regularly provide wastewater engineering services. The data was provided by the Clean Water Fund. The dashed red vertical line is the construction budget for the La Crosse project. [Note: Milwaukee MSD projects omitted].

Donohue is a specialized wastewater consulting firm with tremendous experience, expertise, and resources, possessing one of the largest, most experienced process engineering departments in the upper Midwest. Figure 3 shows Donohue provides planning, design, and bidding services at a cost that is competitive with all firms, including or especially those that have a track record delivering large, complex, wastewater projects like this project.

Construction Services

Figure 4 shows Donohue construction services fees for the 12 representative projects listed in Table 1. It also shows data from the CWF. Like the preceding figures, this one shows Donohue is competitive with the consulting field. It also reveals that construction service fees are more variable than design fees. We look forward to working with the City to determine the "right" construction-phase services, level-of-effort, and fee.

References

The references listed below have retained Donohue as well as competing firms. They can speak to Donohue's level of service and cost competiveness.

Tom Grisa, Director of Public Works
City of Brookfield, WI
Phone: (262) 796-6644
E-mail: grisa@ci.brookfield.wi.us

Nathan Qualls, Director of Technical Services
NEW Water (Green Bay Metropolitan Sewerage District)
Phone: (920) 438-1032
E-mail: nqualls@newwater.us

Charles (Trip) Barton, Engineering Manager
Illinois American Water
Phone: (309) 566-4148
E-mail: charles.barton@amwater.com

Allison Swisher, Public Utilities Director
City of Joliet, IL
Phone: (815) 724-4220
E-mail: aswisher@joliet.gov

Donohue has provided planning, design, bidding, and construction-phase services on multiple projects for the clients listed above. We were retained for these projects through varying selection methods including price-based proposals and sole-sourced negotiations.

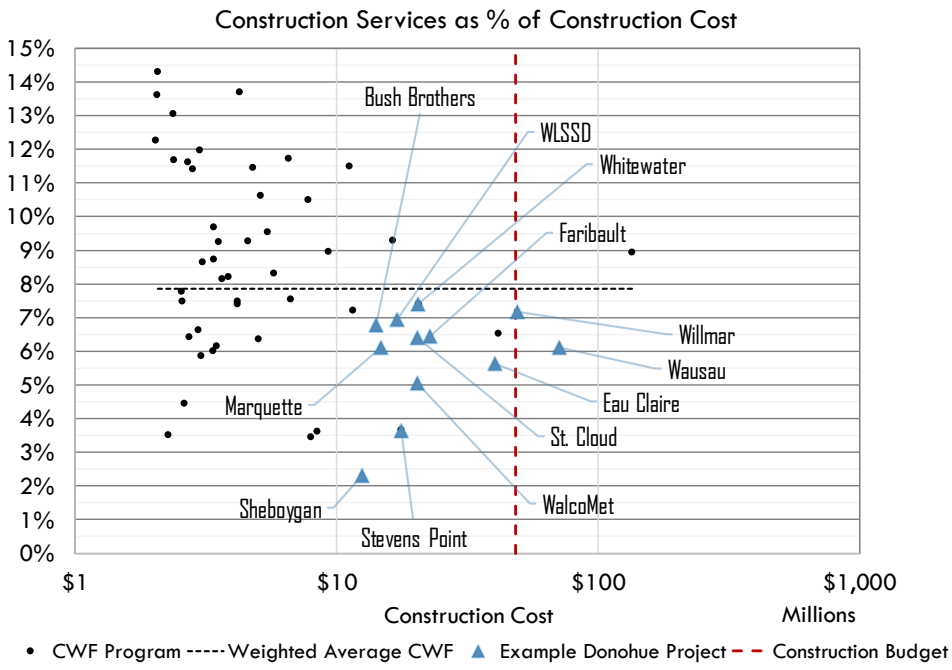
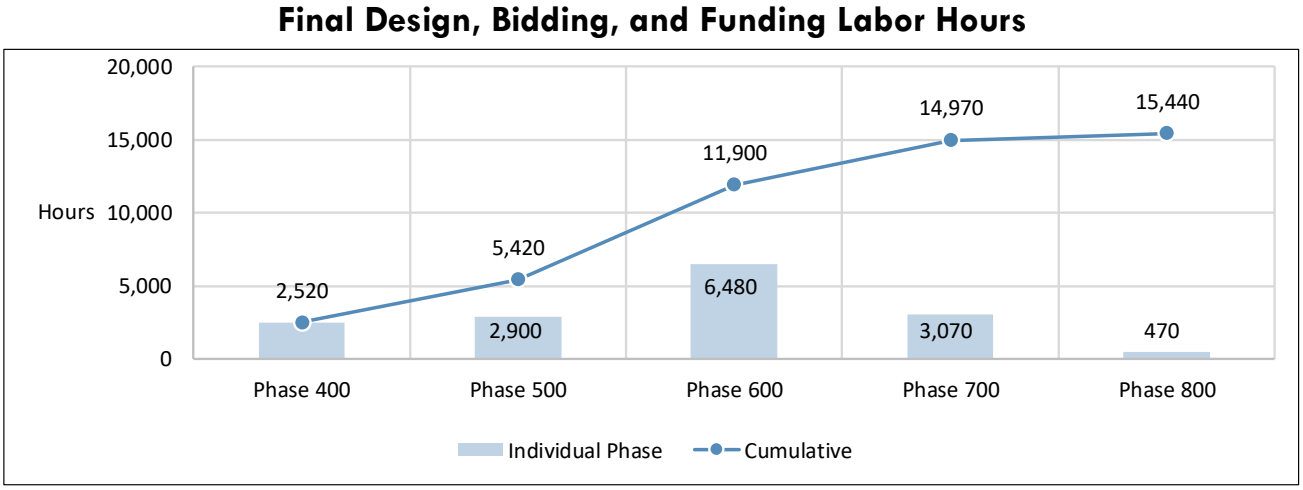


Figure 4 – Construction Services Fees as % of Construction Cost for the 12 Donohue Projects Presented in Table 1. This figure reveals Donohue is competitive. It also shows construction-phase fees are more variable than those for pre-construction services. The data was provided by the Clean Water Fund. The dashed red vertical line is the construction budget for the La Crosse project. [Note: Milwaukee MSD projects omitted].

Fee Structure

Final Design, Bidding, and Funding

Proposed labor fees and expenses for Final Design, Bidding, and Funding are provided on a worksheet later in this Section. The worksheet shows team members, hours, and hourly rates. The average Donohue multiplier is 3.0. The proposed level of effort is summarized below. Figure 5 shows our proposed Final Design, Bidding, and Funding fee expressed as a % of the Construction Budget.



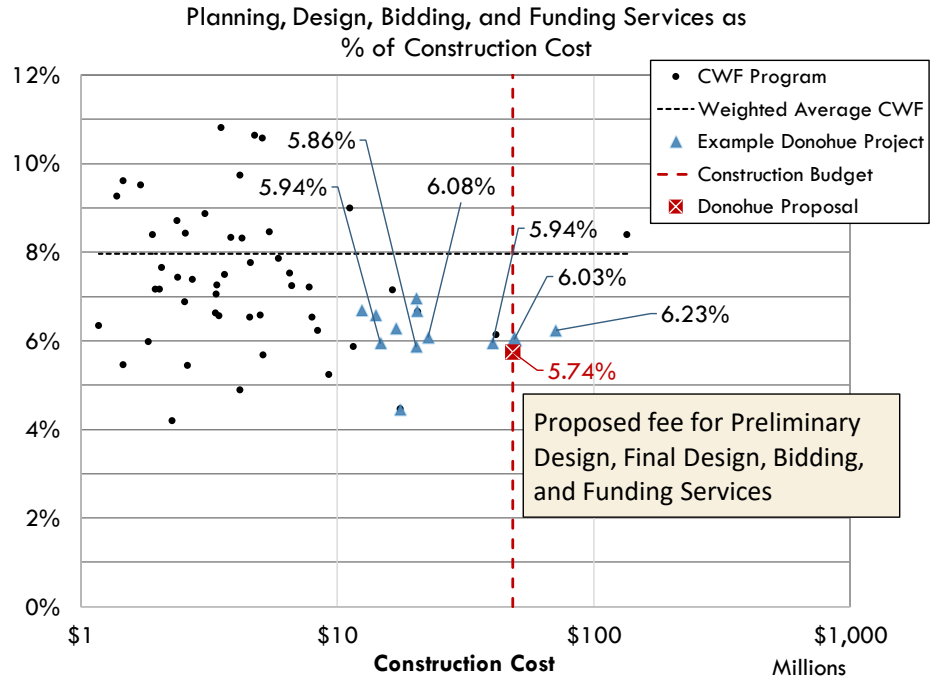


Figure 5 – Donohue Proposed Final Design, Bidding, and Funding Fee as % of Construction. This figure reveals Donohue is submitting a competitive fee for Design, Bidding, and Funding. We believe this fee strikes the proper balance: a fair/competitive fee that does not jeopardize the quality and integrity of the Bidding Documents and Project. The value shown here includes Preliminary and Final Design Services. This fee, as a % of construction, is less than the similar Donohue projects shown on this figure. The lone project that was completed for a lower % of construction was a unique dissimilar project where Donohue was retained without competition.

Construction

Proposed labor fees and expenses for Construction are provided on a worksheet later in this Section. The worksheet shows staff classifications, hours, and hourly rates. We expect to provide and review specific staff members and their experience before receiving Construction Phase authorization and an executed Agreement. The average Donohue multiplier is 3.0.

All Phases

Proposed fees for all Project Phases are summarized below. We understanding that the City will only Contract for Final Design, Bidding, and Funding at this time.

Fee by Service

Services	Donohue Hours	Donohue Labor	Non-Donohue[1]	Total
Final Design	14,880	$2,228,400	$90,500	$2,318,900
Bidding	470	$76,250	$500	$76,750
Funding[2]	175	$28,425	$0	$28,425
Construction Phase	16,780	$2,891,150	$77,900	$2,969,050
Total	32,305	$5,224,225	$168,900	$5,393,125

Notes

[1] Subconsultants and expenses

[2] Funding during Final Design and Constrruction. Funding during Final Design Phase = $14,400

Fee by Phase or Contract

Phases	Donohue Hours	Donohue Labor	Non-Donohue[1]	Total
Final Design, Bidding, Funding	15,440	$2,333,075	$91,000	$2,424,075
Construction	16,865	$2,891,150	$77,900	$2,969,050
Total	32,305	$5,224,225	$168,900	$5,393,125

Notes

[1] Subconsultants and expenses

Fee and % of Construction By Phase	Total	% of Construction	
Preliminary Design[1]	$349,275	0.72%	5.74%
Final Design, Bidding, Funding	$2,424,075	5.02%	
Construction	$2,969,050	6.15%	
Total[2]	$5,742,400	11.89%	11.89%

Notes

[1] Previous Donohue contract

[2] Donohue cost opinions to date assumed 15% for Engineering Services

Construction Budget	$48,300,000

Design and Bidding Phase Services Fee Worksheet | La Crosse, Wisconsin

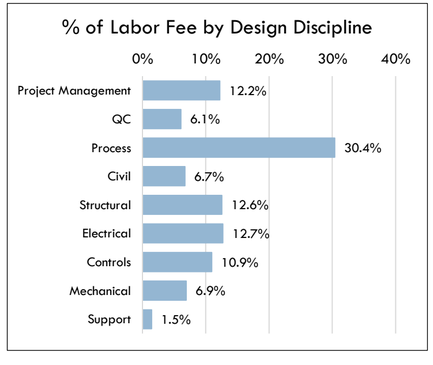
	Project Management			QC	Process Engineering and Operations					Civil Engineering		Structural Engineering		Electrical Engineering		Controls Engineering		Mechanical Engineering		Support			Costs				
Phases and Tasks	Client Team Leader $240	Project Manager $180	Design Manager $180	Senior Reviewers $195	Lead Liquid $160	Lead Solids $160	Lead Operations $215	Lead Energy $195	Support $115	Lead $145	Support $115	Lead $145	Support $130	Lead $235	Support $180	Lead $195	Support $115	Lead $195	Support $115	Funding $160	CAD Mgmt $130	Total Hours	Labor	Subs	Expenses	Grand Total
400 - Refined Layout and PIDs	10	40		40																	40	130	$22,600			$22,600
1 Workshop - Preliminary Design Report (2 d)		20	20		20	20	20	20						10		10						140	$26,100		$2,000	$28,100
2 Refine Equipment Selections			20		10	20	10	10	80					10		10						170	$26,000			$26,000
3 Refine and Advance Layout Drawings			40		20	30	15	20	80	40	100	100	200	20	100	10	50	10	50			885	$127,425			$127,425
4 Refine and Advance PIDs			10		20	20	40	20	80							30	300					520	$70,250			$70,250
5 Refine and Advance Operating Strategies			10		20	30	60	10	80							20		20				250	$41,650			$41,650
6 Refine and Advance Energy Balance/Strategy			10					50														60	$11,550			$11,550
7 Refine Cost Opinion			15		5	10		5	80	5	15	5	15	5	15	5	15	5	15			215	$29,675			$29,675
8 Informal Site Visits and On-Site Meetings (2)		10	10		10	10		10	20	5	5	5	5	5	5	5	5	5	5			120	$18,900		$1,000	$19,900
9 Survey			5							10												15	$2,350	$30,000		$32,350
10 Geotechnical Investigation and Report			5									10										15	$2,350	$40,000		$42,350
500 - Final Layout	10	40		40																	40	130	$22,600			$22,600
1 Complete Manufacturer Preferences/Selections			40		10	30	10	10	100					10	40	10	40	10	40			350	$51,850			$51,850
2 Produce Final Layout Drawings and PIDs			40		20	30	80	20	200	40	160	80	200	20	200	40	160	15	150			1455	$208,175			$208,175
3 Produce Outline Specifications			20		10	15	10	10	200	5	20	5	20	5	20	5	20	5	20			390	$52,375			$52,375
4 Refine Cost Opinion			10		10	10		10	50	5	10	5	10	5	10	5	10	5	10	5		170	$24,625			$24,625
5 Perform Air Permit Evaluation																						0	$0	$7,500		$7,500
6 Workshop - 60%-Complete Docs (2 d)		20	20		20	20	20	20		5	5	5	5	5	5	5	5	5	5			170	$29,650		$2,000	$31,650
7 Incorporate Owner Revisions			10		5	5		5	40		10		10		10		10		10			115	$15,525			$15,525
8 Informal Site Visits and On-Site Meetings (2)		10	10		10	10		10	20	5	5	5	5	5	5	5	5	5	5			120	$18,900		$1,000	$19,900
600 - Construction Drawings	10	160		200																	40	410	$75,400			$75,400
1 Produce Reviewable Bidding Documents		80	160		200	200		200	800	200	400	400	800	200	400	200	400	160	320			5120	$747,200			$747,200
2 Refine Cost Opinion			30		10	10		10	20	10	20	10	20	10	20	10	10	5	10			205	$31,825			$31,825
3 Submit Reviewable Bid Docs to WDNR			20																	60	20	100	$15,800		$500	$16,300
4 Respond to WDNR Comments			40																			40	$7,200			$7,200
5 Workshop - WDNR Bid Docs (2 d)		20	20		20	20		20		5	5	5	10	5	10	5	10	5	10			170	$28,050		$2,500	$30,550
6 Incorporate Owner Revisions			10		5	5		5	40		10		10		10		10		10			115	$15,525			$15,525
7 Informal Site Visits and On-Site Meetings (2)		10	10		10	10		10	20	5	5	5	5	5	5	5	5	5	5			120	$18,900		$1,000	$19,900
8 Refine Cost Opiion			10		10	10		10	80	5	10	5	10	5	10	5	10	5	10	5		200	$28,075			$28,075
700 - Review and Coordination	10	120																			40	170	$29,200			$29,200
1 Perform Designer Review		20	40		40	40		40	160	20	40	40	80	40	240	100	240	20	80			1240	$186,300			$186,300
2 Perform Plans-in-Hand Review		10	10		10	10		10	20		10	10	10	10	10	10	10		10			150	$23,350			$23,350
3 Incorporate Designer Review Revisions			10		5	5		5	40		10		10		10		10		10			115	$15,525			$15,525
4 Workshop - 90%-Complete Docs (2 d)		20	20		20	20		20		5	5	5	10	5	10	5	10	5	10			170	$28,050		$3,000	$31,050
5 Incorporate Owner Review Revisions			20		5	5		5	40		10		10		10		10		10			125	$17,325			$17,325
6 Perform Final QC Review				480			20													20		520	$101,100			$101,100
7 Incorporate Final QC Revisions			40		20	20		20	100	10	20	20	40	20	40	10	40	10	40			450	$65,850			$65,850
8 Refine Cost Opinion			20		5	5		5	20	5	10	5	10	5	10	5	10	5	10			130	$19,600			$19,600
800 - Project Bidding	10	60		25																		95	$18,075			$18,075
Pre-Select/Negotiate Equipment			20			40																60	$10,000			$10,000
Condcut Pre-Bid Conference			20						10					15								45	$8,275		$250	$8,525
Respond to Questions			30		5	5		5	10	5	10	5	10	5	10	5	10	5	10			130	$20,250			$20,250
Issue Addenda			30						40		10		10		10		10		10		10	130	$17,850			$17,850
Review Bids and Make Recommendation			10																			10	$1,800		$250	$2,050
Total Hours	50	640	865	785	555	665	285	595	2,430	390	905	730	1,515	425	1,215	520	1,415	310	865	90	190	15,440				
Labor Cost by Role	$12,000	$115,200	$155,700	$153,075	$88,800	$106,400	$61,275	$116,025	$279,450	$56,550	$104,075	$105,850	$196,950	$99,875	$218,700	$101,400	$162,725	$60,450	$99,475	$14,400	$24,700		$2,333,075	$77,500	$13,500	$2,424,075

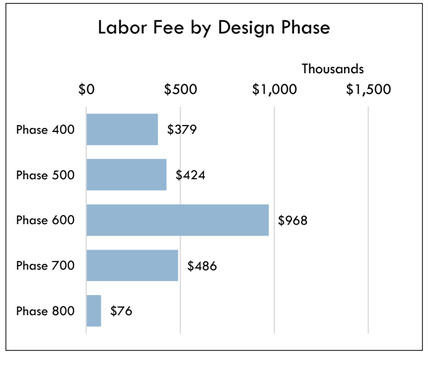
	Project Management			QC	Process Engineering and Operations					Civil Engineering		Structural Engineering		Electrical Engineering		Controls Engineering		Mechanical Engineering		Support		
People	Gerbitz	Lynne	Lockett	Sr Engs	Raisbeck	Bergstrom	Marten	Wills	Jr Engs	Holzwart	Jr Engs	Reimes	Jr Engs	Stohl	Jr Engs	Goecks	Jr Engs	Wills	Larson	Wojtkiewicz	Bremer	Totals
Phase 400 Hours	10	70	145	40	105	140	145	145	420	60	120	120	220	50	120	90	370	40	70	0	40	2,520
Phase 500 Hours	10	70	150	40	85	120	120	85	610	60	210	100	250	50	290	70	250	45	240	5	40	2,900
Phase 600 Hours	10	270	300	200	255	255	0	255	960	225	450	425	855	225	455	225	445	180	365	65	60	6,480
Phase 700 Hours	10	170	160	480	105	105	20	105	380	40	105	80	170	80	330	130	330	40	170	20	40	3,070
Phase 800 Hours	10	60	110	25	5	45	0	5	60	5	20	5	20	20	20	5	20	5	20	0	10	470
% of Total Hours	0.32%	4.15%	5.60%	5.08%	3.59%	4.31%	1.85%	3.85%	15.74%	2.53%	5.86%	4.73%	9.81%	2.75%	7.87%	3.37%	9.16%	2.01%	5.60%	0.58%	1.23%	100%
% of Total Labor Cost	0.51%	4.94%	6.67%	6.56%	3.81%	4.56%	2.63%	4.97%	11.98%	2.42%	4.46%	4.54%	8.44%	4.28%	9.37%	4.35%	6.97%	2.59%	4.26%	0.62%	1.06%	100%

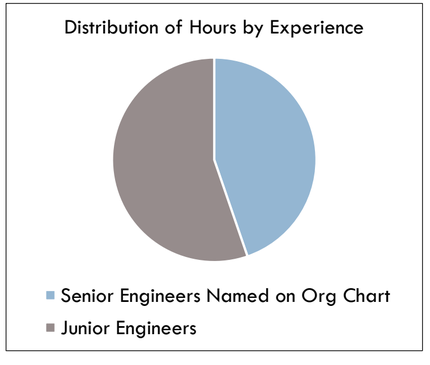
Average Donohue Multiplier
3.0

	Preliminary Design		Final Design		Total Design	
Labor Breakdown by Discipline	Cost	% of Total	Cost	% of Total	Cost	% of Total
Project Management	$44,575	12.99%	$282,900	12.13%	$327,475	12.24%
QC	$9,450	2.75%	$153,075	6.56%	$162,525	6.07%
Process	$161,250	46.97%	$651,950	27.94%	$813,200	30.38%
Civil	$18,775	5.47%	$160,625	6.88%	$179,400	6.70%
Structural	$33,300	9.70%	$302,800	12.98%	$336,100	12.56%
Electrical	$21,350	6.22%	$318,575	13.65%	$339,925	12.70%
Controls	$28,925	8.43%	$264,125	11.32%	$293,050	10.95%
Mechanical	$25,650	7.47%	$159,925	6.85%	$185,575	6.93%
Support	$0	0.00%	$39,100	1.68%	$39,100	1.46%
Total Labor Cost	$343,275	100.00%	$2,333,075	100.00%	$2,676,350	100.00%
Subconsultants	$0		$77,500		$77,500	
Expenses and Travel	$6,000		$13,500		$19,500	
Total Cost	$349,275		$2,424,075		$2,773,350	

Cost as % of Construction Budget	0.72%	5.02%	5.74%
			Total Design and Bidding Phase Services as % of Construction







Cost Per Sheet Metric

Estimated Number of Sheets
812
Total Design Fee
$2,773,350
Cost per Sheet
$3,415

Construction Budget	$48,300,000

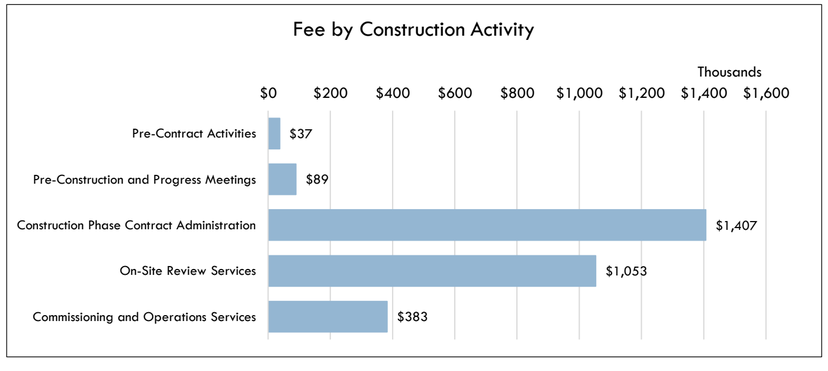
Construction Phase Services Fee Worksheet | La Crosse, Wisconsin

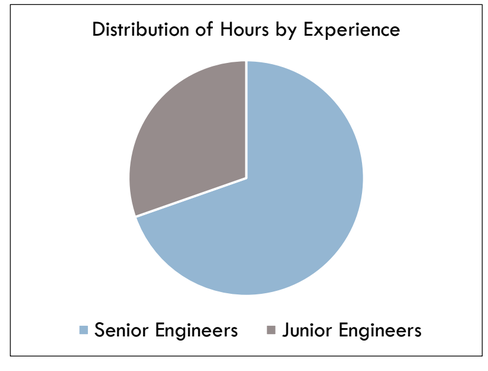
	Project Management			QC	Process				Funding	Civil Engineering		Structural Engineering		Electrical Engineering		Controls Engineering		Mechanical Engineering		On-Site			Costs		
	Client Team Leader	Project Manager	CCA	Senior Reviewers	Lead Engs	Support Engs	Lead Operations	Support Operations	Lead	Lead	Support	Lead	Support	Lead	Support	Lead	Support	Lead	Support	FT-RPR	PT-RPR	Total Hours	Labor	Expenses	Grand Total
Phases and Tasks	$250	$185	$185	$200	$185	$125	$220	$125	$165	$155	$125	$155	$125	$240	$185	$200	$125	$200	$125	$185	$135				
Pre-Contract Activities	5	20		10		5			25		5		5		5		5		5			90	$15,125		$15,125
Prepare Contract Documents for Execution			40																			40	$7,400		$7,400
RPR Project Review and Orientation w/Design Team																				80		80	$14,800		$14,800
Pre-Construction and Progress Meetings	10																					10	$2,500		$2,500
Prepare for, Conduct, and Document Pre-Con Conference		5	20																			25	$4,625	$500	$5,125
Attend Monthly Progress Meetings and Special Meetings		80	300																			380	$70,300	$11,400	$81,700
Construction Phase Contract Administration	20	300		40																		360	$68,500		$68,500
Administer Construction Contract			3,600																			3600	$666,000		$666,000
Provide Clarifications + Interpretations (RFIs and COs)					150	450				20	40	30	60	50	100	50	100	30	60			1140	$170,750		$170,750
Prepare and Submit Change Order Recommendations					60	120				10	30	10	30	10	30	10	30	20	30			390	$58,150		$58,150
Shop Drawings + Submittal Reviews and Responses					50	400				10	50	20	100	60	300	60	300	20	100			1470	$218,550		$218,550
Review and Recommend Contractor Payment Requests			120																			120	$22,200		$22,200
Provide Responses to Contractor Claims	20	20	60																			100	$19,800		$19,800
Perform Designer Site Reviews and Documentation					50	50	20	20		20	10	40	20	30	10	30	10	30	10			350	$59,000	$10,500	$69,500
Produce Substantial + Final Completion Punch List			80		10	10	20	20		10		20		20		20		10				220	$40,250	$4,500	$44,750
Produce Record Drawings			60			300					20		20		40		40		20			500	$68,500		$68,500
On-Site Review Services																						0	$0		$0
F-T Resident Project Representative																				4,800		4800	$888,000		$888,000
P-T Resident Project Representative																					1,000	1000	$135,000	$30,000	$165,000
Commissioning and Operations Services	20	60		40					60													180	$34,000		$34,000
Review Manufacturer O&M Materials							20	160														180	$24,400		$24,400
Review Manufacturer Training Materials							50															50	$11,000		$11,000
Prepare and Present SOPs and Process Training					20	80	300	400						20	40	20	40	20	40			980	$159,900	$5,000	$164,900
Prepare Contractor's Startup Checklist								80														80	$10,000	$1,000	$11,000
Assist with Systems Checkout and Startup							80	80														160	$27,600	$3,000	$30,600
Assist with Systems Demonstration and Troubleshooting		40			40		80	160														320	$52,400	$6,000	$58,400
Assist with Post-Startup Training and System Optimization		40			40		80	80														240	$42,400	$6,000	$48,400
Total Hours	75	565	4,280	90	420	1,415	650	1,000	85	70	155	120	235	190	525	190	525	130	265	4,880	1,000	16,865			
Labor Cost by Role	$18,750	$104,525	$791,800	$18,000	$77,700	$176,875	$143,000	$125,000	$14,025	$10,850	$19,375	$18,600	$29,375	$45,600	$97,125	$38,000	$65,625	$26,000	$33,125	$902,800	$135,000		$2,891,150	$77,900	$2,969,050

	Project Management			QC	Process				Funding	Civil Engineering		Structural Engineering		Electrical Engineering		Controls Engineering		Mechanical Engineering		Support		
People	Gerbitz	Lynne	TBD	Sr Engs	Sr Engs	Jr Engs	Marten	Jr Ops	Wojtkiewicz	Holzwart	Jr Engs	Reimes	Jr Engs	Stohl	Jr Engs	Goecks	Jr Engs	Wills	Larson	TBD	TBD	Totals
Pre-Contract Activities	5	20	40	10	0	5	0	0	25	0	5	0	5	0	5	0	5	0	5	80	0	210
Pre-Construction and Progress Meetings	10	85	320	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	415
Construction Phase Contract Administration	40	320	3,920	40	320	1,330	40	40	0	70	150	120	230	170	480	170	480	110	220	0	0	8,250
On-Site Review Services	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,800	1,000	5,800
Commissioning and Operations Services	20	140	0	40	100	80	610	960	60	0	0	0	0	20	40	20	40	20	40	0	0	2,190
% of Total Hours	0.44%	3.35%	25.38%	0.53%	2.49%	8.39%	3.85%	5.93%	0.50%	0.42%	0.92%	0.71%	1.39%	1.13%	3.11%	1.13%	3.11%	0.77%	1.57%	28.94%	5.93%	100%
% of Total Labor Cost	0.65%	3.62%	27.39%	0.62%	2.69%	6.12%	4.95%	4.32%	0.49%	0.38%	0.67%	0.64%	1.02%	1.58%	3.36%	1.31%	2.27%	0.90%	1.15%	31.23%	4.67%	100%

	Construction Phase	
Labor Breakdown by Activitiy	Cost	% of Total
Pre-Contract Activities	$37,325	1.26%
Pre-Construction and Progress Meetings	$89,325	3.01%
Construction Phase Contract Administration	$1,406,700	47.38%
On-Site Review Services	$1,053,000	35.47%
Commissioning and Operations Services	$382,700	12.89%
Total Labor Cost	$2,969,050	100.00%

Cost as % of Construction Budget	6.15%
	Total Construction Phase Services as % of Construction





Average Donohue Multiplier
3.0

APPENDIX
Preliminary List of Drawings: Final Design

DONOHUE

Preliminary List of Drawings: Final Design

No.	Drawing	Title
VOLUME 1		
001		GENERAL
1	001-G-0	Cover
2	001-G-1	Signature Sheet
3	001-G-2	Index of Sheets
4	001-G-3	Index of Sheets
5	001-G-4	Index of Sheets
6	001-G-5	Index of Sheets
7	001-G-6	General Legend, Symbols, and Abbreviations
8	001-G-7	Civil Legend and General Notes
9	001-G-8	Plumbing Legend/HVAC Legend/Electrical Legend
10	001-G-9	Instrumentation and Control Standard Legend
11	001-G-10	Instrumentation and Control Standard Symbology
12	001-ENV-1	Schedule
13	001-ENV-2	Schedule
14	001-ENV-3	Schedule
002		SITE DEVELOPMENT
15	002-CK-1	Project Overview
16	002-CK-2	Site Key Plan
17	002-CK-3	Existing Conditions
18	002-CK-4	100-Year Flood Elevations
19	002-CK-5	Boring Locations
20	002-CT-1	Erosion Control Plan
21	002-CT-2	Erosion Control Plan
22	002-CRF-1	Removal Plan (Above Ground)
23	002-CRF-2	Removal Plan (Above Ground)
24	002-CRF-3	Removal Plan (Above Ground)
25	002-CRF-4	Removal Plan (Above Ground)
26	002-CRF-5	Removal Plan (Above Ground)
27	002-CRF-1	Removal Plan (Above Ground)
28	002-CRP-2	Removal Plan (Above Ground)
29	002-CRP-3	Removal Plan (Above Ground)
30	002-CRP-4	Removal Plan (Above Ground)
31	002-CRP-7	Truck Routes
32	002-CF-1	Site Plan
33	002-CF-2	Site Plan
34	002-CF-3	Site Plan
35	002-CF-4	Site Plan
36	002-CF-5	Site Plan
37	002-CFL-1	Points and Tables
38	002-CFL-2	Points and Tables
39	002-CFL-3	Points and Tables
40	002-CFL-4	Points and Tables
41	002-CFL-5	Points and Tables
42	002-CFL-6	Points and Tables
43	002-CFL-7	Points and Tables

No.	Drawing	Title
44	002-CP-1	Yard Piping Plan
45	002-CP-2	Yard Piping Plan
46	002-CP-3	Yard Piping Plan
47	002-CP-4	Yard Piping Plan
48	002-CP-5	Yard Piping Plan
49	002-CP-6	Yard Piping Plan
50	002-CG-1	Grading Plan
51	002-CG-2	Grading Plan
52	002-CG-3	Grading Plan
53	002-CG-4	Grading Plan
54	002-CG-5	Grading Plan
55	002-CLS-1	Landscaping Plan
56	002-CE-1	Electrical Site Plan
57	002-CE-2	Electrical Site Plan
58	002-CE-3	Electrical Site Plan
59	002-CE-4	Electrical Site Plan
60	002-CE-5	Electrical Site Plan
61	002-CE-6	Electrical Site Plan
004		PROCESS SUMMARY
62	004-M-1	Block Diagram
63	004-M-2	Design Summary
64	004-M-3	Design Summary
65	004-M-4	Hydraulic Profile
66	004-M-5A	Hydraulic Profile
007		ELECTRICAL DISTRIBUTION
67	007-ER-1	Removal Overall One-Line Diagram
68	007-E-2A	Overall One-Line Diagram
69	007-E-2B	Overall One-Line Diagram
70	007-E-3	One-Line Diagram and Elevation
71	007-E-4A	One-Line Diagram and Elevation
72	007-E-4B	One-Line Diagram and Elevation
73	007-ER-5	Removal One-Line Diagram and Elevation
74	007-E-6	One-Line Diagram and Elevation
75	007-ER-7	Removal One-Line Diagram and Elevation
76	007-ER-8	Removal Panel Schedules
77	007-E-9	One-Line Diagram and Elevation
78	007-E-10	Panel Schedules
79	007-ER-11	Removal One-Line Diagram and Elevation
80	007-E-12	One-Line Diagram
81	007-E-13	Elevation and Panel Schedule
82	007-E-14	One-Line Diagram and Panel Schedules
83	007-ER-15	Removal One-Line Diagram and Elevation
84	007-E-16	One-Line Diagram and Elevation
85	007-ER-17	Removal One-Line Diagram and Elevation
86	007-E-18	One-Line Diagram and Elevation
87	007-ER-19	Removal Panel Schedule
88	007-E-20	Panel Schedule
89	007-E-21	One-Line Diagram and Panel Schedules
90	007-E-22	One-Line Diagram and Panel Schedules
91	007-E-23	Panel Schedules

No.	Drawing	Title
92	007-E-24A	One-Line Diagram and Elevation
93	007-E-24B	One-Line Diagram
94	007-E-25B	Elevation and Panel Schedule
95	007-E-26	One-Line Diagram and Panel Schedule
96	007-ER-27	Removal One-Line Diagram and Elevation
97	007-E-28A	One-Line Diagram and Elevation
98	007-E-28B	One-Line Diagram and Elevation
99	007-ER-29	Removal One-Line Diagram and Elevation
100	007-E-30	One-Line Diagram and Elevation
101	007-ER-31	Removal One-Line Diagram and Elevation
102	007-E-32	One-Line Diagram and Elevation
103	007-E-33A1	One-Line Diagram and Panel Schedule
104	007-E-34A1	Panel Schedules
105	007-E-33A2	One-Line Diagram and Panel Schedule
106	007-DS-1	Duct Bank Sections
107	007-DS-2	Duct Bank Sections
108	007-DS-3	Duct Bank Sections
109	007-DS-4	Duct Bank Sections
110	007-DS-5	Duct Bank Sections
111	007-DS-6	Duct Bank Sections
008		NETWORK DIAGRAM
112	008-I-1	Fiber Optic Network - Overview
113	008-I-2	Fiber Optic Network - Details
114	008-I-3	Copper Network Connections - Overview 1
115	008-I-5	SCADA Network Riser 1
116	008-I-6	SCADA Network Riser 2
117	008-I-7	SCADA Network Riser 3
009		PROCESS AND INSTRUMENTATION DIAGRAM
118	009-N-1B	Influent Screening
119	009-N-2A	Screenings Handling
120	009-N-2B	Screenings Handling
121	009-N-3	Raw WW Screening
122	009-N-4	Grit Removal
123	009-N-8	Secondary RAS/WAS Pumping
124	009-N-10	Activated Sludge Blowers - Overview
125	009-N-11	Activated Sludge Blowers - Detail
126	009-N-13	Activated Sludge Basins
127	009-N-15	Secondary Clarification
128	009-N-18	Secondary Effluent Pumping
129	009-N-19B	Filtration - Aqua-Aerobic
130	009-N-20B	Filtration Cleaning - Aqua-Aerobic
131	009-N-21	Filtration Polymer Feed
132	009-N-22	PRC Feed - Liquid Train
133	009-N-24	SHC Feed
134	009-N-25	W3 Effluent Pumping
135	009-N-27	HSW Receiving
136	009-N-28	Digester Feed/Overflow/Mixing
137	009-N-29	Digester Feed Valves and BD Pump Station 2
138	009-N-30	Digester Heating, Recirc, and Transfer
139	009-N-31	Dewatering Feed Pumps

No.	Drawing	Title
140	009-N-32	DG Collection and Waste Gas Burner
141	009-N-33	DG Compression-Storage-Distribution
142	009-N-34	DG and NG Boilers
143	009-N-35	Hot Water Pumps
144	009-N-36	Digester Heating Pumps
145	009-N-37	Primary Scum Pumping
146	009-N-39	Primary Sludge Screening
147	009-N-40	Primary Sludge Thickening and Pumping
148	009-N-41	WAS Thickening GBT
149	009-N-43	TWAS Pumping
150	009-N-44	GBT Polymer Feed System
151	009-N-45	Sludge Dewatering Belt Filter Press 1
152	009-N-46	Sludge Dewatering Belt Filter Press 2
153	009-N-47	Belt Filter Press Polymer Feed System
154	009-N-48	Wet Cake Pumping
155	009-N-49	Dryer Dosing Pumps
156	009-N-50	Dryer Depositor
157	009-N-51	Sludge Drying
158	009-N-52	Drying Air Treatment
159	009-N-53	Dried Biosolids Handling
160	009-N-54	Hot Water Heating System
161	009-N-55	Recycle Pumping
162	009-N-56	Compressed Air
163	009-N-57	PRC Feed - Solids Train
164	009-N-58	Fuel Tanks, Generators, and Switchgear
165	009-N-59	Dryer Dust Collection
100		PLANT 1
		REMOVAL
166	100-R-1	Removal Plan
167	100-R-2	Removal Plan
168	100-R-3	Removal Plans
169	100-R-4	Removal Plan
170	100-R-5	Removal Plan
171	100-R-6	Removal Plan
172	100-R-7	Removal Plan
173	100-R-8	Removal Plans
174	100-R-9	Removal Plan
175	100-R-10	Removal Plan
176	100-R-11	Removal Plan
177	100-R-12	Removal Plan
178	100-R-13	Removal Plan
179	100-R-14	Removal Plan
180	100-R-15	Removal Plan
181	100-R-16	Removal Plan
182	100-R-17	Removal Plan
183	100-R-18	Removal Plan
184	100-R-19	Removal Plan
185	100-R-20	Removal Plan
186	100-R-21	Removal Plan
187	100-R-22	Removal Plan
188	100-R-23	Removal Plan

No.	Drawing	Title
189	100-R-24	Removal Plan
190	100-R-25	Removal Plan
191	100-R-26	Removal Plan
		ARCHITECTURAL
192	100-A-1	Plan
193	100-A-2	Plan
194	100-A-3	Plan
195	100-A-4	Plan
196	100-AS-1	Plan
197	100-AS-2	Plan
198	100-AS-3	Plans
199	100-AS-4A	Plan
200	100-AS-4B	Plans
201	100-AS-5	Plan
202	100-AS-6	Plan
203	100-AS-7	Plan
204	100-AS-8	Plans
205	100-AS-9	Plan and Detail
206	100-AS-10	Plan
207	100-AS-11	Plan and Detail
208	100-AS-12A	Plan
209	100-AS-12B	Plans
210	100-AS-13	Plan
211	100-AS-14	Plan and Detail
212	100-AS-15	Plan and Section
213	100-AS-16	Plan
214	100-AS-17	Plan
215	100-AS-18	Plan and Section
216	100-AS-19	Plan
217	100-AS-20A	Plan
218	100-AS-20B	Plan and Section
219	100-AS-21	Plan
220	100-AS-22	Plan and Sections
221	100-AS-23	Plan
		PROCESS MECHANICAL
222	100-M-1	Plan
223	100-M-2	Plan
224	100-M-4A	Plan
225	100-M-4B	Plan
226	100-M-8	Plan
227	100-M-10	Plan
228	100-M-11	Plan
229	100-M-12A	Plan
230	100-M-12B	Plan and Detail
231	100-M-14	Plan
232	100-M-18	Plan
233	100-M-19	Plan
234	100-M-28	Section

No.	Drawing	Title
235	100-M-29	Section and Detail
236	100-M-30	Section and Detail
237	100-M-31	Section
238	100-M-32	Sections
239	100-M-33	Isometrics
		PLUMBING
240	100-P-1	Plan
241	100-P-2	Plan
242	100-P-3	Plans
243	100-P-4A	Plan
244	100-P-4B	Plan
245	100-P-7	Plan
246	100-P-8	Plans
247	100-P-9	Plan
248	100-P-10	Plan
249	100-P-11	Plan
250	100-P-28	Isometrics
251	100-P-29	Isometrics
		HVAC
252	100-H-1	Plan
253	100-H-2	Plan
254	100-H-3	Plans
255	100-H-4A	Plan
256	100-H-4B	Plan
257	100-H-10	Plan
258	100-H-11	Plan
259	100-H-12A	Plan
260	100-H-12B	Plan
261	100-H-13	Plan
262	100-H-14	Plan
263	100-H-15	Plan
264	100-H-16	Plan
265	100-H-17	Plan
266	100-H-18	Plan
267	100-H-19	Plan
268	100-H-20A	Plan
		ELECTRICAL/INSTRUMENTATION
269	100-EN-1	Plan
270	100-EN-2	Plan
271	100-E-3	Plan
272	100-EN-4A	Plan
273	100-EN-4B	Plan
274	100-EN-5	Plan
275	100-EN-6	Plan
276	100-EN-7	Plan
277	100-EN-8	Plan
278	100-EN-9	Plan
279	100-EN-10	Plan
280	100-EN-11	Plan

No.	Drawing	Title
281	100-EN-12A	Plan
282	100-EN-12B	Plan
283	100-EN-13	Plan
284	100-EL-5	Lighting and FAS Plan
285	100-EL-6	Lighting and FAS Plan
286	100-EL-7	Lighting and FAS Plan
287	100-EL-8	Lighting and FAS Plan
		PRIMARY CLARIFICATION
288	310-R-1	Removal Plan
289	310-R-2	Removal Plan
290	310-M-1	Plan
291	310-M-7	Sections
VOLUME 2		
001		GENERAL
292	001-G-0	Cover
293	001-G-1	Signature Sheet
294	001-G-2	Index of Sheets
295	001-G-3	Index of Sheets
296	001-G-4	Index of Sheets
297	001-G-5	Index of Sheets
298	001-G-6	General Legend, Symbols, and Abbreviations
299	001-G-7	Civil Legend and General Notes
300	001-G-8	Plumbing Legend/HVAC Legend/Electrical Legend
301	001-G-9	Instrumentation and Control Standard Legend
302	001-G-10	Instrumentation and Control Standard Symbology
303	001-ENV-1	Schedule
304	001-ENV-2	Schedule
305	001-ENV-3	Schedule
306	001-ENV-4	Schedule
307	002-CK-1	Project Overview
308	002-CK-2	Site Key Plan
309	002-CK-3	Existing Conditions
		PLANT 2
310	160-R-1	Removal Plan
311	160-R-2	Removal Plan
312	160-R-3	Removal Plan
313	160-R-4	Removal Plan
314	160-R-5	Removal Plan
315	160-R-6	Removal Plan
316	160-A-1	Code Plan
317	160-A-2	Code Plan
318	160-AS-1	Plan
319	160-AS-2	Plan and Detail
320	160-AS-3	Plan, Section, and Detail
321	160-AS-4	Detail
322	160-M-1	Plan and Detail
323	160-M-2	Plan
324	160-M-3	Plan

No.	Drawing	Title
325	160-M-4	Section
326	160-M-5	Section
327	160-M-6	Plan and Detail
328	160-M-7	Plan
329	160-M-8	Plan
330	160-M-9	Section
331	160-M-10	Section
332	160-M-11	Plan and Detail
333	160-M-12	Plan
334	160-M-13	Plan
335	160-M-14	Section
336	160-M-15	Section
337	160-M-16	Plan and Detail
338	160-M-17	Plan
339	160-PH-1	Plan
340	160-PH-2	Plan
341	160-EN-1	Plan
342	160-EN-2	Plan
343	160-EN-3	Plan
344	160-N-1	Wiring Tables For 160-EN-2
345	160-EL-1	Lighting and FAS Plan
346	160-EL-2	Lighting and FAS Plan
		ACTIVATED SLUDGE
347	405-S-1	Plan
348	405-S-2	Plan
349	405-S-3	Sections
350	405-S-4	Section and Details
351	405-M-1	Plan
352	405-M-2	Plan
353	405-M-3	Section
354	405-EN-1	Plan
355	405-EN-2	Plan
356	190-R-1	Removal Plan
357	190-R-2	Removal Plan
358	190-R-3	Removal Plan
359	190-R-4	Removal Plan
360	190-R-5	Removal Plan
361	190-R-6	Removal Plan
362	190-S-2	Plan
363	190-S-5	Plan and Details
364	190-S-6	Plan
365	190-S-7	Sections and Details
366	190-M-1	Plan
367	190-M-2	Plan
368	190-M-3	Plan and Detail
369	190-M-4	Plan
370	190-M-5	Plan and Detail
371	190-M-6	Plan
372	190-M-7	Sections
373	190-EN-1	Plan
374	190-EN-2	Plan

No.	Drawing	Title
375	190-EN-3	Plan
376	190-EN-4	Plan
377	190-EN-5	Plan
378	190-EN-6	Plan
		GRAVITY THICKENER
379	300-R-1	Removal Plans
380	300-M-1	Plans
381	300-M-2	Sections
382	300-EN-1	Plans
		SECONDARY CLARIFIERS
383	210-R-1	Removal Plan
384	210-R-2	Removal Plan
385	210-S-2	Plan
386	210-S-3	Plan and Section
387	210-M-1	Plan
388	210-M-2	Plan
389	210-M-3	Section
		TERTIARY FILTRATION
390	240-R-1	Removal Plan
391	240-R-2	Removal Plan
392	240-A-1	Code Plan
393	240-A-2	Code Plan
394	240-AS-1	Plan
395	240-AS-2	Plan
396	240-AS-3	Plan
397	240-AS-4	Plan
398	240-AS-6B	Plan-Aqua-Aerobic
399	240-AS-7	Plan and Sections
160	240-AS-8	Plan
401	240-AS-9B	Plan-Aqua-Aerobic
402	240-AS-10	Plan
403	240-AS-11B	Plan-Aqua-Aerobic
404	240-AS-12	Sections
405	240-AS-13B	Section-Aqua-Aerobic
406	240-AS-14B	Sections-Aqua-Aerobic
407	240-AS-15	Sections
408	240-AS-16	Sections and Detail
409	240-AS-17	Detail
190	240-M-1	Plan
411	240-M-2	Plan
412	240-M-3	Plan
413	240-M-6B	Plan-Aqua-Aerobic
414	240-M-7	Plan
300	240-M-8	Plan and Details
416	240-M-9B	Plan-Aqua-Aerobic
417	240-M-11B	Plan-Aqua-Aerobic
418	240-M-12B	Section-Aqua-Aerobic
419	240-M-13B	Section-Aqua-Aerobic
420	240-M-14	Sections

No.	Drawing	Title
421	240-M-15	Isometrics and Detail
422	240-M-16B	Isometrics-Aqua-Aerobic
423	240-M-17	Section and Detail
424	240-M-18B	Section-Aqua-Aerobic
425	240-P-1	Plan
426	240-P-2	Plan
427	240-P-9B	Plan-Aqua-Aerobic
428	240-H-1	Plan
429	240-H-2	Plan
430	240-H-3	Plan
431	240-EN-1	Plan
432	240-EN-2	Plan
433	240-EN-3	Plan
434	240-EN-4	Plan
435	240-EN-5	Plan
436	240-EN-6B	Plan-Aqua-Aerobic
437	240-EN-9B	Plan-Aqua-Aerobic
438	240-EN-11B	Plan-Aqua-Aerobic
439	240-EL-7	Lighting and FAS Plan
440	240-EL-8	Lighting and FAS Plan
		HSW Building
441	330-R-1	Removal Plan
442	330-R-2	Removal Plan
443	330-R-3	Removal Plan
444	330-R-4	Removal Plan
445	330-R-5	Removal Plan
446	330-R-6	Removal Plan
447	330-R-7	Removal Plan
448	330-AS-1	Plan
449	330-AS-2	Plan
450	330-AS-3	Plan
451	330-AS-4	Elevations
452	330-AS-5	Sections
453	330-AS-6	Section and Detail
454	330-AS-7	Sections
455	330-AS-8	Plans and Sections
456	330-M-1	Plan
457	330-M-2	Plan
458	330-M-3	Sections
459	330-M-4	Section and Details
460	330-M-5	Details
461	330-F-1	Plan
462	330-P-1	Plan
463	330-P-2	Plan
464	330-P-3	Plan
465	330-P-4	Isometrics
466	330-H-1	Plan
467	330-H-2	Plan
468	330-EN-1	Plan
469	330-EN-2	Plan
470	330-EN-3	Plan

No.	Drawing	Title
471	330-EL-2	Lighting and FAS Plan
		DIGESTER BUILDING
472	360-R-1	Removal Plan
473	360-R-2	Removal Plan
474	360-R-3	Removal Plan
475	360-R-4	Removal Plan
476	360-R-5	Removal Plan
477	360-R-6	Removal Plan
478	360-R-7	Removal Plan
479	360-R-8	Removal Plan
480	360-R-9	Removal Plan
481	360-A-1	Plan
482	360-A-2	Plan
483	360-AS-1	Plan
484	360-AS-2	Plan
485	360-AS-3	Plan and Details
486	360-AS-4	Plan and Section
487	360-AS-5	Plan
488	360-AS-6	Plan
489	360-AS-7	Plan and Detail
490	360-AS-8	Plan
491	360-AS-9	Plan
492	360-AS-10	Section
493	360-AS-11	Section
494	360-AS-12	Sections
495	360-AS-13	Sections
496	360-AS-14	Sections
497	360-AS-15	Sections
498	360-AS-16	Sections
499	360-AS-17	Sections
500	360-AS-18	Sections
501	360-AS-19	Sections
502	360-AS-20	Sections
503	360-AS-21	Sections
504	360-AS-22	Sections
505	360-AS-23	Sections
506	360-M-1	Plan
507	360-M-2	Plan
508	360-M-3	Plan
509	360-M-4	Plan
210	360-M-5	Plan
511	360-M-6	Plan
512	360-M-7	Plan
513	360-M-8	Plan
514	360-M-9	Plan
515	360-M-10	Plan
516	360-M-11	Plan
517	360-M-12	Plan
518	360-M-13	Plan
519	360-M-14	Plan
520	360-M-15	Plan

No.	Drawing	Title
521	360-M-16	Plan
522	360-M-17	Plan
523	360-M-18	Section
524	360-M-19	Section
525	360-M-20	Section
526	360-M-21	Section
527	360-M-22	Section
528	360-M-23	Section
529	360-M-24	Section
530	360-M-25	Section
531	360-M-26	Section
532	360-M-27	Section
533	360-M-28	Section
534	360-M-29	Section
535	360-M-30	Section
536	360-M-31	Section
537	360-M-32	Section
538	360-M-33	Section
539	360-M-34	Section
540	360-M-35	Section
541	360-M-36	Section
512	360-M-37	Isometric - Digester Gas
543	360-M-38	Isometric - Sludge
544	360-M-39	Isometric - Digester Mixing
545	360-M-40	Isometric - Heating Water
546	360-M-41	Details
547	360-PH-1	Plan
548	360-PH-2	Plan
549	360-PH-3	Plan
550	360-PH-4	Plan
551	360-PH-5	Plan
552	360-PH-6	Plan
553	360-PH-7	Plan
554	360-PH-8	Plan
555	360-PH-9	Plan
556	360-PH-10	Plan
557	360-PH-11	Plan
558	360-EN-1	Plan
559	360-EN-2	Plan
560	360-EN-3	Plan
561	360-EN-4	Plan
562	360-EN-5	Plan
563	360-EN-6	Plan
564	360-EN-7	Plan
565	360-EN-8	Plan
566	360-N-1	Wiring Tables
567	360-N-2	Wiring Tables
568	360-N-3	Wiring Tables
569	360-EL-4	Lighting and FAS Plan
570	360-EL-5	Lighting and FAS Plan
571	360-EL-6	Lighting and FAS Plan
572	360-EL-7	Lighting and FAS Plan

No.	Drawing	Title
573	360-EL-8	Lighting and FAS Plan
574	360-EL-9	Lighting and FAS Plan
		Waste Gas Burner
575	470-SMEN-1	Plan and Elevations
		Dewatering and Drying
576	500-A-1	Plan
577	500-A-2	Plan
578	500-A-3	Plan
579	500-A-4	Plan
580	500-AS-1	Plan
581	500-AS-2	Plan
582	500-AS-3	Plan
583	500-AS-4	Plans
584	500-AS-5	Plan
585	500-AS-6	Plans
586	500-AS-7	Plan
587	500-AS-8	Plan
588	500-AS-9	Plan
589	500-AS-10	Plan
590	500-AS-11	Plan
591	500-AS-12	Plan
592	500-AS-13	Plan
593	500-AS-14	Plan
594	500-AS-15	Plan
595	500-AS-16	Plan
596	500-AS-17	Section
597	500-AS-18	Section
598	500-AS-19	Section
599	500-AS-20	Section
240	500-AS-21	Section
601	500-AS-22	Section
602	500-AS-23	Section
603	500-AS-24	Section
604	500-AS-25	Section
605	500-AS-26	Section
606	500-AS-27	Section
607	500-AS-28	Section
608	500-AS-29	Section
609	500-AS-30	Section
330	500-AS-31	Section
611	500-AS-32	Section
612	500-AS-33	Section
613	500-AS-34	Elevations
614	500-AS-35	Elevations
615	500-AS-36	Elevations
616	500-AS-37	Plans and Section
617	500-AS-38	Details
618	500-AS-39	Details
619	500-AS-40	Sections and Detail
620	500-AS-41	Section and Elevation

No.	Drawing	Title
621	500-AS-42	Plan and Detail
622	500-AS-43	Plan
623	500-M-1	Plan
624	500-M-2	Plan
625	500-M-3	Plan
626	500-M-4	Plan
627	500-M-5	Plan
628	500-M-6	Plan
629	500-M-7	Plan
630	500-M-8	Plan
631	500-M-9	Plan
632	500-M-10	Plan
633	500-M-11	Plan
634	500-M-12	Plan
635	500-M-13	Plan
636	500-M-14	Plan
637	500-M-15	Plan
638	500-M-16	Plan
639	500-M-17	Section
640	500-M-18	Section
641	500-M-19	Section
642	500-M-20	Section
643	500-M-21	Section
644	500-M-22	Section
645	500-M-23	Section
646	500-M-24	Section
647	500-M-25	Section
648	500-M-26	Section
649	500-M-27	Section
650	500-M-28	Section
651	500-M-29	Section
652	500-M-30	Section
653	500-M-31	Section
654	500-M-32	Section
655	500-M-33	Section
656	500-M-34	Section
657	500-M-35	Section
658	500-M-36	Section
659	500-M-37	Section
660	500-M-38	Section
661	500-M-39	Section
662	500-M-40	Section
663	500-SM-41	Dust Collector Plan and Section
664	500-M-42	Details
665	500-M-43	Details
666	500-M-44	Detail
667	500-M-45	Detail
668	500-M-46	Details
669	500-M-47	Isometric
670	500-M-48	Isometric
671	500-M-49	Isometric
672	500-M-50	Isometric

No.	Drawing	Title
673	500-F-2	Plan
674	500-F-3	Plan
675	500-P-1	Plan
676	500-P-2	Plan
677	500-P-3	Plan
678	500-P-4	Plan
679	500-P-5	Plan
680	500-P-6	Plan
681	500-P-7	Plan
682	500-P-8	Plan
683	500-P-9	Plan
684	500-P-10	Plan
685	500-P-11	Plan
686	500-P-12	Plan
687	500-P-13	Plan
688	500-P-14	Plan
689	500-P-15	Plan
690	500-P-16	Plan
691	500-P-17	Isometric
692	500-P-18	Isometric
693	500-H-1	Plan
694	500-H-2	Plan
695	500-H-3	Plan
696	500-H-4	Plan
697	500-H-5	Plan
698	500-H-6	Plan
699	500-H-7	Plan
360	500-H-8	Plan
701	500-H-9	Plan
702	500-H-10	Plan
703	500-H-11	Plan
704	500-H-12	Plan
705	500-H-13	Plan
706	500-H-14	Plan
707	500-H-15	Plan
708	500-H-16	Plan
709	500-EN-1	Plan
710	500-EN-2	Plan
711	500-EN-3	Plan
712	500-EN-4	Plan
713	500-EN-5	Plan
714	500-EN-6	Plan
715	500-EN-7	Plan
716	500-EN-8	Plan
717	500-EN-9	Plan
718	500-EN-10	Plan
719	500-EN-11	Plan
720	500-EN-12	Plan
721	500-EN-13	Plan
722	500-EN-14	Plan
723	500-EN-15	Plan
724	500-EN-16	Plan

No.	Drawing	Title
725	500-EN-17	Plan
726	500-N-1	Wiring Tables
727	500-N-2	Wiring Tables
728	500-N-3	Wiring Tables
729	500-N-4	Wiring Tables
730	500-EL-4	Lighting and FAS Plan
731	500-EL-5	Lighting and FAS Plan
732	500-EL-6	Lighting and FAS Plan
733	500-EL-7	Lighting and FAS Plan
734	500-EL-8	Lighting and FAS Plan
735	500-EL-9	Lighting and FAS Plan
736	500-EL-10	Lighting and FAS Plan
737	500-EL-11	Lighting and FAS Plan
738	500-EL-12	Lighting and FAS Plan
739	500-EL-13	Lighting and FAS Plan
740	500-EL-14	Lighting and FAS Plan
741	500-EL-15	Lighting and FAS Plan
742	500-EL-16	Lighting and FAS Plan
743	999-C-1	Construction Details
744	999-C-2	Construction Details
745	999-C-3	Construction Details
746	999-C-4	Construction Details
747	999-C-5	Construction Details
748	999-C-6	Construction Details
749	999-C-7	Construction Details
750	999-C-8	Construction Details
751	999-C-9	Construction Details
752	999-C-10	Construction Details
753	999-C-11	Construction Details
754	999-C-12	Construction Details
755	999-C-13	Construction Details
756	999-C-14	Construction Details
757	999-A-1	Room Finish Schedule
758	999-A-2	Room Finish Schedule
759	999-A-3	Room Finish Schedule
760	999-A-4	Door Schedule
761	999-A-5	Door Schedule
762	999-A-6	Door Schedule
763	999-A-7	Window Schedule
764	999-A-8	Standard Details
765	999-A-9	Standard Details
766	999-A-10	Standard Details
767	999-A-11	Standard Details
768	999-A-12	Standard Details
769	999-A-13	Standard Details
500	999-S-1	Standard Details
771	999-S-2	Standard Details
772	999-S-3	Standard Details
773	999-S-4	Standard Details
774	999-S-5	Standard Details
775	999-S-6	Standard Details
776	999-S-7	Standard Details

No.	Drawing	Title
777	999-S-8	Standard Details
778	999-S-9	Standard Details
779	999-S-10	Standard Details
780	999-S-11	Standard Details
781	999-S-12	Standard Details
782	999-S-13	Standard Details
783	999-M-1	Standard Details
784	999-M-2	Standard Details
785	999-M-3	Standard Details
786	999-M-4	Standard Details
787	999-M-5	Standard Details
788	999-F-1	Standard Details
789	999-P-1	Standard Details
790	999-P-2	Standard Details
791	999-P-3	Standard Details
792	999-P-4	Standard Details
793	999-H-1	Schedules
794	999-H-2	Schedules
795	999-H-3	Schedules
796	999-H-4	Schedules
797	999-H-5	Standard Details
798	999-H-6	Standard Details
799	999-H-7	Standard Details
800	999-H-8	Standard Details
801	999-E-1	Standard Details
802	999-E-2	Standard Details
803	999-E-3	Standard Details
804	999-E-4	Standard Details
805	999-E-5	Standard Details
806	999-N-1	Standard Details
807	999-N-2	Standard Details
808	999-N-3	Standard Details
809	999-N-4	Standard Details
810	999-N-5	Standard Details
811	999-N-6	Standard Details
812	999-N-6	Standard Details

APPENDIX
Resumes

DONOHUE

DONOHUE

MICHAEL W. GERBITZ, PE

PROFESSIONAL ENGINEER
Wisconsin: 32259
Michigan: 6201064285
Minnesota: 53781

YEARS OF EXPERIENCE
30

EDUCATION
Master of Science
Civil Engineering
Southern Illinois University
1992

Bachelor of Science
Aerospace Engineering and Mechanics
University of Minnesota
1990

PROFESSIONAL ASSOCIATIONS
Central States Water Environment
Water Environment Federation
NACWA

AWARDS
2018 ACEC Minnesota Engineering Excellence Grand Award, Project Manager/Lead Process Engineer: A Utility of the Future > Making St. Cloud GREATER, St. Cloud Minnesota

2017 ACEC Wisconsin Engineering Excellence Best of State Award, Project Manager: Eau Claire WWTF-Resilient, Robust, Sustainable, Eau Claire, Wisconsin

2013 ACEC Wisconsin Engineering Excellence Grand Award, Project Manager: Sheboygan Regional WWTP Achieves Net Zero Energy, Sheboygan, Wisconsin

2012 ACEC Minnesota Engineering Excellence Honor Award, Lead Project Manager/Lead Process Engineer: New Wastewater Treatment Facility, Willmar, Minnesota

2008 George Bradley Gascoigne Medal, Water Environment Federation

2007 ACEC Engineering Excellence Grand Award/National Finalist, Project Manager: Wastewater Treatment Facility at Chatfield, Minnesota

PAPERS
"Sheboygan WWTF Achieves Net Zero Energy," The Clarifier, Wisconsin Wastewater Operators' Association, December 2013

"You've got grit-slurry problems. Now what?" Water Environment & Technology Magazine, September 2013

"Best from the Inside Out, A change in direction eliminated filamentous bulking at a Wisconsin slaughterhouse," Industrial Wastewater, February/March 2007, Water Environment Federation Magazine

Low-Level Phosphorus Compliance, Facility Planning, and Preliminary Design, La Crosse, Wisconsin. Sr. Project Manager/Principal/Client Advocate: The City of La Crosse retained Donohue to evaluate low-level phosphorus compliance alternatives at this 20-mgd average/40-mgd peak treatment facility. After a phosphorus compliance strategy was developed, the City retained Donohue to perform a comprehensive and holistic treatment facility plan. This plan addressed capacity, condition, safety, compliance, performance, and efficiency concerns. The recommended plan included equipment replacements, infrastructure rehabilitation, aeration basin configuration basin enhancements to improve bio-P performance, effluent disc filtration for phosphorus compliance (0.1 mg-TP/L), biosolids dewatering, biosolids drying, biogas conditioning, and biogas utilization (biogas-fueled engine generators). Currently providing preliminary design services.

Master Planning, La Crosse, Wisconsin. Process Engineer: Evaluated solids handling system, biogas-to-energy, aeration-efficiency enhancement, and phosphorus removal alternatives as part of a facility-wide planning effort for this 20-mgd average-flow wastewater treatment facility. The treatment facility consists of preliminary treatment, primary treatment, enhanced phosphorus removal activated sludge, final clarification, UV disinfection, anaerobic digestion, solids thickening, and liquid biosolids storage. The facility planning effort included a two-day alternatives brainstorming workshop with two internationally-recognized wastewater experts (Stensel and Lue-Hing). The brainstorming workshop generated more than 50 alternatives worthy of further detailed evaluation.

Wastewater Treatment Improvements Design, Wausau, Wisconsin. Project Manager/Principal/Client Advocate: The City of Wausau retained Donohue to produce Bidding Documents to construct the improvements outlined in in the Donohue-authored Wastewater Treatment Facility Plan. The improvements to this 8-mgd average/36-mgd peak facility included a new administration building, raw wastewater screening improvements, raw wastewater pumping improvements, grit system improvements, primary flow splitting improvements, primary treatment and solids pumping improvements, primary effluent conduit improvements, anoxic/anaerobic selectors for biological phosphorus removal, aeration basin configuration and efficiency improvements, aeration system improvements, secondary flow splitting improvements, effluent pumping, secondary effluent pumping, disc filtration for effluent BOD and phosphorus compliance, UV disinfection, primary solids screening, primary thickening, WAS thickening, digestion system enhancements, DSD dewatering, biosolids drying, and biosolids storage improvements.

Treatment Facilities Upgrade, Eau Claire, Wisconsin. Project Engineer: The project involved a major upgrade ($40M) to the entire wastewater treatment facility. The existing rotating biological contactors were replaced with a biological phosphorus removal activated sludge system with high-efficiency turbo-blowers. The project also included primary sludge screening, primary clarifier improvements, secondary clarifier improvements, anaerobic digestion system improvements (linear motion mixers, nozzle mixing, digester covers, biogas storage, and digester gallery piping), solids thickening, biogas conditioning, biogas utilization for heat and electricity production, an automation system to minimize operator requirements, odor control, alkalinity storage and feed systems, water and wastewater laboratory improvements, updated sludge pumping improvements, and emergency electricity generation, and ventilation and electrical system improvements to meet NFPA code.

Energy Efficiency and Biofuel Project, St. Cloud, Minnesota. Project Manager/Principal/Client Advocate: Donohue designed a biofuel conditioning and utilization system for this 17-mgd advanced wastewater treatment facility. The system was sized and designed to work alongside a 250-kW solar garden and accommodate additional biofuel from hauled-in high-strength waste.

Nutrient Recovery and Reuse Project (NR2), St. Cloud, Minnesota. Project Principal/Client Advocate: The City of St. Cloud retained Donohue to complete design services for a biosolids upgrade and nutrient recovery project (NR2). Biosolids processing at the St. Cloud WWTF currently includes sludge thickening and digestion. The NR2 project increased biogas storage, added biosolids dewatering, added Lystek biosolids

PAPERS (continued)
"Nutrient Removal: One Size Does Not Fit All," Water Environment & Technology, October 2004

PUBLICATIONS (peer reviewer)
"Moving Towards Resource Recovery Facilities," Water Environment Federation 2013

PRESENTATIONS
"Wastewater Today: Saving Energy, Producing Energy, and Recovering Nutrients," MWOA Section Meeting, Willmar, Minnesota, June 2017

"Energy Reduction Projects at WWTPs – Goal Towards Net Zero," MPCA Wastewater Operations Conference, March 2017

"Affordable and Unconventional Clean Water Act Compliance for Willmar, MN: A 'Salty Discharge' Case Study Illustrating the Benefits of EPA's Prioritized and Integrated Strategy for Clean Water Act Compliance," CSWEA Annual Conference, May 2016

"Energy Production and Dramatically Moving the Energy/Cost Needle," MWEA Energy Workshop, East Lansing, Michigan, October 2014

"One Size Does Not Fit All: Site Specific Conditions and Nutrient Removal Configurations," IAWEA Annual Meeting, June 2014

"Overcoming the Barriers for Energy Recovery: Developing WLSSD's Energy Vision," CSWEA Annual Conference, May 2014

"Achieving Energy Independence: Water Resource Recovery Facilities Can Achieve It," MWEA Annual Biosolids Conference, March 2014

"Overcoming the Barriers for Energy Recovery: Developing WLSSD's Energy Vision," WATERCON, March 2014

"Overcoming the Barriers for Energy Recovery: Developing WLSSD's Energy Vision," CSWEA Environment Conference, November 2013

"Sheboygan Heat Drying Biosolids," CSWEA Wisconsin Annual Spring Biosolids Symposium, March 2013

"You've Got Grit Slurry: Now What? Three Case Studies of Grit Slurry Serving Large Combined Sewer Systems," WEFTEC, October 2012

"LM Digester Mixers and More Micro-Turbines Enhance Sheboygan's Ability to Produce Energy and Go off the Grid," Central States WEA Annual Meeting, May 2012

cell lysis, and Ostara sidestream struvite recovery. Struvite recovery reduces recycle phosphorus loading and produces a slow-release fertilizer product. The improvements are performing well, yielding struvite and a high-quality soil amendment.

Low-Level Phosphorus Compliance, Fox River Water Pollution Control Center, Brookfield, Wisconsin. Project Manager/Principal/Client Advocate: The City retained Donohue to design improvements to meet a low-level effluent phosphorus limit (0.075 mg-TP/L) at this 50-mgd treatment facility. During planning, Donohue and the Owner considered a host of compliance strategies before selecting disc filtration. The Bidding Documents defined the Work associated with a chemical mixing and flocculation system, flow splitting system, and effluent disc filtration system.

Preliminary Treatment Improvements, Western Lake Superior Sanitary District, Duluth, Minnesota. Project Engineer: Designed preliminary treatment improvements at this 40-mgd average/155-mgd peak flow facility. The purpose of this project was to address condition- and performance-related deficiencies within two preliminary treatment processes: screening and grit removal. Improvements included screen influent channel modifications, three ¼-inch opening bar screens, screenings washing/compacting, a screening bypass channel, grit removal basin enhancements, grit slurry pumping enhancements, grit dewatering/washing equipment, material handling enhancements, and HVAC enhancements.

Biogas Conditioning and Utilization – Renewable Energy Improvements, Western Lake Superior Sanitary District, Duluth, Minnesota. Project Manager/Principal/Client Advocate: The District retained Donohue to design a biogas conditioning and biogas utilization system. Biogas conditioning consists of moisture removal, biological H2S removal, and siloxane removal. The conditioned biogas fuels a boiler system that heats the expansive wastewater treatment campus as well as three nominal 800-kW engine generators. Waste heat is recovered from the engine generators.

Wastewate Treatment Facility and Pump Stations, Willmar, Minnesota. Project Manager: Donohue served as program manager for the design of $70M of wastewater system improvements. These improvements consisted of a new 5-mgd average day flow treatment facility, 6 miles of 48- and 54-inch gravity interceptor, two raw wastewater pump stations, and several miles of raw wastewater force main. The new 5-mgd treatment facility consists of a screw pump raw wastewater pump station, a centrifugal submersible raw wastewater pump station, fine screening, screenings washing/compacting, grit removal, anoxic selector, oxidation ditch activated sludge, secondary settling, UV disinfection, final aeration, chemical phosphorus removal, gravity belt WAS thickening, liquid sludge storage, hypochlorite filament control, and reclaimed effluent pumping and distribution. The design phase included a 30%-complete design submittal with cost opinion, a 75%-complete design submittal and cost opinion, and a 95%-complete design submittal and cost opinion. The 30%-complete cost opinion exceeded the program budget, prompting a value engineering effort. Value engineering reduced the project cost opinion to the budget.

Wastewater Treatment Facility Improvements, Faribault, Minnesota. Project Manager: The upgrade included a new preliminary treatment building with raw wastewater pumping, fine screening with screenings dewatering, and grit removal with grit washing/dewatering; Administration Building improvements, primary sludge pumping improvements, primary scum removal improvements, roughing filter rehabilitation complete with media replacement, motorized distributors, and recycle system improvements; activated sludge system reconfiguration to improve operating performance and flexibility; aeration system improvements complete with high-speed, single stage, high-efficiency blowers; diffused air system improvements complete with automated DO control, flexible membrane diffusers, and above-grade air distribution piping; secondary clarifier enhancements; a new UV disinfection system; a new high-river stage effluent pumping system; new RAS and WAS pumping; new aerated WAS storage; new WAS thickening structure with a 2-M gravity belt thickener; anaerobic digestion system improvements; liquid and gas piping improvements, NFPA 820 code compliance, digester mixing, and a gas-holding digester cover.

DONOHUE

ERIC J. LYNNE, PE

PROFESSIONAL ENGINEER
Minnesota: 54373
Wisconsin: 42739
Illinois: 62066969

YEARS OF EXPERIENCE
13

EDUCATION
Master of Science
Civil and Environmental Engineering
South Dakota State University
2009

Bachelor of Science
Civil and Environmental Engineering
South Dakota State University
2007

PROFESSIONAL ASSOCIATIONS
Water Environment Federation-Central States WEA

Wisconsin Wastewater Operators Association

Sentral States Select Society of Sanitary Sludge Shovelers (7S)

SPECIAL TRAINING
BioWin Designer Training:
- Introductory Topics
- Advanced Topics

AWARDS
2016 ACEC Wisconsin Engineering Excellence State Finalist Award, Project Manager: Stevens Point-Brewing a Better Future Together, Stevens Point, Wisconsin

2016 ACEC Missouri Engineering Excellence Grand Award, Process Engineer: Jefferson City-Cole Junction Pump Station and Force Main

2014 Central States WEA:
- WEA Service Award
- WI Section Service Award
- Young Professional of the Year

2014 ACEC Missouri Engineering Excellence Honor Award, Process Engineer: Inline Storage Optimizes Existing Riverside Pump Station, Jefferson City, Missouri

2011 ACEC Wisconsin Engineering Excellence Best of State, Process Engineer: Facility Planning to Meet Permit Limits, Superior, Wisconsin

PAPERS
"Challenging the limits of technology," Water Environment & Technology Magazine, January 2015, Vol. 27, No. 1

WEF 2008 Poster Session

"Effective Removal of Pharmaceuticals and Personal Care Products in Wastewater Treatment Plants"

Mr. Lynne has experience as a project manager for projects of varying size, ranging from small studies to design-bid-build projects. Although a process engineer at the core, Mr. Lynne's direct involvement with staff provides him with significant background knowledge that becomes essential in a project manager role, even if the project is not process oriented. He has experience in construction supervision and surveying, which combined with his WWTP operator and laboratory experience, form the basis for a conscientious engineer on all fronts. Since nearly all projects may have relevance to a process component, Mr. Lynne provides quality process knowledge for conceptual and full-scale designs, as well as troubleshooting for treatment optimization. He utilizes BioWin and GPS-X process modeling software to perform evaluations of many biological treatment scenarios.

Strategic Planning Engineering Services for Wastewater Treatment, La Crosse, Wisconsin. Client Advocate/Project Manager/Process Engineer: This project initiated as a wastewater facility re-rate, but after uncovering major capacity restrictions to the biosolids handling process – a strategic facility plan process was stimulated. Mr. Lynne championed the project team to provide a whole-plant perspective towards improvements and inspired the Owner to identify additional local methods for reuse of dried wastewater biosolids. Mr. Lynne assembled and explained key differences to the regional and industrial contributor contracts, such that the City can begin implementing a common contract for equitable distribution of facility capacity.

Digestion, Dewatering, and Drying, Stevens Point, Wisconsin. Project Manager and Lead Process Engineer: Performed initial study phase work to develop project drivers and estimated project scope and costs. Subsequent planning phases included detailed logistics, cost opinions and equipment preferences. Coordinated on-site pilot testing for dewatering and drying equipment. Utilized results of pilot testing to size and design main equipment for ultimate goal of biosolids drying and Class A nutrient reuse. Provided project punchlist inspection during construction.

High Strength Waste Receiving and Force Main Design, Stevens Point, Wisconsin. Project Manager and Process Engineer: Designed system to convey excess brewery waste from the industry to the WWTP using a force main system as well as a WWTP located waste receiving tank to accept additional hauled in wastes. The contents of both systems are metered into the anaerobic digesters. Cost-payback decisions were a key part of this project.

Influent Pumping and pH Control Design, Stevens Point, Wisconsin. Project Manager and Process Engineer: Design of an average daily flow submersible pump to compliment the main peak flow lift pumps and increase efficiency. Assisted the City to obtain Focus on Energy grant funding. Associated facility plan amendment determined acid feed system as the most cost-effective ammonia discharge compliance method. The acid feed system with pH control was designed, to prevent capacity expansion requirements for ammonia treatment.

Wastewater Treatment Plant Capacity, Stevens Point, Wisconsin. Process Engineer/ Project Manager: Wastewater treatment plant capacity was evaluated after installation of high-rate mixing to the existing secondary digester. Mr. Lynne used of BioWin process modeling and existing data to document that higher than Wisconsin Administrative Code allowable loadings could be sustained without degrading process performance. WDNR approval was received in less than two weeks. The revised capacity resulted in a 25% increase to influent BOD and TSS loadings.

Permit Compliance Planning Engineering Services for Wastewater Treatment. Fort Atkinson, Wisconsin. Client Advocate/Project Manager/Process Engineer: This ongoing project evolved from facilities planning and permit compliance to involve direct equipment replacement, biosolids demonstration testing, and sewer system modeling; then back to facilities planning to finalize the plan after systems had changed. These adaptations are indicative of the flexibility and consideration that Mr. Lynne provides to clients in an effort to obtain the right project at the lowest cost. Fort Atkinson was able to complete the planning stage and confidently move into design for increased firm

PRESENTATIONS

"Sand Filter Conversion to Disc Filters for 0.075 mg/L Total Phosphorus (Medford, WI)," WWOA, October 2019

"WWTP Effluent Phosphorus Filtration for Point-O-Seven-Five," CSWA Conference, May 2019

"Phosphorus Trading: A Real WWTP to WWTP Solution," WWOA, October 2018

"Activated Sludge and BNR Process Control: Hands-On in the Real World," WEFTEC, October 2017, October 2018

"Real Improvements to the Dewaterability of Bio-P Sludge," Iowa WEA Conference, June 2017

"Struvite Mitigation for Improved Bio-P Dewaterability," CSWEA Conference, May 2017

"Real Improvements to the Dewaterability of Bio-P Sludge," Minnesota Conference on the Environment, November 2016

"Activated Sludge and BNR Process Control: Hands-On in the Real World: Alkalinity at East Bank WWTP, Jefferson Parish," WEFTEC, September 2016

"Fond du Lac WWTP Lab Experience," CSWEA Conference, May 2016

"Nitrification and Phosphorus Treatment Success Stories," MPCA Annual Wastewater Operators Conference, March 2016

"Waste Not, Want Not: Maximizing High Strength Waste Addition (Stevens Point, WI)," Minnesota Conference on the Environment, November 2015

"Waste Not, Want Not: Maximizing High Strength Waste Addition," WWOA Conference, October 2015; CSWEA Conference, May 2015

"Operator Tips & Tricks," WWOA Conference, October 2015

"Bringing Wastewater Treatment to a Rainforest Community in Costa Rica," WEFTEC, September 2015

"Oxidation Reduction Potential (ORP) & Alkalinity," Workshop, WEFTEC, September 2015

"Low Level Phosphorus Removal Fundamentals, Technologies, and Results," MPCA Annual Wastewater Operators Conference, March 2015

"Struvite Harvesting Technologies, Impacts, and Economics," MPCA Annual Wastewater Operators Conference, March 2015

"Need for Filtration or Equivalent? Demonstration Testing Prepares Communities for Low Level Phosphorus," WWOA Conference, October 2014: CSWEA Conference, May 2014

capacity in their main lift station knowing that the costs for this work is much less cost and risk than strictly trying to minimize infiltration and inflow sources.

WWTF Main Lift Station Rehabilitation, Study, Design, and Construction, St. Cloud, Minnesota. Project Manager/Process Engineer: Project consisted of larger pumps, replacement valves, piping, controls, HVAC, and electrical gear including a standby generator. The crucial pump station discharges up to 34 mgd into two force mains which acts as either gravity or pressurized pipes depending on the flow. To avoid overly conservative designs, Mr. Lynne provided onsite testing with Owner staff to verify pump curve and system curve hydraulics. Detailed construction sequencing was provided to educate the project team and bidders to mitigate risk and ensure reliable treatment.

Wastewater Treatment Plant Facility Digester and Grit Improvements, New London, Wisconsin. Process Engineer: Evaluation to identify and recommend improvements to the anaerobic digestion and grit systems. Historical data analysis and plant staff were utilized as key indicators of system needs. Alternatives to be considered include digester heating, mixing, waste activated sludge thickening, and digester gas microturbines. The plan received expeditious WDNR approval and design services followed. Mr. Lynne provided lead process design and was instrumental at establishing construction sequencing methods to install the new equipment within the existing structure's footprint.

Primary Digester System Improvements, Sanitary District of Decatur, Illinois. Process Engineer: Lead designer to improve mixing in four 100-foot diameter anaerobic digesters and reduce concerns with the biogas. Linear motion mixing technology was selected to minimize cost and energy use. Excess biogas condensate issues were addressed using automatic draining drip-traps, and waste gas flare odors were mitigated using an enclosed high-efficiency flare. The associated improvements also fixed code-related safety concerns.

High-Strength Waste Receiving Facility, Sanitary District of Decatur, Illinois. Process Engineer: Lead designer for a high-strength waste receiving facility at the District's wastewater treatment plant. The facility is designed to receive a highly digestible industrial by-product from 5,000 gallon tractor-trailer during the day, attenuate the waste, and slowly meter the waste directly into the anaerobic digesters. Major project components included a hauler access station (card-reader), below grade concrete tank, positive displacement pumps, and a glass-lined force main. The nature of this waste required the use of Viton O-rings, gaskets, and seals to prevent premature failure. Design activities included conceptual, preliminary, and final layouts, coordination between disciplines, and sizing of equipment. Project components included drawings and specifications and cost estimates.

Capacity Evaluation, Superior, Wisconsin. Process Engineer: Capacity evaluation to identify the true capacity of the 15-mgd peak hour flow facility. A hydraulic model was generated, followed by a calibration field survey to ensure accurate results. The goal of the model was to understand the maximum capacity of the main facility to ensure proper handling of CSO flows without hindering treatment performance substantially. Provided with proper wastewater characterization data, a BioWin process model was implemented to accurately identify system capacity under various steady-state and dynamic scenarios, including periods of good or poor settleability.

Wet Weather Optimization, Superior, Wisconsin. Process Engineer: Design for automation of RAS pump valves to evenly withdraw return sludge from a series of clarifiers. Second phase of the project involved fine screening, washer compactors, and flow distribution to optimize existing facilities under peak flows.

Aeration System Improvements, North Shore Water Reclamation District, Gurnee, Illinois. Process Engineer: Process modeling, conceptual evaluation, and design of aeration modifications for energy savings. Design included replacement aeration diffusers and high-efficiency blowers. Process modifications include conversion to pre-anoxic and anaerobic selector zones at all three District facilities. Energy savings were documented and presented to funding agencies, resulting in over $3 million in grants.

DONOHUE CHRISTOPHER D. LOCKETT, PE

PROFESSIONAL ENGINEER
Wisconsin: 39070

YEARS OF EXPERIENCE
18

EDUCATION
Bachelor of Science
Civil and Environmental Engineering
University of Wisconsin-Madison
2002

Mr. Lockett is a highly skilled and respected Senior Project Manager credited with 18 years of experience and knowledge in civil and process mechanical engineering. His engineering expertise includes process flow development, detailed process mechanical design, civil pipeline design, hydraulics, equipment specification, construction management and start-up services. Mr. Lockett leads water/wastewater treatment facility design and design-build projects. His strengths include project team coordination, client interactions, communication and mentoring/training. Mr. Lockett works to build strong, trusting owner/engineer relationships that benefit both current and future projects.

Wastewater Treatment Facility Preliminary Design, La Crosse, Wisconsin. Lead Project Engineer: Preliminary design for equipment replacements, infrastructure rehabilitation, aeration basin configuration basin enhancements to improve bio-P performance, effluent disc filtration for phosphorus compliance (0.1 mg-TP/L), biosolids dewatering, biosolids drying, biogas conditioning, and biogas utilization (biogas-fueled engine generators).

2.5 mgd Industrial WW Treatment Plant Expansion, Greeley, Colorado. Project Manager: Led mechanical design, construction management and start-up of this $22M Design-Build Project for a dairy facility. Project included expanded equalization, MBBR roughing system, expansion of existing cooling, filtration, and UV systems, and a 1.2 million-gallon anaerobic CSTR with biogas storage bubble, biogas conditioning system and 500 kW biogas engine generator for power generation.

"Green-Field" Industrial WW Pretreatment System, Hackettstown, New Jersey. Project Manager: Led mechanical design, construction management and start-up of an $8.5M Design-Build project for a confectionary. Project included segregated equalization for FOG separation, an anaerobic SBR with floating membrane cover and a waste gas burner.

"Green-Field" Industrial WW Treatment System, Ashville, North Carolina. Project Manager: Led mechanical design, construction management and start-up related to mechanical and electrical scope only of this $5.5M Design-Build project for a brewery. Project included an anaerobic SBR process and a biogas utilization system that included biogas compression for use in two microturbines for electric power generation.

1.2 mgd "Green-Field" Industrial Pretreatment System Design, DePere, Wisconsin. Project Manager: Coordinated engineering disciplines for a design that included a vendor proprietary anaerobic digestion treatment process including flare for a pulp and paper facility. Sulfur components were removed using a biological H2S scrubber.

1.2 mgd Industrial WW Treatment System Expansion, Carlisle, Pennsylvania. Project Manager: Led mechanical design, construction management and start-up of a wastewater facility expansion for a dairy facility. Project included 0.6 mgd treatment of industrial wastewater and 0.6 mgd of COW water, which required biological treatment. Project also included aeration system upgrades, clarifier modifications and the addition of downward flow, continuously backwashing sand filters.

2.0 mgd "Green-Field" Industrial WW Treatment System Design, Greeley, Colorado. Project Manager: Led mechanical design, engineering construction services and start-up for this $30M design-build project for a dairy facility. Project included DAF, SBR and tertiary filtration technologies as well as wastewater cooling for thermal effluent discharge limitations. The treatment system also included solids holding, handling and thickening components.

2.5 mgd Industrial WW Treatment System, Lemoore, California. Project Manager: Led mechanical design, construction management and start-up of this $14M wastewater treatment facility expansion for a dairy facility. Project included high-rate activated sludge, DAF, aerobic SBR and DAF technologies. Project also included a tertiary filter for reducing effluent TSS.

Additional Projects:

- 0.2 mgd Industrial WW treatment system design-build including phosphorus ppt and removal in Juda, Wisconsin
- Design of pH adjustment system for beverage bottling facility in Hattiesburg, Mississippi
- Design of an H2S and siloxane removal system for a landfill gas system in Waco, Texas
- Preliminary design of an MBR WW treatment system for a dairy bottling facility in Fair Oaks, Indiana
- PH adjustment system pilot study and test for dairy producer in Tulare, California
- Design of biological odor control system for combined sewer system in South Bend, Indiana
- DAF retrofit to existing wastewater pretreatment plant for confectionary client in Topeka, Kansas
- Design of storm water retention basin for a municipality in Elkhorn, Wisconsin
- Biological trickling filter pilot study and test for pulp and paper company in DePere, Wisconsin

Project Engineer: Led the design and construction phase services of sewer, combined sewer, and potable water transmission systems:

- Goshen, Indiana
  24-inch combined sewer siphon under a river using open-cut method
- South Bend, Indiana
  48-inch combined sewer siphon under a river using micro tunneling and several soil stabilization methods
- Independence, Kansas
  1.5 miles of 24-inch sanitary force main, including a river crossing using open-cut method
- Olathe, Kansas
  6.0 miles of 60-inch steel pipe water transmission main including four jack and bore tunnels
- Overland Park, Kansas
  3.5 miles of 30-inch through 54-inch ductile iron water pipe including two jack and bore tunnels
- Lenexa, Kansas
  3.0 miles of 30-inch and 36-inch PCCP water main including three jack and bore tunnels

Great Water Alliance Program, Pipeline Design, Waukesha, Wisconsin. Task Lead: Acted as the Task Lead for the design of approximately 34 miles of water transmission main and sewer force main. The pipeline portion of the Great Water Alliance was broken into three distinct contracts to facilitate bidding and construction:

- Contract Package 2: $55M, 11 miles 30” and 36” water transmission main and 2 miles of 30” sewer force main
- Contract Package 5: $35M, 9 miles 30” sewer force main
- Contract Package 6: $52M, 12 miles 30” sewer force main

Led the pipeline design team including pipeline alignment and profiles, trenchless installations (HDD and jack and bore), appurtenances such as isolation valves, blow-off assemblies, air valves, and cathodic protection, restrained joints, trenching and backfilling, utility and municipality coordination, constructability analysis, specifications, and hydraulics

DONOHUE

RICHARD C. CLAUS, PE, BCEE

PROFESSIONAL ENGINEER
Indiana: PE10200059
Ohio: 73855
Louisiana: 0040165

PROFESSIONAL REGISTRATIONS
American Academy of Environmental Engineers, Board Certified Environmental Engineer, 2006-present

YEARS OF EXPERIENCE
22

EDUCATION
Master of Environmental Engineering
Texas Tech University
1998

Bachelor of Science
Environmental Engineering
Texas Tech University
1998

PROFESSIONAL ASSOCIATIONS
Water Environment Federation

Indiana Water Environment Association, Operations and Maintenance Committee Chair 2004-2007

Ohio Water Environment Association, Southwest Section Chair, Awards Committee 2012-2015 and Government Affairs Committee 2008-2015

AWARDS
2005 Tumble Bug Award (dedicated service to the association), Indiana Water Environment Association

PRESENTATIONS
"Benefits of Hydraulic Model Development at Metropolitan Sewer District of Greater Cincinnati (MSDGC) WWTPs," Ohio Water Environment Association Annual Conference, 2012

"Landfill Leachate Pretreatment Process Evaluation and Pilot Study," Ohio Water Environment Association Annual Conference, 2012

"Solids Handling and WWTP Process Flow – Cause and Effect Interactions," Indiana WEA Annual Conference, 2007

"Conversion of an Existing Tank to a Primary Sludge Gravity Thickener." Water Environment Federation Technical Exhibition and Conference, 2003

"Dechloramination Alternative Evaluation for Evansville, Indiana Water Filtration Plant," American Water Works Association Annual Conference, 2009

"Pumping of Dewatered Sludge," Water Environment Federation Technical Exhibition and Conference, 2002

Richard has over 22 years of project management and engineering experience in the planning, design and construction administration of water and wastewater facilities and collection systems. Areas of expertise include the detailed design of treatment plants and pump stations.

Water Pollution Control Facility Wet Weather Pump Station, Muncie, Indiana. Quality Control Reviewer and Technical Adviser: For project Basis of Design Memorandum and Preliminary Design. The project design included fine screening and pump station facilities for 80 mgd of combined sewer flow more than the existing WPCF's wet weather capacity. Design for proposed wet weather storage facilities downstream of the new wet weather pump station is being performed by other consultants.

Water Pollution Control Facility Basis of Design Memorandum for Future Expansion to 30 mgd, Muncie, Indiana. Lead Process Engineer: High-level study phase to determine WPCF expansion needs from current 24 mgd design capacity to 30 mgd design capacity. The approximate cost of this future expansion will be included in the Muncie Sanitary District's long-term combined sewer overflow control plans.

Southport Advanced Wastewater Treatment Plant Capacity Expansion, Citizens Energy Group, Indianapolis, Indiana. Lead Process Engineer: Performed startup services for the Air Nitrification System (ANS). The East and West ANS systems have a combined design average daily flow rate of 125 mgd. System equipment includes new, single-stage centrifugal turbo blowers, new fine bubble diffusers, anoxic zone mixers, instrumentation, and controls.

Wastewater Treatment Facility Phosphorus Removal Improvements, Vincennes, Indiana. Lead Process Engineer: Wastewater treatment facility upgrades to meet effluent phosphorus limits. Design includes conversion to a biological phosphorus removal process and process modeling was performed using BioWin. Design also includes a new chemical building for chemical precipitation of phosphorus if required and various miscellaneous improvements.

Wastewater Treatment Plant Additions and Improvements, Terre Haute, Indiana. Engineer: Performed Operations and Maintenance Manual finalization and quality control for both Terre Haute WWTP Phase 1 and Phase 2 Improvements with a combined construction cost of approximately $120 million. Richard is also assisting with select construction engineering assignments during the latter part of Phase 2 construction.

Grit Removal System Evaluation, Elkhart, Indiana. Process Engineer: Grit system evaluation with emphasis on the grit pumping system and existing grit dewatering equipment. The existing grit pumping system was analyzed to alleviate piping system plugging problems routinely experienced during wet weather, high flow conditions. Improvement alternatives were identified and advantages and disadvantages of each alternative were evaluated for the grit pumps, piping system, and the grit separation equipment. The recommended alternative included installation of larger capacity grit slurry pumps, increasing pipe size from 4-inch to 6-inch with long radius bends, and installation of larger capacity Hydrogritters consisting of a cyclone, grit classifer, and spiral conveyor for grit separation.

Wastewater Treatment Plant Phase 3 Improvements, Williamsburg, Ohio. Project Manager: Construction phase for a biological nutrient removal conversion and capacity expansion project from 0.5 mgd to 1.0 mgd. The project includes conversion of a sequencing batch reactor activated sludge system to a continuous-flow biological nutrient removal system, and upgrades to the wastewater treatment plant's electrical and control systems.

Wastewater Treatment Plant Design Development Report, Franklin Wastewater Treatment Corporation, Ohio. Project Manager and Lead Process Design Engineer: Design development report for more than $20 million of phased improvements for the wastewater treatment plant. Coordinated with the WWTP contract operator/manager, Veolia Water North America, for construction cost estimation based on approximately

PRESENTATIONS (continued)

"Sidestream Treatment of Septage, Supernatant, and Filtrate: Muncie, Indiana WPCF," Indiana Water Environment Association Conference, 2004

"Conversion of an Existing Tank to a Primary Sludge Gravity Thickener: Town of Speedway, Indiana, Wastewater Treatment Plant," Indiana Water Environment Association Conference, 2004

"Pumping of Dewatered Sludge," Indiana Water Environment Association Conference 2003

"Sludge Settleability and Currently Adopted Secondary Clarifier Design Guidelines – A Case Study," Indiana Water Pollution Control Association Conference, 2002

PUBLICATION

"Dechloramination Alternative Evaluation for Evansville, Indiana Water Filtration Plant," American Water Works Association Annual Conference, 2009

20-percent design level plan and section drawings of proposed structures and improvements to increase peak flow rates to 16 mgd.

MillerCoors Brewery Water Reclamation Facility, Trenton, Ohio. Project Manager: Several projects at the Brewery's 2 mgd design flow and 6.1 mgd peak flow, direct discharge, water reclamation facility for process wastewater. Significant projects included detailed grit and spent diamataceous earth (SDE) particle analysis study, new grit removal facilities detailed design, and design and startup services for a new automated filtrate recycle and turbidity monitoring system for SDE wastewater dewatering on existing plate and frame filter presses.

Quality Control Reviews for the following projects:

- **Kings Highway Pump Station Brewster, Ohio** – Design QC reviews
- **Mud Run Pump Station, Akron, Ohio** – Design QC reviews
- **Alum Creek Wastewater Treatment Plant, Delaware County, Ohio** – PER hydraulic model review
- **Fritz Island Wastewater Treatment Plant, Reading, Pennsylvania** - Design oversight review of various unit process upgrades
- **Wastewater Treatment Plant Hydraulic and Biological Evaluation, Marion, Ohio** – Hydraulic Model Review
- **WPB – East Central Regional Bio solids** – Reviewed centrifuge dewatering detailed design
- **Rolling Hills Regulator Improvements, Fort Wayne, Indiana** – Review of CSO bending weir preliminary and detailed design
- **Wastewater Treatment Plant Improvements, Whiteland, Indiana –** Design review of WWTP improvements. Project design to correct process imbalances due to hydraulic issues
- **Pump Station Improvements, Miamisburg, Ohio** – QC review of preliminary design for pump station improvements
- **Dryden Road Pump Station, Montgomery County, Ohio** – QC review of preliminary design and improvement alternatives

Wastewater Treatment Plant Process Modeling, Metropolitan Sewer District of Greater Cincinnati, Ohio. Assistant Project Manager and Quality Control Reviewer: Various projects, including detailed supplemental sampling, calibrated GPS process model development, and development of operations tools interacting with models for six of MSDGC's seven major WWTPs. Reviews included WWTP modeling guidelines and standards and individual WWTP process modeling reports for each plant.

Wastewater Treatment Plant Hydraulic Model Development, Metropolitan Sewer District of Greater Cincinnati, Ohio. Lead Process Engineer: Development of hydraulic models at all seven of MSDGC's major plants. Plant sizes range from 2 to 130 mgd, with peak flow rates to 430 mgd. Models were calibrated to field conditions and developed with user interface screens to allow MSDGC engineering and operations staff to quickly run multiple scenarios at various flow rates, receiving water conditions, and numbers of process units in service to predict water surface elevations at all key structures. Hydraulic model reports documented all survey, field work, calibration procedures and results.

Honda Infrastructure Improvements, Greensburg, Indiana. Lead Project Engineer: Design of all solids handling related improvements included in the 4.0 to 8.9 mgd wastewater treatment plant expansion project for the City of Greensburg to support Honda and future growth. Improvements at the wastewater treatment plant included a new headworks/screening facility, additional primary and secondary clarification, expansion of the activated sludge treatment system using a vertical loop reactor, improvements to the anaerobic digestion system, additional sludge thickening and new belt filter press dewatering. A new administration building and lab were also included in the design.

DONOHUE

ROBERT J. NEATH, PE

PROFESSIONAL ENGINEER
Missouri: 028255
Illinois: 062051829

YEARS OF EXPERIENCE
28

EDUCATION
Master of Science
Sanitary/Environmental Engineering
South Dakota State University, 1997

Bachelor of Science
Civil Engineering
South Dakota State University, 1990

PROFESSIONAL ORGANIZATION MEMBER
Water Environment Federation
Missouri Water Environment Association
American Water Works Association
Missouri Section AWWA
American Society of Civil Engineers
St. Louis Section
Engineers' Club of St. Louis

Mr. Neath brings more than 28 years of experience in design and construction management for water and wastewater clients involving treatment plants, pump stations, conveyance piping, and tanks. He is a skilled program and construction manager able to communicate effectively with and build consensus among clients, regulators, contractors, and community, adept in schedule, cost and quality management.

Lower Meramec WWTP, Metropolitan St. Louis Sewer District, St. Louis, Missouri. Project Manager: Served as Project Manager on the design and services during construction of the $82.6M Lower Meramec River WWTP and an additional $20M in associated projects (site preparation, site preload, outfall sewer, electrical supply). Responsibilities included development of project scope and fee, project team management, work planning, budget control, cost control, schedule control, and client communications. Also served as the process design engineer for the conceptual design responsible for reviewing discharge standards and sizing pumps, clarifiers, trickling filters, wet weather facilities, and solids handling facilities. The project consists of fine screens, primary clarification, trickling filters, secondary clarification, grit removal, sludge thickening, solids dewatering, odor control and preliminary design for chlorine disinfection.

Lemay and Bissell Point WWTP Incinerator Scrubber Upgrades, Metropolitan St. Louis Sewer District, St. Louis, Missouri. Construction Project Manager: Provided construction management (CM) services for sludge incineration construction projects at the Lemay and Bissell Point WWTPs, including: process design reviews; bidability/constructability reviews at milestone events; cost estimate reviews; bid phase support; regulatory compliance submittals, and construction administration/inspection from project award through emissions compliance testing and final acceptance. Construction cost is approximately $13.6M.

Lemay and Bissell Point WWTP Disinfection Upgrades Construction Management Services, Metropolitan St. Louis Sewer District, St. Louis, Missouri. Construction Project Manager: Provided CM services for disinfection facility construction projects at the Lemay and Bissell Point WWTPs, including: process design reviews of UV and Liquid Sodium Hypochlorite disinfection; bidability/constructability reviews at milestone events; cost estimate reviews; bid phase support; and construction administration/inspection from project award through final acceptance. Construction cost is approximately $16.5M for Bissell Point and $21.6M for Lemay.

Little Rock AFB Water and Sewer Improvements, Little Rock, Arkansas. Project Manager: For the wastewater collection system infrastructure renewal in military family housing. Project involves topographical surveys, geotechnical investigations, design analyses, plans, specifications, and cost estimating for over 20,000 linear feet of sewer pipe. Project also included close coordination with on-base housing and MWR (Morale, Welfare, Recreation).

Kansas City, Missouri Water Services, Kansas City, Missouri. Design Manager: For Little Shoal Creek Interceptor – Lower Extension wastewater collection system replacement. Project involves topographical surveys, geotechnical investigations, permitting, design analyses, plans, specifications, cost estimating, and services during construction for over 13,000 linear feet of 42-inch trunk sewer pipe. Project also includes close coordination with the City of Liberty, Missouri.

Traverse City, Michigan. Lead Process Engineer: Solids Handling Improvements Membrane Bioreactor Design-Build.

Springfield, Missouri. Project Manager: Value Engineering Evaluation, Northwest WWTP.

Kirkwood, Missouri Water Department. Project Manager: Sludge Handling and Disposal Study, Design and Construction.

St. Louis County Water Company, Missouri. Project Engineer: Lime Sludge Handling and Disposal Study.

Metropolitan St. Louis Sewer District, St. Louis, Missouri. Project Manager: Comprehensive Sanitary Sewer System Study and Hydraulic Modeling Services for the Sanitary Sewer Overflow Elimination Study (200 miles of Pipe in Lower Meramec River, Missouri River, Lemay, and Bissell Watersheds.

Metropolitan St. Louis Sewer District, St. Louis, Missouri. Project Manager: Infiltration/Inflow Study.

Kansas City, Missouri. Project Engineer: Completion of the Phase I Combined Sewer Overflow Permit.

Utilities Privatization Program, Fort Campbell, Kentucky, and Fort Irwin, California. Program Manager: Previously served as Program Manager (2009–2013) and Engineering Manager (2006–2009) at Fort Campbell, Kentucky and Fort Irwin, CA. Responsible for round-the-clock operations and maintenance for water and wastewater utility systems. Responsible for design and construction of water and wastewater infrastructure. Program included responsibility for approximately 75 operations and maintenance staff members, 12 construction staff members, and 12 engineering staff members. Estimated contract value of $700M for each location. Summary of projects constructed include:

- On-site Liquid Sodium Hypochlorite Generation
- Architectural Code Compliance Updates
- Security Improvements
- Operations & Maintenance Building
- WTP Filter Backwash Pump
- High Service Pump Station Upgrade
- Water Distribution System Improvements
- WTP rate of Flow Controllers
- WTP Filter Gallery Flood Pump
- Booster Pump Station Upgrade
- 1.25 MG Elevated Water Storage Tank
- Fire Hydrant Replacement Program
- Secondary Clarifier Rehabilitation
- Trunk Sewer Replacement/Point Repair/Lining, Phases 1-3
- WWTP Improvements including CEPT, Activated Sludge, RAS/WAS Pumping, Secondary Clarifiers, Aerobic Digestion, Yard Piping and Electrical Service
- Collection System Replacement/Point Repair/Lining, Phases 1-5
- Lateral Replacement Program
- Lift Station Upgrades, Phase 1-2

NATHANIEL W. CASSITY, PE, BCEE

PROFESSIONAL ENGINEER
Wisconsin: 35946
Illinois: 62062820
Michigan: 6201067118
Iowa: P24675

PROFESSIONAL DESIGNATION
Board Certified Environmental Engineer

YEARS OF EXPERIENCE
21

EDUCATION
Master of Science
Civil and Environmental Engineering
University of Wisconsin – Madison
1999

Bachelor of Science
Civil and Environmental Engineering
University of Wisconsin – Madison
1997

PROFESSIONAL ASSOCIATIONS
Water Environment Federation
Wisconsin Wastewater Operators' Association
American Academy of Environmental Engineers

AWARDS
2004 ACEC Wisconsin Engineering Excellence Best in State Award, Wastewater Treatment Plant Upgrade and Expansion, Ripon, Wisconsin

2004 American Society of Civil Engineers Wisconsin Section Engineering Achievement Award, Wastewater Treatment Plant Upgrade and Expansion, Ripon, Wisconsin

PRESENTATIONS
"Utility of the Future, The Continued Journey at St. Cloud, MN" Michigan WEA Conference, Boyne Falls, Michigan, June 2019

"Activated Sludge and BNR Process Control: Hands-On in the Real World," WEFTEC, New Orleans, Louisiana, October 2018

"Sustainability Focused Facility Planning – A Community Specific Approach," Michigan WEA Conference, Boyne Falls, Michigan, June 2018

"Utility of the Future, One City's Journey," Michigan WEA, Frankenmuth, Michigan, January 2018

"Optimization in Practice: Case Studies from NEW Water's Phosphorus and TSS Optimization Plans'" WWOA, Madison, WI, October 2017

"Activated Sludge and BNR Process Control: Hands-On in the Real World," WEFTEC, Chicago, Illinois, October 2017

"Advances in Wastewater Treatment Technology," Michigan WEA Conference, Boyne Falls, Michigan, June 2017

Mr. Cassity has 21 years of experience as a wastewater process engineer. He has performed numerous evaluations and designs for wastewater facilities, including primary and secondary treatment, advanced treatment, disinfection, odor control, and the handling, treatment, and disposal of biosolids. Mr. Cassity specializes in process modeling using BioWin and GPS-X process simulators. Recent projects include detailed design and evaluations of biological nutrient removal, facility planning, and capacity studies.

Nutrient Recovery and Reuse Project (NR2), St. Cloud, Minnesota. Project Manager: The City of St. Cloud retained Donohue to complete design services for a biosolids upgrade and nutrient recovery project (NR2). Prior to this project, biosolids processing at the St. Cloud WWTF included sludge thickening and digestion. The NR2 project added increased biogas storage, biosolids dewatering, biosolids cell lysis and sidestream struvite recovery. Struvite recovery reduces recycle phosphorus loading and produces a slow-release fertilizer product.

Primary Clarifier Rehabilitation, Holland, Michigan. Lead Engineer: Donohue was retained by the City of Holland to provide planning, design, and construction phase services for improvements to its wastewater treatment facility. The project focusses on the rehabilitation of the facilities four existing covered primary clarifiers. Design includes: the condition assessment of the clarifier concrete; evaluation of the aluminum covers and structural elements; recommended rehabilitation methods; and design and specification of the rehabilitation approach.

Wastewater Treatment Plant Upgrades, Janesville, Wisconsin. Lead Process Engineer: Preliminary engineering and final design of upgrades to the 17-mgd facility. Work included design of enhanced biological phosphorus removal facilities utilizing primary sludge fermentation along with incorporation of a high efficiency aeration system utilizing both single stage and multi-stage centrifugal blowers. Modeled and designed the activated sludge BNR process using the BioWin process simulator.

Biosolids Master Plan, East Lansing Water Resource Recovery Facility, East Lansing, Michigan. Process Engineer: Creation of a 20-year solids handling plan to guide solid handling improvements throughout the facility. Report evaluated potential solids handling alternatives including various thickening, dewatering, and drying methods to generate biosolids end-products to be sent to landfill or suitable for land application.

Tertiary Filter Renovation Design, Springbrook Water Reclamation Center, Naperville, Illinois. Project Manager: Designed activities to retrofit two buried steel filter vessels with new internal filtration equipment and sand media. Other design activities included replacing all pneumatically actuated valves for eight filters, installing VFD drives for the existing backwash pumps and air scour blowers, and constructing a pre-engineered fiberglass reinforced plastic electrical building to house the new VFDs, PLC, and electrical equipment.

Aeration System Evaluation, Metropolitan Water Reclamation District of Greater Chicago, Cook County, Illinois. Technical Advisor and Quality Review: Completed an evaluation of the existing aeration systems to determine what equipment and control modifications are required to optimize the energy consumption at Stickney WRP. Used SIMBA# modeling software to develop an advanced model of the biological system and controls. Estimated capital costs and energy savings for evaluating project payback. Managed internal project schedules and budgets and attended project coordination meetings with the client.

Nutrient Removal Planning, Joliet, Illinois. Developed a sampling and monitoring program for all three of Joliet's wastewater treatment facilities to gather baseline information on influent characteristics and nutrient concentrations. Provided direction to Joliet on special monitoring programs for future use in developing BioWin process simulator models and evaluating nutrient removal alternatives for the facilities.

PRESENTATIONS (continued)

"Advanced Aerobic Digestion Techniques: Naperville, IL, CSWEA, St. Paul, Minnesota, May 2017

"Optimization in Practice: NEW Water EBPR & TSS," CSWEA, St. Paul, Minnesota, May 2017

"Wyoming Clean Water Plant – Energy Efficiency Implementation," MWEA Process Seminar, East Lansing, Michigan, October 2016

"Activated Sludge and BNR Process Control: Hands-On in the Real World: Oxidation Reduction Potential at East Bank WWTP, Jefferson Parish," WEFTEC, New Orleans, Louisiana, September 2016

"Planning for the Future: Battle Creek's Approach to Upgrading its Secondary Treatment Processes," IWEA Conference, Champaign, Illinois, 2016

"Your Bugs Are Doing Better Than You Think," Iowa WEA Conference, Council Bluffs, Iowa, 2016

"Choices to Address Filamentous Growth," MWEA Process Seminar, East Lansing, Michigan, 2015

"Process Changes with Impact," MWEA, East Lansing, Michigan, 2015

"Your Bugs Are Doing Better Than You Think," Wastewater Operators Association, Wisconsin Dells, Wisconsin, 2015

"Phosphorus Compliance Case Studies in Illinois," Central States WEA Conference, Oakbrook Terrace, Illinois, 2015

"Low Level DO Operations: Impact on Energy Nutrients and Ecology," MWEA Wastewater Administrators Conference, Frankenmuth, Michigan, 2015

"Energy Production and Dramatically Moving the Energy/Cost Needle," MWEA Energy Workshop, East Lansing, Michigan, 2014

"Full Scale Pilot Targeting Ultra-Low Phosphorus at Janesville WPCF," Central States WEA Conference, St. Paul, Minnesota, 2014

"Fermentation Enhanced Nutrient Removal at Janesville WWTF," WEF/IWA Nutrient Removal and Recovery Conference, Vancouver, British Columbia, 2013; Central States WEA, St Charles, Illinois; Wisconsin Wastewater Operators' Association Conference, Wisconsin Dells, Wisconsin, 2012

"Factoring Energy Savings into a Plant Upgrade," Wisconsin Wastewater Operators' Association Conference, Wisconsin Dells, Wisconsin, 2012

Grit Removal and RAS Pumping Preliminary Design for Springbrook WRC, Naperville, Illinois. Project Manager: Preliminary engineering project determining the most cost-effective technologies for grit removal and RAS pumping at SWRC's 22.5-mgd North Plant. Following selection, prepared preliminary design drawings and a preliminary construction cost estimate for a combined grit removal and RAS pumping facility.

Phosphorus Removal Pilot Studies and Planning Evaluation for Springbrook Water Reclamation Center, Naperville, Illinois. Project Engineer: Completed a small scale pilot study and a full scale pilot study evaluating low level phosphorus removal for the 26-mgd Springbrook WRC. Evaluated biological phosphorus removal, chemical phosphorus removal, and add-on tertiary filtration utilizing a small scale membrane pilot unit provided by Koch Membrane Systems. Chemical phosphorus removal was further evaluated by conducting a full-scale pilot study on SWRC's 4-mgd South Plant dosing ferric chloride. The results of the pilot studies along with results from two special monitoring and sampling programs were used to develop a full plant model for SWRC using the BioWin process simulator. Upgrade alternatives were modeled and a phosphorus removal planning memorandum was prepared summarizing the findings and providing conceptual descriptions, design parameters, capital costs, and annual operating costs for each alternative.

Biosolids Thickening and Aeration Improvements Engineering and Design, Springbrook Water Reclamation Center, Naperville, Illinois. Lead Process Engineer: Preliminary engineering and final design of digestion thickening and aeration upgrades to the aerobic digesters, including preparation of technical memoranda for aeration upgrades and thickener upgrades, and final design of aeration and thickening upgrades. Investigated blower technologies that included multi-stage centrifugal, single-stage centrifugal, positive displacement, and high-speed centrifugal. Led the design of a high-speed centrifugal blower building with six 250-hp units.

Mill Creek Water Reclamation Facility Electrical and Process Improvements, Lake County, Illinois. Project Manager and Lead Process Engineer: Designed aeration basin improvements to incorporate biological nitrogen removal facilities by providing anoxic selector zones and internal mixed liquor recycle pumping. Conducted hydraulic analysis of basin modifications to size hydraulic control elements and maintain full gravity flow through the facility. Designed aeration control improvements adding electrically actuated control valves along with airflow and dissolved oxygen monitoring and control devices to automate the aeration control system and improve process efficiency.

Vernon Hills Water Reclamation Facility Improvements, Lake County Department of Public Works, Vernon Hills, Illinois. Lead Process Engineer: Preliminary treatment, aeration, final clarifiers, return activated sludge pumping, and biosolids loading facilities related to a facility expansion from 4 mgd to 6 mgd. Designed aeration system for two new aeration tanks and a new discharge header system for the existing multi-stage centrifugal blowers.

Operational Evaluation Report for Phosphorus and Suspended Solids, NEW Water, Green Bay, Wisconsin. Project Manager: Developed operational evaluation report consistent with NEW Water's permit compliance requirements related to TMDL implementation for the lower Fox River. The report included a summary of current phosphorus and suspended solids performance relative to future phosphorus and suspended solids TMDL limits. The remainder of the report consisted of evaluation and recommendation of optimization action plans in an effort to continue to reduce effluent total phosphorus and suspended solids.

Ultra-Low Phosphorus Removal Pilot Study, Janesville, Wisconsin. Project Engineer: Completed the full-scale pilot study at the 17-mgd facility to achieve ultra-low phosphorus concentrations. The approach to the ultra-low treatment utilized a combination of biological nutrient removal and chemical polishing. The pilot produced a three week average of 0.06 mg/L total phosphorus in the effluent.

DONOHUE

ALLEN F. HOWE

YEARS OF EXPERIENCE
25

EDUCATION
Bachelor of Science
Civil Engineering
University of Wisconsin-Platteville
1995

AWARDS
2017 ACEC Wisconsin Engineering Excellence Best of State Award, Lead Process-Mechanical Engineer: Eau Claire WWTF-Resilient, Robust, Sustainable, Eau Claire, Wisconsin

2011 ACEC Minnesota Engineering Excellence Honor Award, Process Engineer: New Wastewater Treatment Facility at Willmar, Minnesota

2011 ACEC Wisconsin Engineering Excellence State Finalist, Lead Process Design Engineer: Eau Claire Removes Toxicity and Improves Pumping, Eau Claire, Wisconsin

2010 ACEC of Wisconsin Engineering Excellence State Finalist, Process Engineer: Wastewater Plant Expansion and Optimization, Two Rivers, Wisconsin

PRESENTATIONS
"Indianapolis CSO 39 Storage/Primary Treatment." Central States Water Environment Association, May 2004

"Aerated Lagoon Effluent Polishing with Peat Wetlands." Gibbsville Sanitary District, Gibbsville, Wisconsin, January 2001

"Peat/Wetland Treatment Alternative for Small Communities." Gibbsville Sanitary District, Gibbsville, Wisconsin, May 2000

Mr. Howe has 25 years of engineering experience involving water and wastewater treatment systems. His duties have included plant evaluations, facilities plan reports, treatment process sizing and design, hydraulic modeling, preparation of construction plans and specifications, construction cost opinions, user charge analysis, and construction administration and observation.

Over the past decade, Al has focused on construction administration and observation, where he applies his strict attention to detail to the construction process. This includes wastewater treatment construction projects at NEW Water-Green Bay, Sheboygan, Appleton, Manitowoc, Stevens Point, and Whitewater, WI and Joliet, IL.

High Strength Waste Receiving Tank and Force Main Design and Construction, Stevens Point, Wisconsin. Construction Administrator: For construction of newly designed system to convey excess brewery waste from the industry to the WWTP using a force main system as well as a WWTP located waste receiving tank to accept additional hauled in wastes. The contents of both systems are metered into the anaerobic digesters.

Ferric Chloride Feed System Evaluation/Design Construction, NEW Water, Green Bay, Wisconsin. Construction Observation: Evaluation of existing ferric chloride feed system components and range of ferric chloride feed rates. Developed listing of potential feed point locations and identified improvements necessary to provide an efficient feed system, including supplementary mixing. Determined optimal location for ferric chloride unloading to bulk storage. Developed design memorandum including unit process sizing, flow diagrams and conceptual layout sketches. Prepared bidding documents, including plans and specifications, and opinion of probable construction cost. Provided construction observation services.

Treatment Facilities Upgrade, Eau Claire, Wisconsin. Process Engineer: major upgrade ($40M) to the entire wastewater treatment facility. The existing rotating biological contactors were replaced with a biological phosphorus removal activated sludge system with high-efficiency turbo-blowers. The project also included primary sludge screening, primary clarifier improvements, secondary clarifier improvements, anaerobic digestion system improvements (linear motion mixers, nozzle mixing, digester covers, biogas storage, and digester gallery piping), solids thickening, biogas conditioning, biogas utilization for heat and electricity production, an automation system to minimize operator requirements, odor control, alkalinity storage and feed systems, water and wastewater laboratory improvements, updated sludge pumping improvements, and emergency electricity generation, and ventilation and electrical system improvements to meet NFPA code.

U.S. Route 6 Sanitary Sewer Improvements, Joliet, Illinois. Construction Administrator /Resident Engineer: Project involved design and construction of a new 4-mgd submersible pump station, 1.4 miles of 21-inch sanitary sewer, and 1.1 miles of new 16-inch force main. Specific construction activities included:

- 2,130 feet of 21-inch Gravity Sewer, average 14-feet deep along US Route 6, dewatering required entire distance
- 5,580-feet of 21-inch Gravity Sewer, depth ranging from 14 to 36-feet deep along right-of-way of US Route 6, dewatering required entire distance; including ripping thru shale and cutting thru 30 feet of sand
- 300-feet of 20-inch bored and jacketed under Casino entrance
- Two casing crossings under US Route 6
- Abandoned one Lift Station and Rehabilitation of another.
- Construct new submersible lift station with 38-foot deep wet well.
- 5,875-feet of 16-inch HDPE force main from new submersible lift station, bored and jacked under US Route 6, direction bored under Rock Run river, open cut thru forest preserve and residual area, bored and jacked under CSX Railroad, open cut under 22 inch and 30 inch Transcanada NG pipelines to existing 60-inch Sanitary Sewer located in a Community Park.

- Construction activities included coordination with residents, community officials, park district, forest preserve, railroad, casino, industrial users, bus routes, and utilities.

Challenges included piping route alternative studies, easement needs identification, public interaction, DOT permit coordination, railroad crossings, rock excavation trenching and dewatering.

East Side Influent Pump Station Design and Construction Services, East Side Treatment Plant, Joliet, Illinois. Construction Manager/Resident Engineer: Project involved design of a replacement for the existing influent pump station and screening facility. Station designed for 45 mgd expandable to 75 mgd in the future using four dry-pit submersible pumps. Two screens included with full redundancy. Screens are 35 feet deep and able to be pivoted out of the channel for maintenance.

Wastewater Treatment Plant Improvements, Whitewater, Wisconsin. Construction Administrator: Project involved major improvements to the 1.5 mgd average day flow (11 mgd peak) wastewater treatment facility. Design was based on Donohue's Facility Planning recommendations: remove existing RBC secondary treatment system, construct activated sludge system incorporating enhanced biological phosphorus removal, utilize one existing secondary settling basin for additional aeration tankage, construct new secondary clarifiers, construct RAS pumping system, construct WAS pumping and centrifuge sludge thickening system, renovate the Administration Building, replace electrical systems, accommodate future tertiary filtering to achieve low-level phosphorus compliance, and accommodate future total nitrogen removal strategies. To help fund the project, City received a $707,500 grant through WDNR's Clean Water Fund Principal Forgiveness loan program.

Biosolids Dewatering and Drying Improvements, Sheboygan, Wisconsin. Construction Administrator: Project involved biosolids dewatering and drying facilities improvements project at the 40-mgd Sheboygan Regional Wastewater Treatment Facility. The project included overseeing City procured major pieces of process equipment and then overseeing the contractor installing the procured equipment. The project added screw press dewatering equipment, cake sludge pumping, a medium temperature belt dryer, biosolids cooling and transport equipment, and a biosolids storage silo with a nitrogen blanket for fire suppression. Nitrogen is generated onsite using a rotary screw compressor and membrane separation system.

Anaerobic Digestion Process Upgrade, Two Rivers, Wisconsin. Process Engineer: Project involved design and preparation of plans and specifications for upgrading an existing anaerobic digestion process. The project included converting a secondary digester to a primary digester by adding a mixing system, replacing the steel gas holder with a dual membrane gas holder, installing new mixing/heating equipment, and rehabilitating the primary digester by replacing the mixing and heating systems. Because of space constraints, draft tube mixers with hot water heat exchangers were selected. Additional improvements included a new isolated digester gas handling room, new digester gas hot water boiler, backup hot water supply tied into existing natural gas building boiler system, replacement of all digester gas piping, safety equipment, and installation of a new waste gas burner.

Anaerobic Digestion System Upgrade, Harvard, Illinois. Process Engineer: Project included the design and preparation of plans and specifications for an anaerobic digestion system upgrade. Improvements included rehabilitation of a primary cover, new mixing, heating and recirculation, and gas management system.

DONOHUE

JOSEF A. BERKTOLD, PE

PROFESSIONAL ENGINEER
Wisconsin: 30282
Illinois: 62057671
Minnesota: 47475

YEARS OF EXPERIENCE
32

EDUCATION
Bachelor of Science
Electrical Engineering
Illinois Institute of Technology
1988

AWARDS
2019 ACEC Missouri Engineering Excellence Honor Award, Electrical Engineer: Lemay Pump Station Electrical System Transformation, Metropolitan St. Louis Sewer District, St. Louis, Missouri

2018 ACEC Minnesota Engineering Excellence Grand Award Lead Electrical Engineer: A Utility of the Future > Making St. Cloud GREATER, St. Cloud Minnesota

2011 ACEC Minnesota Engineering Excellence Honor Award, Electrical Engineer: New Wastewater Treatment Facility at Willmar, Minnesota

2011 ACEC Indiana Engineering Excellence Honor Award, Lead Electrical Engineer: North Pump Building and Electrical Building at Three Rivers Filtration Plant, Fort Wayne, Indiana

2007 Lead Electrical Engineer: American Academy of Environmental Engineers, Superior Achievement Award, Sludge Drying/Melting Facilities, Zion, Illinois

2003 Lead Electrical Engineer: Wisconsin Association of Consulting Engineers, Honor Award, Gurnee Plant Odor Control Improvements, Gurnee, Illinois

President's Award for Technical Excellence from Waste Management for the East Penn Manufacturing Wastewater Treatment Facilities, Lyon Station, Pennsylvania, Lead Electrical Engineer

PRESENTATIONS
"Understanding NFPA 820 Fire and Explosion Protection in Wastewater Treatment Facilities." Indiana WEA Conference, November 2012; Missouri WEA/ AWWA Joint Meeting, March 2017

"Understanding NFPA 820 Fire and Explosion Protection in Wastewater Treatment Facilities." Wisconsin Wastewater Operators Association Conference, October 2012

"Arc Flash Hazards in Plants – What are Arc Flash Hazards, How to Determine Arc Flash Hazards in Plants, and How to Protect Plant Staff," Wisconsin Wastewater Operators Association Annual Conference, October 2010

Mr. Berktold has 32 years of progressive experience designing electrical systems for water and wastewater treatment facilities. His areas of expertise include:

- Electrical Service and Power Distribution
- Emergency and Standby Electrical Power Systems
- Motor Control and Motor Control Center Design
- Voltage Drop and Short Circuit Analysis
- Lightning Protection and Grounding Design
- Lighting Design
- Code Interpretations and Applications
- Landfill Gas to Electrical Energy Cogeneration Projects
- QA/QC Reviews of Electrical Designs

Mr. Berktold is Donohue's Practice Leader for Electrical Systems. He has given numerous presentations at the national and regional level regarding electrical systems and safety issues related to water and wastewater facilities. This includes arc flash hazards, identifying hazardous classified locations using NFPA 820, and testing plant electrical systems without impacting operations.

He serves on the National Fire Protection Association's NFPA 820, Standard for Fire Protection in Wastewater Treatment and Collection Facilities technical committee as the WEF representative. Thus, he is very knowledgeable on NFPA compliance and changes made to the standard in the new 2020 version released on May 18, 2019.

Jones Island and South Shore WRF VFD Phase IV Replacement Project (J06057D01), Milwaukee Metropolitan Sewage District, Milwaukee, Wisconsin. (2014) Lead Electrical Engineer: Donohue designed the replacement of 23 Variable Frequency Drives (VFDs) at the two plants. Jones Island work took place at the RAS Pump Station, Effluent Pump Building, and Thickening Facility. Work included documenting existing Switchgear and Motor Control Centers, harmonics testing during design to determine a solution which meets IEEE 519, adding two surge protection devices to each Switchgear lineup, and doing final layouts and sizing of 15 new VFDs. The RAS Pump Station had three 125-hp VFDs and three 200-hp VFDs which had integral reduced voltage solid state bypass starters and integral passive harmonic filtering. The Effluent Pump Building had six 300-hp VFDs with integral passive harmonic filtering. The Thickening Facility had three 100-hp VFDs with external harmonic filtering. South Shore work included documenting motor control centers in the Aeration Buildings, harmonics testing during design to determine a solution which meets IEEE 519, adding surge protection devices to four MCCs and doing final layouts and sizing of eight new 200-hp VFDs which include integral reduced voltage solid state bypass, harmonic filtering, output dV/dt filtering.

Jones Island and South Shore WRF Dewatering and Drying Building VFD Replacement Phase II (J04013D01), Milwaukee Metropolitan Sewage District, Milwaukee, Wisconsin. Project Manager: Donohue replaced approximately 82 Variable Frequency Drives. Work included documenting approximately 14 motor control centers in the Drying and Dewatering Building, harmonics testing, motor testing, and doing final layouts and sizing of new VFDs. Phase III of the project is currently in design.

Blower and Engine Generator System Upgrade, Milwaukee Metropolitan Sewerage District, Wisconsin. Lead Electrical Engineer during Construction: The project included replacement of process air system blowers and provision for new engine generator sets. Blower work included replacement of four 30,000-scfm engine-driven blowers with new 1,500 hp electric motor-driven, high efficiency, dual-vane centrifugal blowers. The project included replacement of the plant's main 24.9kV switchgear, replacement of plant's step-down transformers, and new 4.16kV solid state reduce voltage starters (soft starters) for the new 1,500 hp blower motors. The project also included four new 4.16kV, 925 kW engine generator sets fueled by digester gas or natural gas to be used for peak shaving.

PRESENTATIONS (continued)

"Arc Flash Hazards and Safety: Training, Protection, and Related Issues," Webinar presentation for Water Environment Federation for the Safety, Security, and Occupational Health Committee (SSoHC) on February 24, 2010

"Arc Flash Hazards in Plants – What are Arc Flash Hazards, How to Determine Arc Flash Hazards in Plants, and How to Protect Plant Staff" Indiana Water Environment Association, November 2009

"What are Arc Flash Hazards, How to Determine Arc Flash Hazards in Plants, and How to Protect Plant Staff," Water Environment Federation, Orlando, Florida October 2009

"Arc Flash Hazards in Plants - Understanding NFPA 820 – Fire and Explosion Protection in Wastewater Treatment Facilities,"

Wisconsin Wastewater Operators Association Annual Conference, October 2009

"Identifying Hazardous Classified Locations in Wastewater Treatment Facilities Using NFPA 820," Indiana Water Environment Association, November 2008

"NFPA 820: Standard for Fire Protection in Wastewater Treatment and Collection Facilities,"

Water Environment Federation Annual Conference, Chicago, Illinois, October 2008

"Performing Preventative Maintenance and Testing Your Electrical System Without Shutting Down your Plant," Wisconsin Wastewater Operators Association Annual Conference, October 2008

"Testing Aging Electrical Systems Without Shutting Down Your Plant," Indiana Water Environment Association, November 2007

Jones Island Water Reclamation Facility, Milwaukee Metropolitan Sewerage District, Wisconsin. Lead Electrical Engineer during Construction: Project consisted of replacing four 4.16kV motor starters for the existing 5,500-hp, synchronous Process Air Compressor motors with new solid state (soft-start) starters. Project also includes refurbishing electronic positioners on the inlet guide vanes and surge valves.

Wastewater Treatment Plant Expansion, Eau Claire Wisconsin. Lead Electrical Engineer: Design of $45M of wastewater system improvements that are currently under design. These improvements consist of new aeration tanks and blower building, new dewatering building, digester cover replacement, digester building expansion with new biogas generators, and replacing the existing electrical distribution system. The electrical design consists of a new 12.47kV electric service, 12.47kV main switchgear, a 12.47kV distribution loop around the facility, two 12.47kV to 480V step-down padmount transformers at each building each capable of powering the entire building, two 600kW diesel standby generators, two 240kW biogas generators operating on digester gas to supplement the power requirements of the plant and reduce operating costs, main-tie-main configured motor control centers at each building, 480V power panels, 120/208V lighting panels, building lighting, and site lighting.

New Wastewater Treatment Plant, Willmar, Minnesota. Lead Electrical Engineer: Design of $70M of wastewater system improvements. These improvements consisted of a new 5-mgd average day flow treatment facility, six miles of 48- and 54-inch gravity interceptor, two raw wastewater pump stations, and several miles of raw wastewater force main. The new 5-mgd treatment facility consists of a screw pump raw wastewater pump station, a centrifugal submersible raw wastewater pump station, fine screening, screenings washing/compacting, grit removal, anoxic selector, oxidation ditch activated sludge, secondary settling, UV disinfection, final aeration, chemical phosphorus removal, gravity belt WAS thickening, liquid sludge storage, hypochlorite filament control, and reclaimed effluent pumping and distribution. The electrical design consisted of new 12.47kV electric services, 12.47kV main paralleling switchgear with automatic transfer between electric services/standby generators, two 1,750kW diesel standby generators, two 12.47kV distribution loops around the facility, two 12.47kV to 480V step-down padmount transformers at each building each capable of powering the entire building, main-tie-main configured motor control centers at each building, 480V power panels, 120/208V lighting panels, building lighting, and site lighting.

Sludge Recycling Facility, North Shore Water Reclamation District, Zion, Illinois. Lead Electrical Engineer: Design of electrical distribution system for the Sludge Recycling Facility, including preparation of plans and specifications. The project consisted of a new 5kV electric service, 5kV outdoor switchgear, 5kV indoor switchgear, 5kV reduced voltage motor starter for a 5kV, 1,500 hp motor, a 480V switchboard, and 480V custom motor control centers. The 300-foot by 150-foot building had roof heights ranging from 14 to 80 feet. Distribution to the motors and 480V equipment inside the facility was through an extensive cable tray system, with a separate control and instrumentation cable tray system. A number of the 480V motors utilized variable frequency drives (VFDs). The VFDs consisted of one 400 hp VFD, two 100 hp VFDs, one 75 hp VFD, and numerous smaller VFDss. A small 480V emergency standby generator provided backup power to a recirculation pumping system and the lighting. The project also included coordinating with the electric utility to provide a new 5kV service to the facility.

Clavey Road WTP Improvements, North Shore Water Reclamation District, Gurnee, Illinois. Lead Electrical Engineer: Design of improvements of the Clavey Road Wastewater Treatment Plant in Highland Park, Illinois (19 mgd design influent flow). The facility expansion included solids handling, extensive odor control, and automation of the plant's operation that totaled $22 million in construction costs. The electrical design included tying into the existing facilities 4,160V electrical distribution system, new 480V transformer substation for the new structures, new 480V motor control centers, and large addition to the existing underground conduit duct bank system for the new automation systems.

DONOHUE

BRADY M. BELL

YEARS OF EXPERIENCE
14

EDUCATION
Bachelor of Science
Electrical and Computer
Engineering Technology
Purdue University
2006

ADDITIONAL EDUCATION AND TRAINING
ProWORX NXT Programming Level 1, Schneider Electric

RSLogix 5000 Project Development, Rockwell Automation

Process Control Programming, Rockwell Automation

Robotics in Logix - Afast Robotics, Rockwell Automation

CCV204 FactoryTalk View ME and PanelView Plus Programming, Rockwell Automation

Proficy Historian Development, GE Fanuc Automation

Proficy Real-Time Information Portal, GE Fanuc Automation

Proficy HMI/SCADA iFix Fundamentals 154, GE Fanuc Automation

AWARDS
2019 ACEC Missouri Engineering Excellence Honor Award, I&C/Controls Engineer: Lemay Pump Station Electrical System Transformation, Metropolitan St. Louis Sewer District, St. Louis, Missouri

2013 ACEC Indiana Engineering Excellence Honor Award, Controls System Engineer: Overflow Reduction through CSO Abatement Projects, Goshen, Indiana

2013 ACEC Indiana Engineering Excellence State Finalist, Control System Engineer: Long-term Control Plan and Wastewater Treatment Plant No. 1 Improvements, Auburn, Indiana

2011 ACEC Indiana Engineering Excellence Honor Award, Control Systems Engineer: North Pump Building and Electrical Building at Three Rivers Filtration Plant, Fort Wayne, Indiana

PRESENTATIONS
"SCADA Systems – Choosing Your Path Forward," Missouri WEA/AWWA Joint Meeting, March 2017

"From Manual to Auto: Automating a Community," IWEA Annual Conference March 2016

"Managing Your SCADA Systems to Their Full Benefit by Developing a Path Forward," IWEA Annual Conference March 2016

"SCADA Systems: Choosing Your Path Forward," Michigan WEA Process Seminar, October 2015

Mr. Bell has significant experience with all facets of instrumentation and control systems in wastewater and water treatment. His background includes project management, design, application software, and field services, ranging from software development through startup and owner training.

Process Control Network Improvements, Water Pollution Control Facility, Columbia City, Indiana. Control Systems Engineer: Plant-wide process control network improvements, including software development of ten new programmable logic controllers, installation and software development of Intellution iFix SCADA system, development of historical data collection system using Intellution iHistorian, configured remote access of process control network via remote personal computers using Intellution Real Time Information Portal, plant-wide startup and owner training, and reconfiguration of City's telemetry system.

CSO Equalization Basin Improvements, Water Pollution Control Facility, Columbia City, Indiana. Control Systems Engineer: PLC and HMI programming of a new equalization basin, pumping system, chemical addition, chemical removal, and tipping bucket automated cleaning equipment. Incorporated new control system hardware into the existing SCADA system installed on a previous Donohue project. Expansion included a new fiber optic trunk and PLC hardware to allow full automation of the added facilities, including an automated flushing system for un-manned cleaning of the facility after a rain event.

Process Control Programming, Fort Wayne, Indiana. Control Systems Engineer: Software development and programming of numerous portions of the Water Pollution Control Plant including:

- Thickening Process Upgrade – PLC and HMI application programming of new pumping and mixing equipment and upgraded the functionality of the existing centrifuge equipment.
- SCADA System Upgrade – Blower 8 controls and remote monitoring.
- Dechlorination Facility Project – New facility housing chemical storage, pumping equipment, and automatic backup generator. The PLC and HMI programming allowed various modes of operation to automatically adjust chemical feed rates to maintain compliance with permits. The project also included the expansion of the plant fiber optic trunk to the Pond 2 Outfall, Pond 3 Outfall, Pond 1-2 Interconnect Structure, as well as the new Dechlorination Facility. The entire "Pond Site" was added to the existing SCADA system for remote monitoring and control.
- CSO Pond 1 and Pond 2 Bleedback Project – Facilities were built to return CSO from the ponds back to the plant for treatment. The system was automated to allow the water to return as quickly as possible after a rain event to increase storage volume for future events.
- Primary Clarifiers and Other Plant Upgrades Project – Included monitoring and control of a new splitter box, four 180-foot diameter primary clarifiers, primary sludge pumping equipment, scum handling and pumping equipment, three basin drain pump stations, and ancillary equipment such as air compressors, HVAC, and booster pumps. The project also changed the phosphorous removal from ferrous chloride to ferric chloride. The new Phosphorous Removal Facility included chemical storage and chemical pumping equipment and was fully automated to control the phosphorous level in the primary effluent.
- Digester 6 Upgrade Project – Included new heating and mixing equipment to be used in conjunction with the other five digesters.
- Wet Weather Pump Station – Included retrofit of existing pump station in conjunction with large capacity improvements and screening equipment. Construction of the facility in numerous phases to allow the pump station to remain in operation at all times required six major modifications to the control system. Each major modification changed the operation of the facility and required extensive testing and training to ensure uninterrupted operation.

PRESENTATIONS (continued)
"Holistic Modeling for Sustainable and Controllable Design" (Poster), CSWEA Annual Meeting, May 2013

Process Control Upgrade, Auburn, Indiana. Control Systems Engineer: Plant-wide process control design including P&ID development and process control network upgrade.

Water, Wastewater and CSO Systems Process Control Upgrades, Goshen, Indiana. Control Systems Engineer: Plant-wide automation project including PLC programming and process control network upgrade. The project incorporated the Wastewater Treatment Plant, a new 212-mgd CSO Facility, two water treatment plants, two water towers, booster pump stations, and 35 lift stations into one combined SCADA system. There were 16 ControlLogix PLCs distributed throughout the facilities with Local I/O as well as Remote I/O. Redundant SCADA servers, 22 view nodes, and all of the PLC hardware were interconnected through a fiber optic network, which was managed with VLANs and subnetting to provide security and traffic coordination. Remote access was provided through a secured connection to allow operation of all facilities from any iPad or laptop with internet access. All critical alarms were configured to be sent as text messages to the on-call operator after hours. Fully automated process control allowed the plant operations to change from 24/7 staffing to 8 hours a day, 5 days a week. Some of the key features of the control system programming include:

- Level control and automatic pump alternation
- Automated influent flow control to send flow to the CSO facility when needed
- Automated primary sludge withdrawal
- Blower control and aeration selector zone gate control
- RAS controlled as percent of influent
- Automated WAS withdrawal
- Digester heating loop control
- Flow-paced and analyzer-trimmed chlorine and dechlorination control
- CSO facility provides automatic pumping, screening, disinfection, mixing, dechlorination, reporting, and cleaning. Outside of equipment maintenance, the CSO facility remains un-manned at all times.

Project Management – Systems Integrations and/or Programming

Wet Weather Pump Station and Screening Facility, Fort Wayne, Indiana. Systems Integration and Programming Project Manager: Draft and execute subcontract agreements, manage subcontractor's daily work, prepare monthly progress reports, prepare Product Data and Shop Drawing submittals, prepare and respond to work changes and RFIs, manage budgets and prepare pay applications using scheduled values, earned value analysis, and percent complete reports. Deadlines and workmanship met or exceeded project expectations.

Effluent Pump Station, Fort Wayne, Indiana. Systems Integration and Programming Project Manager: Draft and execute subcontract agreements, manage subcontractor's daily work, prepare monthly progress reports, prepare Product Data and Shop Drawing submittals, prepare and respond to work changes and RFIs, manage budgets and prepare pay applications using scheduled values, earned value analysis, and percent complete reports.

First Flush/Bleedback Programming, Fort Wayne, Indiana. Programming Project Manager: Draft and execute professional service agreements, prepare work completed reports and monthly invoices, attend progress meetings and workshops with the Owner and Designer, manage budget and schedule in compliance with Owner and Contractor schedules. The project had a very tight budget with out-of-scope changes added and was still completed on time and on budget.

On-Call Engineering Services Agreement, Water Pollution Control Plant, Auburn, Indiana. On-Call Engineering Services Project Manage: Draft and execute professional service agreements, serve as primary contact between engineering staff and the Owner, manage requests for on-call work and prepare estimates prior to work, prepare work completed reports and monthly invoices.

DONOHUE

JEFFREY L. WILLS, PE

PROFESSIONAL ENGINEER
Wisconsin: 34491
Minnesota: 46817
Illinois: 62061503
Iowa: P24652

CERTIFICATIONS
2-Hour OSHA, 2017
Confined Space Entry

YEARS OF EXPERIENCE
26

EDUCATION
Bachelor of Science
Mechanical Engineering
University of Wisconsin - Madison
1994

AWARDS
2019 ACEC Missouri Engineering Excellence Honor Award, Lead Mechanical Engineer: Lemay Pump Station Electrical System Transformation, Metropolitan St. Louis Sewer District, St. Louis, Missouri

2018 ACEC Minnesota Engineering Excellence Grand Award, Energy Systems Engineer: A Utility of the Future > Making St. Cloud GREATER, St. Cloud Minnesota

2017 ACEC Engineering Excellence National Recognition, Mechanical Engineer: Kenosha WWTF Energy Optimized Resource Recovery, Kenosha, Wisconsin

2017 ACEC Wisconsin Engineering Excellence Grand Award, Mechanical Engineer: Kenosha WWTF Energy Optimized Resource Recovery, Kenosha, Wisconsin

2014 ACEC Wisconsin Engineering Excellence Best of State, Energy Recovery Engineer: Wastewater Treatment and Energy Recovery Facility, Bush Brothers & Company, Augusta, Wisconsin

2013 ACEC Wisconsin Engineering Excellence Grand Award, Energy Recovery Engineer: Sheboygan Regional WWTP Achieves Net Zero Energy, Sheboygan, Wisconsin

2012 ACEC Minnesota Engineering Excellence Honor Award, HVAC/Mechanical Engineer: New Wastewater Treatment Facility, Willmar, Minnesota

2011 ACEC Indiana Engineering Excellence Honor Award, Lead HVAC/Mechanical Engineer: North Pump Building and Electrical Building at Three Rivers Filtration Plant, Fort Wayne, Indiana

2011 ACEC Minnesota Engineering Excellence Honor Award, Lead HVAC/Mechanical Engineer: New Wastewater Treatment Facility at Willmar, Minnesota

Mr. Wills' professional activities have included planning, design and construction administration as well as project management on a wide variety of HVAC, plumbing and process engineering for water and wastewater treatment plants, aeration, anaerobic digestion, and biogas utilization systems, odor control, industrial ventilation, dust collection, office air conditioning, and laboratory ventilation. He is Donohue's Practice Leader for Energy Recovery and Mechanical Systems.

Wastewater Treatment Facility Preliminary Design, La Crosse, Wisconsin. Lead Mechanical Engineer: Preliminary design for equipment replacements, infrastructure rehabilitation, aeration basin configuration basin enhancements to improve bio-P performance, effluent disc filtration for phosphorus compliance (0.1 mg-TP/L), biosolids dewatering, biosolids drying, biogas conditioning, and biogas utilization (biogas-fueled engine generators).

Energy Management Master Plan and Heating System Preliminary Design, Western Lake Superior Sanitary District, Duluth, Minnesota. Process Engineer: Assessed current and potential future digester gas generation rates to determine best future use of available gas. Utilization methods considered included: engine-generators, microturbine, compressed natural gas (CNG) for vehicle fueling and fuel cell. Hydrogen sulfide treatment options considered included replaceable media, biofiltration, and chemical addition to the digesters. Study recommended the installation of engine-generators with biofiltration for H2S removal.

Biogas Conditioning and Main Campus Heating System Improvement Project, Western Lake Superior Sanitary District, Duluth, Minnesota. Lead Mechanical Engineer: Designed replacement of existing steam boiler system with a hot water boiler system to allow greater flexibility for future heat recovery. New boiler was central system serving all buildings on the site and included six 5.4-MMBH natural gas/fuel boiler boilers and three 7-MMBH biogas/natural gas boilers with individual boiler pumps and primary circulation pumps. To protect the boilers from the internal corrosion within the aged plant hot water piping network, heat exchangers were installed to isolate the boiler loop from the distribution loop. Design also included HVAC upgrades for the Heating Buildings new Boiler Room, Gas Handling Room and Electrical Rooms along with minor modifications to existing systems. Equipment installed included over 20,000-cfm of glycol heated make-up air and the starting point for digital HVAC controls within the plant.

Wastewater Treatment Facility, Willmar, Minnesota. Lead Mechanical Engineer: Design of HVAC and plumbing systems for new wastewater treatment plant including an Administration Building with laboratory facilities.

Energy Study, Danville, Illinois. Lead Mechanical Engineer: Performed an energy study of existing Administration Building to determine methods to reduce energy consumption. Study compared various options including high efficiencies boilers, control modifications, and effluent heat pumps. Though the heat pump option offered the highest energy savings, the high cost of implementation lessened its favorability. Improvements were decided to be a two-part approach. First, the pneumatic controls would be replaced with digital controls that were designed and installed. The future work includes the installation of high efficiency boilers when the existing boilers are in need of replacement.

Sludge Dewatering Building HVAC Improvements, North Shore Water Reclamation District, Waukegan, Illinois. Mechanical Engineer: Design complete replacement of existing steam HVAC systems for the facility. New equipment utilized natural gas. Design incorporated provisions for future odor control connections.

Sludge Drying Facilities, North Shore Water Reclamation District, Zion, Illinois. Mechanical Engineer: Design of multiple HVAC and plumbing systems for the facilities. Reviewed heat recovery availability from the melting process for use as heat source for building heat, inadequate heat was available to offset costs of system installation.

Plant Expansion, Marquette, Michigan. Lead Mechanical Engineer: Design of HVAC and plumbing systems for expansion of an existing plant. Systems included the expansion and

AWARDS (continued)

2007 Lead Process Engineer: American Academy of Environmental Engineers, Superior Achievement Award, Sludge Drying/Melting Facilities, Zion, Illinois

2006 Assistant Process Engineer: Wisconsin Association of Consulting Engineers, Best of State Award, Milwaukee Metropolitan Sewerage District, Jones Island Wet Weather Capacity Improvements, Milwaukee, Wisconsin

2003 Lead Process Engineer: Wisconsin Association of Consulting Engineers, Honor Award, Gurnee Plant Odor Control Improvements, Gurnee, Illinois

2002 Wisconsin Association of Consulting Engineers, Honor Award, Assistant Process Engineer: UV Disinfection Conversion/Aeration Basin Conversion at the Two Rivers, Wisconsin, Wastewater Treatment Facility

PRESENTATIONS

"Odor Control At Gurnee STP," Central States Water Environment Association, May 2006

interconnection of existing heating water facilities with a new boiler system that generates heat through combustion of biogas produced by anaerobic digestion. The project also included biogas handling, and digester heating, feed, and mixing improvements. After completion of the initial improvements, Donohue was retained to implement two 100kW engine generators and gas cleaning system onsite to generate electrical energy along with the heat energy already used at the facility.

Biosolids Master Plan, East Lansing, Michigan. Lead Mechanical Engineer: Performed condition assessment of HVAC, plumbing and NFPA 820 requirements at the City's Water Reclamation Facility. Provided input to complete the biosolids master plan, including design calculations for biogas equipment sizing, and heating requirements for anaerobic digestion, thermal hydrolysis processes and biosolids drying equipment.

Wastewater Treatment Facilities Improvements – Phase 2, Eau Claire, Wisconsin. Lead Mechanical Engineer: Designed complete rehabilitation and replacement of anaerobic digestion facilities. Design included the removal of essentially all existing piping systems and equipment while maintaining functionality of the system. New digestion equipment installed includes linear motion digester mixing, pumped nozzle mixing equipment, fixed digester covers, floating gas holder digester covers, sludge pumping systems and new tube-in-tube heat exchangers for digester heating. System design included the beneficial use of digester gas via digester gas fired boilers and 280-kW engine-generators. Gas to be consumed by the generators was conditioned to remove H2S and siloxanes with replaceable media and moisture by mechanical cooling systems. Waste heat from the generators along with heat from the boilers is collected and distributed through a plant building and process heating system that serves the majority of the campus buildings. Donohue assisted in securing renewable energy funding from Focus on Energy for the project.

Blower Upgrade, Milwaukee Metropolitan Sewerage District, Wisconsin. Lead Mechanical Engineer/Process Engineer: Blower study project at Milwaukee Metropolitan Sewerage District's South Shore Wastewater Treatment Plant. The overall study evaluated engine alternatives including their existing support systems to replace the existing engines on their blowers. Assisted in generating the energy model of plant digester gas utilization and heat recovery systems to determine most cost effective way to use the energy contained in the digester gas. Completed preliminary engineering and recommendations and final design for the primary/secondary heat recovery and cooling systems associated with the existing blower engines and the proposed engine generators. Preliminary design and recommendation and final design of the HVAC systems, fire protection systems, and the blower air filtration.

Digester Mixing and Gas Utilization, Stevens Point, Wisconsin. Process Engineer: Mixing design included the installation of a linear motion mixer on a spiral guided, floating gas holder cover. Gas was utilized in a 180-kW engine generator. A gas conditioning system was included to remove hydrogen sulfide and siloxanes with replaceable media system and moisture was removed with a glycol chiller system. Waste heat from the engine is recovered and returned to the plants existing process and building heating network.

Microturbine Heat Recovery Systems, Sheboygan, Wisconsin. Lead Mechanical Engineer: Assisted the cogeneration supplier with design of heat recovery piping systems to transfer the heat recovered from the microturbine exhaust to the plant digester heating system. Provided design of HVAC systems for new gas handling room that housed that gas compression and treatment skid for the microturbines.

Digester Boiler/Piping Modifications, Sheboygan, Wisconsin. Lead Mechanical Engineer: Reviewed existing digester and building heating water systems for the intended replacement of the existing digester gas fired, digester heating boilers. Found that with minor piping modifications, the digester heating boilers could be used to supply "free heat" to the building system automatically. The plant previously manual positioned valves to interconnect the systems and had limited capacity. Designed boiler replacement and piping modifications for the plant resulting in significant natural gas savings.

DONOHUE CRAIG L. SCHUENEMANN, PE, LEED AP BD+C

PROFESSIONAL ENGINEER
Wisconsin: 36528
Minnesota: 45060
Texas: 102594
Pennsylvania: PE079817
Missouri: 2015007443
Indiana: PE11500162

PROFESSIONAL CERTIFICATES
LEED AP BD+C: 10296741
2-Hour OSHA, 2017
Confined Space Entry
OSHA 10 Hour Construction Industry Outreach, 2018

YEARS OF EXPERIENCE
23

EDUCATION
Bachelor of Science
Civil Engineering
University of Wisconsin - Platteville
1997

PROFESSIONAL ASSOCIATIONS
American Society of Civil Engineers

PAPERS
"Sanitary Sewer Overflows: Big Prevention in a Small Footprint,"
Water Environment & Technology Magazine, July 2009

PRESENTATIONS
"Sanitary Sewer Overflows: Big Prevention in a Small Footprint,"
CSWEA Annual Meeting, May 2008

Mr. Schuenemann is a senior structural engineer with over 23 years of experience designing various water, wastewater, and stormwater structures. He is particularly skilled in evaluating existing facilities to determine structural integrity. As LEED AP certified, Craig has an up-to-date understanding of the most current green building principles and practices.

Wastewater Treatment Facility Preliminary Design, La Crosse, Wisconsin. Sr. Structural Engineer: Preliminary design for equipment replacements, infrastructure rehabilitation, aeration basin configuration basin enhancements to improve bio-P performance, effluent disc filtration for phosphorus compliance (0.1 mg-TP/L), biosolids dewatering, biosolids drying, biogas conditioning, and biogas utilization (biogas-fueled engine generators).

Aux Sable Creek Basin and Westside WWTPs Phosphorus Removal and Expansion, Joliet, Illinois. Structural Designer: Project involves plant expansions at the Aux Sable and Westside WWTPs to meet new total phosphorus effluent limits. Performed the structural design for new structures and modifications to existing structures which include the addition of a second grit chamber at the existing preliminary treatment structure, modifications to multiple existing splitter boxes, new multiple cell selector tank, modifications to the existing oxidation ditch, two new circular final clarifiers, two new chemical buildings, addition of an aluminum cover on the digester tank and a new biosolids storage tank.

Chickasaw Hills Water Reclamation Facility Regionalization – Phase 1, Homer Glen Service Area, Illinois American Water Company, Woodridge, Illinois. Structural Designer: Project involves the design of an upgrade to the Chickasaw Hills WRF to increase its treatment capacity from 1.00 mgd to 1.30 mgd and design it so that in the future it can accept future additional flows (i.e., via regionalization) from the Derby Meadows WRF and upgrade the Chickasaw Hills WRF to make it capable of biologically removing phosphorus down to 1.0 mg/l. Performed structural design for the following structures and upgrades: convert existing chlorine contact tank to UV disinfection, convert two existing tanks to final clarifiers, new aerobic digester tank, new aeration basin, new control building with laboratory, office, electrical and mechanical rooms and chemical storage and feed facilities.

Des Plaines Wastewater Treatment Facility Plan, Lake County Department of Public Works, Illinois. Structural Designer: Design basis for plant expansion, which included evaluation of the existing structure and recommendations for reuse of tanks and building structures.

NCT Water Reclamation Facility Improvements, Lake County Department of Public Works, Illinois. Structural Designer: Design for a $17-million facility expansion, which included preliminary treatment building, aeration basins, pump station, splitter boxes, clarifiers, chemical buildings, contact tank, filter building, dewatering building, pump and blower building, sludge digester covers, and miscellaneous sludge and material storage structures. Included existing structure evaluation and rehabilitation for reuse of tanks.

Mill Creek WRF Expansion, Lake County Department of Public Works, Illinois. Structural Designer: Plant expansion, which included septage receiving station, splitter box, aeration tanks, secondary effluent access vault, filter bypass structure, solids handling building addition, alum feed building, drying beds, and modifications to the wastewater pumping building, secondary control building, filter building, and UV disinfection building.

Des Plaines River WRF Phase IIA Improvements, Lake County Department of Public Works, Illinois. Structural Designer: Plant expansion, which included evaluation of the existing structures and recommendations for repairs and reuse of tanks and building structures.

Des Plaines River WRF Battery A Rehab, Lake County Department of Public Works, Illinois. Structural Designer: Inspection of existing concrete tanks which needed structural rehabilitation. Recommended repairs included patching exposed rebar in walls, repair of

deteriorated concrete, sealing leaking cracks in walls, and removal of existing deteriorated walkways.

Main Influent Pump Station, Phase 1 Pump Replacement, Rock River Water Reclamation District, Rockford, Illinois. Structural Designer: Pump station improvements and modifications associated with pump replacements.

Wastewater Treatment Facility Alterations and Additions, Monroe, Wisconsin. Structural Engineer: Designed a facility expansion. Project included new operations building, septage receiving station, headworks building with Parshall flume and degritters, splitter boxes, aeration tanks, RAS pump station, final clarifier, and cake storage building. Project also included modifications to the existing raw wastewater pump station, splitter boxes, equalization tanks, aeration tanks, blower building, final clarifier, sand filter complex, secondary effluent pump station, chemical building, solids processing building, and digesters building.

Wastewater Treatment Plant Upgrade and Expansion, Janesville, Wisconsin. Structural Engineer: Design of a plant expansion and upgrade to accommodate continuing residential and industrial growth in the city. The project incorporates the latest energy-saving technologies. Design included the 7,600-square-foot administration building. Project challenges included a fast-tracked schedule to apply for stimulus funding.

Return Activated Sludge/Waste Activated Sludge System Improvements, NEW Water, Green Bay, Wisconsin. Structural Engineer: Design for an electrical room additions, miscellaneous structure modifications, and waterproofing repairs to existing RAS/WAS treatment structures. Visual inspections of existing concrete tunnel structures.

Wastewater Conveyance, Intermediate Chemical Feed Building, NEW Water, Green Bay, Wisconsin. Structural Engineer: Design for a chemical building consisting of chemical room, electrical room, plumbing gallery, and lower level valve room.

Wastewater Treatment Facility, Waupun Public Utilities, Wisconsin. Structural Engineer: Site evaluation of existing concrete tank condition and required repairs.

Wastewater Treatment Facility Improvements, Mosinee, Wisconsin. Structural Engineer: Design for a wastewater pump station. Pump station included wet wells, pump room, electrical/control room, and emergency generator in a masonry building.

Wastewater Treatment Plant Improvements, Denmark, Wisconsin. Structural Engineer: Design of sludge storage tank, solids handling building, and miscellaneous modifications to existing structures.

Wastewater Treatment Facility Upgrades, Whiting, Wisconsin. Structural Engineer: Facility expansion, which included oxidation ditch, mixing basins, final clarifier, equipment storage building, and modifications to sludge beds, UV disinfection structure, digester structures, and service building. Visual inspection and evaluation of existing buildings and concrete structures for reuse and modifications.

Chemical Building, Fort Atkinson, Wisconsin. Structural Engineer: Designed of a chemical building, chemical containment area, and baffle wall modifications to existing structures. Performed structural graphics using AutoCAD.

Mechanical Fine Screen Upgrade, Yorkville Sewer Utility District Union Grove, Wisconsin. Structural Engineer: Screening facility and installation of the owner-procured equipment. The screening facility structure consists of cast-in-place concrete foundation, channel, and slab with a mechanical fine screen integral washer/compactor unit installed in the channel.

DONOHUE

WENDY J. RAISBECK, PE

PROFESSIONAL ENGINEER
Wisconsin: 41440
Missouri: 2016011699
Indiana: PE11600556

YEARS OF EXPERIENCE
16

EDUCATION
Bachelor of Science
Environmental and Civil Engineering
University of Wisconsin - Platteville
2004

AWARDS
2018 ACEC Indiana Merit Award, Process Engineer: City of Rushville Utilities - Cloth-Media Disk Filters for CSO Treatment, Rushville, Indiana

2014 ACEC Wisconsin Engineering Excellence Best of State, Process Engineer: Wastewater Treatment and Energy Recovery Facility, Bush Brothers & Company, Augusta, Wisconsin

2011 ACEC Minnesota Engineering Excellence Honor Award, Process Engineer: New Wastewater Treatment Facility at Willmar, Minnesota

2011 ACEC Indiana Engineering Excellence Honor Award, Process Engineer: North Pump Building and Electrical Building at Three Rivers Filtration Plant, Fort Wayne, Indiana

PRESENTATIONS
"An Efficient Aeration Strategy Sits on a Three-Legged Stool; A Case Study of Brookfield, WI", Wisconsin Wastewater Operators Association Annual Meeting, October 2016

"Physical Hydraulic Modeling to Optimize Pump Station Design at Fort Wayne, IN", 101st Indiana Section of AWWA Annual Meeting, February 2009

"Membrane Bioreactor: Innovative Problem Solving, Hutchinson, MN Case Study", Wisconsin Wastewater Operators Association Annual Meeting,

October 2008; 71st Annual Indiana Water Environment Association Conference, November 2007

"Membrane Bioreactor: Innovative Problem Solving, Hutchinson, MN Case Study," Wisconsin Wastewater Operators Association Southeast Regional Meeting, May 2007

Ms. Raisbeck is a Water and Wastewater Process Engineer who has provided planning, design, and construction phase engineering services on various water and wastewater treatment plant upgrades throughout Wisconsin, Indiana, Illinois, Minnesota, Missouri, and Kansas.

Wastewater Treatment Facility Preliminary Design, La Crosse, Wisconsin. Process Engineer: Preliminary design for equipment replacements, infrastructure rehabilitation, aeration basin configuration basin enhancements to improve bio-P performance, effluent disc filtration for phosphorus compliance (0.1 mg-TP/L), biosolids dewatering, biosolids drying, biogas conditioning, and biogas utilization (biogas-fueled engine generators).

South Shore WRF Preliminary and Secondary Capacity Improvements, Milwaukee Metropolitan Sewer District, Wisconsin. Process Engineer: Preliminary engineering to increase process reliability during wet weather conditions up to 300 mgd. Evaluations included preliminary treatment operations, primary influent flow metering, aeration basin step feed, and secondary clarifier inlet channel cleaning, wet weather performance, and scum removal. The District's Visual Hydraulics model was used to determine hydraulic capacities before and after recommended improvements.

Wastewater Treatment Plant Secondary Treatment & Power Distribution Improvements, Superior, Wisconsin. Project Manager: Design upgrades to the activated sludge and power distribution systems to a 15-mgd peak capacity plant. Activated sludge improvements include replacement of two aeration blowers, modifications to the existing fine bubble diffuser grids, addition of new air piping and an automated DO control system, modifications to the wet weather step feed piping, and the addition of new baffle walls and mixers within the existing aeration basin to create a serpentine path and swing zones. Power distribution improvements include replacement of the main switchgear, four substations, and the addition of a secondary utility power feed.

Disinfection System Upgrade, Brookfield, Wisconsin. Project Manager and Lead Process Engineer: Preliminary engineering, design, and construction services for upgrading the existing gaseous chlorine/sulfur dioxide feed, storage, and mixing systems to chemical disinfection/dechlorination feed, storage, and mixing systems for filtered secondary effluent up to 31.2 mgd and for combined filtered secondary effluent/primary effluent up to 50.1 mgd. Project included a comprehensive analysis between UV disinfection and chemical disinfection systems, where the chemical disinfection was selected for implementation. In additional, sample pumps, chlorine analyzers, lighting, and HVAC systems were upgraded.

Aeration System Efficiency Improvements, Brookfield, Wisconsin. Project Manager and Lead Process Engineer: Preliminary engineering, design, and construction services for replacing one large, oversized blower with a high-efficiency, properly sized blower, replacing the oversized aeration piping and flow control valves with properly sized piping and valves, and replacing the partly clogged ceramic diffusers with high-efficiency Teflon-coated diffusers. This project received a Focus on Energy grant.

Wastewater Treatment Facility Upgrades, Fort Wayne, Indiana. Lead Process Engineer: Design and construction services to upgrade facilities for chemically enhanced primary clarification (CEPT) and increasing flows through the secondary clarifiers. The CEPT portion of project included replacement of ferric feed pumps, additional chemical feed location, monitoring equipment, and upgraded control strategies. To increase flows through the secondary clarifiers from 70 mgd to 100 mgd, a comprehensive hydraulic model was created and calibrated. The following improvements were implemented: lowering of v-notch clarifier weirs, modifications to the clarifier mechanisms, replacement of the secondary effluent flow metering with a lower headloss option. After construction was completed additional field testing showed that 100 mgd was not being achieved, which was determined to be due to air entrainment. Additional improvements were recommended and implemented, 100 mgd capacity has now been achieved.

WPCP Wet Weather Pump Station and Screenings Building Improvements, Fort Wayne, Indiana. Process Engineer: Preliminary engineering, design and construction services to expand and upgrade of existing WWPS for a total station pumping capacity of 850 mgd and a wet weather screening facility capacity of 955 mgd in order to meet wet weather compliance requirements, improve flood protection, and mitigate grit accumulation. Project included rehabilitation of two existing pumps (1,500 hp; 160 mgd each), two new large-capacity pumps (1,000 hp; 95 mgd each), two new small-capacity pumps (140 hp, 10 mgd each) for grit abatement within the wetwell, and provisions for two large-capacity future pumps. Physical modeling was performed to confirm pump intake design and identify necessary modifications to existing wet well. Design included extensive hydraulic modeling for the pumps, through the screen structure, and overflow to the river. Several pieces of equipment and piping were separately procured prior to construction contract award to accelerate construction with the ultimate goal of completing construction prior to permit compliance.

Water Pollution Control Plant Digester 3 & 4 Improvements, Fort Wayne, Indiana. Lead Process Engineer: Design of upgrades to the anaerobic digestion system to a 100-mgd peak capacity plant. The anaerobic digestion system includes 6 digesters. Improvements to Digester 3 & 4 included replacing digester covers, replacing sludge recirculation pumping facilities, replacing digester gas collection facilities, addition of linear motion mixers, the replacing sludge transfer gravity and pumping facilities. Improvements to Digester 2 & 3 included the addition of new sludge recirculation pumping and hot water recirculating facilities. Improvement to Digester 6 included new gravity sludge transfer gravity facilities and replacing digester gas collection facilities.

WPCP Wet Weather Pump Station Addition of Pumps 5 & 6, Fort Wayne, Indiana. Process Engineer: Preliminary engineering and design further increase capacity at the WWPS for a total station pumping capacity of 950 mgd and a wet weather screening facility capacity of 1060 bgd. Project includes two new large-capacity pumps (2,000 hp; 210 mgd each) and installation of two additional screens. Design included extensive hydraulic modeling for the pumps and wetwell and through the screen structure.

LTCP Update, PER and CSO Storage/Pumping Basin Design, Phase 2 - WWTP Improvements, Rushville, Indiana. Lead Process Engineer: Design of wastewater treatment plant improvements and a wet weather treatment facility. Design included new fine screening, screenings washing-compacting, grit removal, grit classification, submersible wet weather pump station, and new higher efficiency aeration blowers and an aeration basin DO control system. The Headworks Facility provides screening for all incoming flows up to 12 mgd and after screening flows up to 4 mgd will continue to flow to the remainder of the WWTP with up to 8 mgd of wet weather flow being diverted to the wet weather pump station. The wet weather pump station is a submersible pump station that will pump flow to the WWTP discharge pipe or to future wet weather facilities. Two new aeration blowers and provisions for an additional blower were added with an automated DO control system to the existing aeration basins. Airflow is automatically controlled by DO probes located in each basin.

Cheeney Creek WWTP Expansion Improvements, Fishers, Indiana. Lead Process Engineer: Design of facilities to increase capacity from 8 to 10 mgd average flow and 16 to 20 mgd peak flow. In order to provide the additional treatment and hydraulic capacity the design includes the following: modify to the Grit Tank; construct a new Primary Clarifier Splitter Box; construct a new Primary Clarifier and associated primary sludge pumping, primary scum pumping, pipe gallery, and access building; modify existing primary sludge pumping facilities; construct new completely-mixed, unaerated selector zones within each Aeration Tank for biological phosphorus removal and to enhance sludge settling; modify aeration diffusers, aeration piping, and aeration control system within the Aeration Tanks; replace aeration tank flow splitting gates; modify RAS piping to increase RAS capacity; modify the flow splitting to the final clarifiers; and modifications to increase hydraulic capacity of the final clarifiers.

DONOHUE

ARIC H. BERGSTROM, PE

PROFESSIONAL ENGINEER
Wisconsin: 39114
Michigan: 6201059305
Illinois: 062069797
Indiana: PE11700652

YEARS OF EXPERIENCE
18

EDUCATION
Bachelor of Science
Chemical Engineering
University of Minnesota
2002

AWARDS
2014 ACEC Missouri Engineering Excellence Honor Award, Process Engineer: In-line Storage Optimizes Existing Riverside Pump Station, Jefferson City, Missouri

2013 ACEC Wisconsin Engineering Excellence Grand Award, Process Engineer: Sheboygan Regional WWTP Achieves Net Zero Energy, Sheboygan, Wisconsin

2013 ACEC Indiana Engineering Excellence State Finalist, Process Engineer: Long-term Control Plan and Wastewater Treatment Plant No. 1 Improvements, Auburn, Indiana

PAPERS
"Wastewater Treatment Plant Upgrades in Grafton, Wisconsin," May 2010, Water Environment Federation Magazine

Mr. Bergstrom has experience as both a Process Engineer and Control Systems Engineer. His experience includes the planning, design, and specification/documentation of treatment processes and equipment and the associated control systems utilizing PLCs, HMIs, and VFDs.

Wastewater Treatment Facility Preliminary Design, La Crosse, Wisconsin. Process Engineer: Preliminary design for equipment replacements, infrastructure rehabilitation, aeration basin configuration basin enhancements to improve bio-P performance, effluent disc filtration for phosphorus compliance (0.1 mg-TP/L), biosolids dewatering, biosolids drying, biogas conditioning, and biogas utilization (biogas-fueled engine generators).

Wastewater Treatment Plant Improvements, Wausau, Wisconsin. Process Engineer: Responsible for process design of new Solids Building at 5 mgd wastewater treatment facility. The design incorporated pumping and screening of thin primary sludge followed by gravity thickening and pumping of the screened primary sludge. Two 2-m gravity belt thickeners for thickening waste activated sludge pumping thickened sludge. Two 1.5-m belt filter presses feeding a cake sludge hopper with cake sludge pumps feeding a 4,500 lbs/hour evaporative capacity belt dryer, dried product conveyance using drag conveyors, dust control, polymer feed systems, phosphorous removal chemical feed system, recycle pumping of belt filtrate and dryer condensate, RAS and WAS pumping facilities, and plant compressed air system.

Digestion, Dewatering, and Drying Improvements, Stevens Point, Wisconsin. Project Manager/Process Engineer/Controls Engineer: Responsible for project management, process design, and controls during design through construction and startup for converting an existing 100-ft diameter liquid sludge storage tank to a fourth anaerobic digester and converting an existing utility garage to dewatering and drying building containing a 1.5-m belt filter press feeding cake sludge to a 3,600 pounds/hour evaporative capacity paddle dryer. The project also included these support facilities: a filtrate pump station, thermal fluid heating system, dry product pneumatic conveyance, nitrogen storage and purge, dry product storage silo, digester gas treatment and compression, polymer feed systems, and sludge pumping.

Biosolids Dewatering and Drying Improvements, Sheboygan, Wisconsin. Project Manager/Process Engineer: Responsible for project management and process design of biosolids dewatering and drying facilities at the 40-mgd Sheboygan Regional Wastewater Treatment Facility. The project included preparing owner procurement documents for the City to purchase major pieces of process equipment and then preparing plans and specifications for a contractor to install the procured equipment and other support facilities. The project added screw press dewatering equipment, cake sludge pumping, a medium temperature belt dryer, biosolids cooling and transport equipment, and a biosolids storage silo with a nitrogen blanket for fire suppression. Nitrogen is generated onsite using a rotary screw compressor and membrane separation system.

Digester Mixing Facilities, Sheboygan, Wisconsin. Project Manager/Process Engineer: Responsible for project management and process design of new digester mixing facilities, digester cover restoration and digester gas distribution piping modifications at the 40-mgd Sheboygan Regional Wastewater Treatment Facility. The project included alternate designs for "linear motion" and internal draft tube digester mixing equipment.

Solids Handling Study, Sheboygan, Wisconsin. Process Engineer: Principal author of Near-Term Improvements Solids Handling Study for the Sheboygan Regional Wastewater Treatment Facility. The study examined sludge thickening alternatives, digester mixing technologies, and digester gas distribution piping modifications.

DO Control Loop Modifications, Sheboygan, Wisconsin. Process Engineer: Design to modify the existing DO control loop to provide effective, reliable control of aeration basin DO concentrations. The new DO control system uses two separate control loops to maintain the desired DO concentration in each aeration basin. Blower capacity is varied by maintaining a set pressure in the main blower header. DO sensors located in each of

the four aeration basins control the position of an electrically actuated air flow control valve on the air header leading to each basin.

Secondary Clarifier Mechanism Upgrade, Milwaukee Metropolitan Sewerage District, Wisconsin. Process Engineer: Responsible for the design of scum subnatant pumping facilities and plant effluent water chlorination at the South Shore Water Reclamation Facility as part of the Secondary Clarifier Mechanism Upgrade Project.

Wastewater Treatment Plant Upgrade, Walworth County Metropolitan Sewerage District, Delavan, Wisconsin. Process Engineer: Responsible for design of influent screening facilities, primary sludge pumping modifications, UV disinfection facilities, and anaerobic digestion modifications at this 9.2-mgd (34.4-mgd peak) regional WWTP.

Wastewater Treatment Plant Upgrades, Kewaunee, Wisconsin. Project Manager/ Process Engineer: Existing wastewater treatment plant upgrade project to meet ammonia limits. Project included new influent pumping facilities, preliminary treatment, aeration basin expansion and modifications, new blowers, secondary clarifiers, UV disinfection, chemical phosphorous removal, sludge storage, and reed beds.

Biosolids Facility Upgrades, Dousman, Wisconsin. Controls Engineer: Responsible for controls design for the addition of a new sludge dewatering and cake sludge storage facility containing a 400 lbs/hour screw press, sludge pumping, cake conveyance, and polymer feed systems.

Wastewater Treatment Plant Improvements, Whitewater, Wisconsin. Process Engineer: Responsible for facility planning and process for a 2 mgd wastewater treatment facility including preliminary treatment improvements, high strength waste receiving, anaerobic digestion, RAS and scum pumping, aeration blowers, and centrifuge sludge thickening.

Chemical Phosphorus Removal Gurnee and Clavey Road Water Reclamation Facilities, Gurnee, Illinois. Process and Controls Engineer: Responsible for design of multi-point chemical phosphorous with online orthophosphate analyzer flow pacing at the North Shore Water Reclamation District's Gurnee and Clavey Road facilities.

Scum System Modifications, North Shore Water Reclamation District, Gurnee, Illinois. Project Manager/Process Engineer: Scum system modifications project involving changes to the clarifier scum collection mechanisms, scum pumping system improvements, and new scum screening facilities at each of the District's three wastewater treatment plants.

Sludge Management Program Evaluation, North Shore Water Reclamation District, Gurnee, Illinois. Process Engineer: As part of an overall evaluation of the District's sludge management program analyzed the grit and scum removal operations at all three of the District's WWTPs. Evaluated the possibility of replacing the Waukegan WWTP's Imhoff tanks with new primary clarifiers. The study showed that the Imhoff tanks could be removed from service to reduce odor complaints without overloading the existing primary clarifiers.

Chickasaw Hills WRF Regionalization Phase I, Illinois American Water Company, Homer Glen, Illinois. Controls Engineer: Development of instrumentation and controls plans and specifications for the replacement of an existing packaged wastewater facility with a new biological nutrient removal facility with UV disinfection and aerobic digestion. Including the aeration basins, secondary clarifiers, aerobic digesters, UV disinfection, post aeration, and blower facilities.

Secondary Treatment Improvements, South Bend Indiana. Process Engineer: Responsible for design of a 33 mgd RAS pumping system to evenly distribute RAS from seven secondary clarifiers via four pump stations to four aeration basins.

WILLIAM L. MARTEN, PE, BCEE

PROFESSIONAL ENGINEER
Wisconsin: 25191

PROFESSIONAL REGISTRATION
Board Certified Environmental Engineer – American Academy of Environmental Engineers (Water/Wastewater Engineering)

Wisconsin: Grade IV Certified Wastewater Operator #05552

YEARS OF EXPERIENCE
41

EDUCATION
Master of Science
Civil/Environmental Engineering University of Wisconsin - Madison
1984

Bachelor of Science
Civil/Environmental Engineering University of Wisconsin - Madison
1982

PROFESSIONAL ASSOCIATIONS
Water Environment Federation

- WERF Project Subcommittee QA/QC Reviewer: "Wastewater Treatment Anaerobic Digestion Foaming Prevention and Control Methods" (Current)
- WEF Plant Operations and Maintenance Committee
- Municipal Wastewater Treatment Design Committee Wet Weather Treatment Subcommittee

Central States Water Environment Association

- Ad Hoc Committee on Digester Foaming (2010, 2011, 2012)
- Presenter Foaming Challenges Case Studies Workshop (2011)
- Operations Workshop Ad Hoc Committee (Current)
- Spring Biosolids Symposium Committee (Wisconsin Section – Current)

Illinois Water Environment Association
Illinois Association of Wastewater Agencies
Indiana Water Environment Association
Wisconsin Wastewater Operators Association
American Society of Civil Engineers

AWARDS
2017 ACEC Wisconsin Engineering Excellence Best of State Award, Lead Process Engineer: Eau Claire WWTF-Resilient, Robust, Sustainable, Eau Claire, Wisconsin

2014 ACEC Wisconsin Engineering Excellence Best of State, Process Engineer: Wastewater Treatment and Energy Recovery Facility, Bush Brothers & Company, Augusta, Wisconsin

AWARDS (continued)

Mr. Marten's expertise includes planning, designing, starting up, analyzing, troubleshooting, and auditing wastewater treatment systems, and developing and delivering both training and operations and maintenance (O&M) manuals for such systems. He is Donohue's Practice Leader for Wastewater Biological Processes and Nutrient Removal. Mr. Marten has experience working in the municipal and industrial wastewater treatment fields. This experience includes the following:

- Managed and led planning, evaluation, design, startup, training and troubleshooting evaluations and services at small, medium and large wastewater treatment facilities,
- Managed capacity evaluations to confirm/change rated capacity at several wastewater treatment plants
- Conducted process and operations reviews to solve compliance problems at numerous municipal and industrial wastewater treatment plants
- Managed a 15-mgd wastewater treatment plant in Maine, operated a 50-mgd wastewater treatment plant in Wisconsin, and taught a wastewater treatment operator certification course in California

Phosphorus Compliance Facility Plan, La Crosse, Wisconsin. Project Manager and Lead Process Engineer: Facility planning to assist the City of La Crosse in planning to meet new stringent (0.1 mg/L) water quality based (WQBEL) effluent limits at its 20 mgd Isle la Plume wastewater treatment facility. The work involved historical data analysis, special sampling, pilot testing and BioWin modeling to assess treatment capabilities and develop strategies to optimize phosphorus removal performance of the existing facilities. The project then evaluated treatment and non-treatment (non-point source) alternatives to achieving compliance with the future limits, resulting in a recommended compliance plan for the City. Project currently under preliminary design.

Facility Planning, La Crosse, Wisconsin. Lead Process Engineer: Facility planning for wastewater treatment plant upgrade including assessment of biosolids management/reuse program and processing alternatives, biological nutrient removal optimization, and potential nutrient recovery, along with general plant upgrades related to age of existing infrastructure. One key focus area involved evaluating the anaerobic digestion process to improve its performance, to control struvite formation, and to assess the ability to accept high strength wastes to boost gas production for potential use in co-generation.

Startup Assistance, Operator Training and Process Troubleshooting/Optimization, Eau Claire, Wisconsin. Lead Process Engineer: Development of startup plan and execution of training for this 11.5 mgd facility being converted from a rotating biological contactor (RBC) process to an advanced biological nutrient removal (BNR) activated sludge process. Activities included development of operating procedures and process control tools and ongoing process assistance as the plant staff have transitioned from a very simple, self-regulating RBC process to a complex and dynamic activated sludge system requiring significant monitoring and control.

Facility Planning and Design of Plant Improvements, Eau Claire, Wisconsin. Lead Process Engineer: Facility planning and design of wastewater pump station and treatment plant improvements. The plan developed a phased approach to help the City cost-effectively and reliably meet new effluent ammonia limits in the short term, while maintaining an aging RBC treatment system that is nearing its capacity and useful life limits, with a second phase aimed at replacing the RBCs with a nitrifying activated sludge system and performing anaerobic digestion and other facility upgrades several years down the road, allowing the City to fiscally plan for funding this major expansion. Mr. Marten led design of several key plant improvements including biological phosphorus removal activated sludge, anaerobic digestion heating and mixing improvements, and struvite mitigation provisions related to digestion and downstream solids handling processes. Mr. Marten then lead startup of the new facilities and has provided ongoing operational assistance.

Effluent Phosphorus Compliance Evaluations, Multiple Communities, Wisconsin. Project Manager/Lead Process Engineer/Senior Review Engineer: Multiple projects focused on optimizing phosphorus removal performance of existing facilities and

Life Membership – Wisconsin Wastewater Operators Association, 2013

2011 ACEC Wisconsin Engineering Excellence Best of State, Lead Process Engineer: Facility Planning to Meet Permit Limits, Superior, Wisconsin

2011 ACEC Wisconsin Engineering Excellence State Finalist, Lead Process Engineer: Eau Claire Removes Toxicity and Improves Pumping, Eau Claire, Wisconsin

2010, 2008 & 2006 - Outstanding Leadership and Dedicated Service Awards – Wisconsin Section Central States Water Environment Association

2007 Outstanding Service Award – Technical Program Committee Chair, Central States Water Environment Association

2006 ACEC Engineering Excellence Best of State Award/National Finalist, Sr. Process Engineer: Wet Weather Capacity Improvements at Milwaukee MSD's Jones Island Wastewater Treatment Plant

2005 George Bradley Gascoigne Medal, Water Environment Federation

2005 Koby Crabtree Award for Research & Education, Wisconsin Wastewater Operators Association

2004 Outstanding Service Award, Central States Water Environment Association

2000 Sentral States Select Society of Sanitary Sludge Shovelers, CSWEA

1984 Academic Excellence Award, Central States Water Environment Association

PAPERS

"Low Cost Activated Sludge Optimization – A Superior Approach", The Clarifier, WWOA Quarterly Magazine, February 2016

"Challenging the limits of technology," Water Environment & Technology Magazine, January 2015, Vol. 27, No. 1

"What every Operator should know about Biological Nutrient Removal," Water & Technology Magazine, October 2014, Vol. 26, No. 10

"International Standard Units for Water and Wastewater Processes," WEF Manual of Practice No. 6, 2011

"Nutrient Removal: One Size Does Not Fit All", Water Environment & Technology, October 2004, Vol. 16, No. 10

"Double Take", Water Environment & Technology, August 2004, Vol. 16, No. 8

"Full-scale Evaluation of Factors Affecting the Performance of Anoxic Selectors", Water Environment Research, November/December 1997, Vol. 69, No. 7

evaluating alternative improvements for a number of WWTPs in Wisconsin being faced with new, more stringent (0.075-0.100 mg/L) water quality based effluent phosphorus limits. Facilities range in size from 0.4 mgd to >15 mgd, some making use of chemical phosphorus removal and others a combination of enhanced biological phosphorus removal with chemical treatment for polishing or sidestream treatment.

Master Planning Study, Plant Capacity Assessment and Anaerobic Digestion Improvements, Stevens Point, Wisconsin. Lead Process Engineer: Projects led to anaerobic digestion improvements aimed at increasing the plant's ability to feed high strength waste to its anaerobic digesters to boost biogas generation for co-generation purposes. Also included were issues related to gas quality and struvite control.

Facilities Planning, Milwaukee Metropolitan Sewerage District, Wisconsin. Lead Process Engineer: 2020 Biosolids Facility Planning. While with another engineering firm, Mr. Marten led evaluation of a half-dozen biosolids handling, stabilization and disposal alternatives for the Jones Island and South Shore WRFs, for a 20-year planning period. Alternatives evaluated included continuing with the District's existing Milorganite/Agrilife (anaerobic digestion) program, landfilling, incineration, glass furnace technology, composting, and liquid reuse of a Class A biosolids product.

Shore Digester Gas/Blower Optimization, Milwaukee Metropolitan Sewerage District, Wisconsin. Lead Process Engineer: This project was focused on evaluating the best use of gas produced from the South Shore WWTP anaerobic digesters for a 20-year planning period, including engine driven generators, engine driven blowers, microturbine generators, and other potential co-generation alternatives. Mr. Marten led evaluations of digester gas production, quality, and treatment, and performed senior review of gas utilization alternatives. Key aspects of the gas quality evaluations included sampling and testing for siloxanes, and evaluation of siloxanes and hydrogen sulfide removal alternatives. Mr. Marten then led the development of a gas treatment implementation plan to provide for siloxanes treatment and removal based on future gas quality.

Wastewater Treatment Plant Modifications, Milwaukee Metropolitan Sewerage District, Wisconsin. Project Manager/Lead Process Engineer/Operations Specialist: Facility delivery, startup, certification, operator training, plant process/operational troubleshooting/modification at the 390-mgd Jones Island Wastewater Treatment Plant. Mr. Marten managed or served in a lead role on numerous projects, including:

- Startup of a new $200 million, 200-dry-ton-per-day, sludge dewatering and drying facility used to produce the commercial biosolids fertilizer Milorganite
- Startup and certification of a 200-dry-ton-per-day, sludge thickening and blending facility
- Startup and certification of a 390-mgd disinfection facility
- Development and oversight of full-scale, anaerobic digester loading and sludge dewatering studies

Key challenges were in coordinating construction activities and new facility startups within the constraints of an operating treatment plant while helping to maintain the plant's record of more than ten years without a monthly permit violation.

Biological Nutrient Removal Evaluation/Training, Sheboygan, Wisconsin. Project Manager/Lead Process Engineer: This project involves assisting the Sheboygan wastewater treatment plant staff in full-scale evaluation and optimization of biological nitrogen and phosphorus removal at the 40-mgd activated sludge plant, and performing staff training of biological nutrient removal concepts, systems, and performance keys.

Master Planning Study, Oakland WWTP Biosolids Handling and Energy Recovery, Topeka, Kansas. Lead Process Engineer: Led evaluations of existing plant anaerobic digestion and solids thickening/dewatering processes at this 15 mgd facility. Evaluations included performance and development/assessment of alternatives to optimize process performance and increase capacity, including assessment of conveying solids from the City's North Topeka WWTP to the Oakland plant to consolidate sludge treatment and reuse operations.

DONOHUE

SHAWN D. REIMES, PE, SE

PROFESSIONAL ENGINEER
Wisconsin: 42797
Iowa: 24228

STRUCTURAL ENGINEER
Illinois: 081.008390

CERTIFICATIONS
2-Hour OSHA, 2017
Confined Space Entry

YEARS OF EXPERIENCE
13

EDUCATION
Bachelor of Science
Civil Engineering
University of Wisconsin - Platteville 2007

PROFESSIONAL ASSOCIATIONS
American Society of Civil Engineers
American Institute of Steel Construction

AWARDS
2019 ACEC Missouri Engineering Excellence Honor Award, Structural Engineer: Lemay Pump Station Electrical System Transformation, Metropolitan St. Louis Sewer District, St. Louis, Missouri

Mr. Reimes' experience includes the structural assessment and design of wastewater and water treatment plants, stormwater facilities, and industrial facilities. He has experience working on both private and public projects. These projects have involved the assessment and design of reinforced concrete tanks, reservoirs, foundations, structural steel, reinforced concrete and masonry buildings, pile foundations, and retaining walls.

Wastewater Treatment Facility Preliminary Design, La Crosse, Wisconsin. Structural Engineer: Preliminary design for equipment replacements, infrastructure rehabilitation, aeration basin configuration basin enhancements to improve bio-P performance, effluent disc filtration for phosphorus compliance (0.1 mg-TP/L), biosolids dewatering, biosolids drying, biogas conditioning, and biogas utilization (biogas-fueled engine generators).

Resource Recovery and Electrical Energy Project, NEW Water, Green Bay, Wisconsin. Lead Structural Engineer: Additions and modifications to the wastewater treatment plant servicing the greater Green Bay area. Design includes two new 2.6-MG digesters with below grade concrete equipment gallery, new biogas building consisting of a pre-engineered metal building with below grade concrete basement, concrete masonry screening facility, and other miscellaneous concrete structures, as well as modifications to existing facilities.

Wastewater Treatment Plant Improvements, Fountain City, Wisconsin. Lead Structural Engineer: Upgrades and additions to the Fountain City WWTP. An evaluation of existing buildings was initially performed to determine what structures could be reused. This led to the renovation and reuse of several buildings including a clarifier complex, rotating biological contactors, digester, and control building. New structures included an electrical building and final clarifier. Inspections were performed during construction on several concrete wastewater tanks while out of service to assess their condition and the need for repairs and/or protective coatings.

Biogas Utilization Facilities, West Bend, Wisconsin. Lead Structural Engineer: Additions to the West Bend wastewater treatment plant. Additions included a new cast-in-place high strength waste receiving station, new concrete masonry unit gas conditioning building, and modifications to an existing service building to accommodate the addition of four new micro turbines.

Wastewater Treatment Plant Upgrades, Denmark, Wisconsin. Lead Structural Engineer: Replacement of RBC filters. Conducted an analysis of the building to determine the best way of accessing existing filters. Sections of existing precast wall panels were removed to allow for removal and replacement of filters.

Facility Planning Inspections, Superior, Wisconsin. Lead Structural Engineer: Inspection and assessment of numerous concrete stormwater structures servicing the City of Superior. Structures included 16 Lift stations and two large treatment facilities. Tasks included structural inspection, developing a report outlining deficiencies and repair recommendations, and assembling a cost estimate for the recommended repairs. Structures ranged from 4-foot diameter below-grade precast manholes with no deficiencies to large multi-level buildings experiencing severe structural deterioration.

Fire Administration Building Generator Installation Project, West Allis, Wisconsin. Lead Structural Engineer: Installation of a new generator for the City of West Allis. Project included an inspection and assessment of the existing building to determine suitable locations for the new generator, followed by production of design drawings and specifications. Structural analysis was required to determine if the existing building constructed in 1929 was capable of supporting the new generator on the roof.

WWTP Centrifuge Improvements, Fort Atkinson, Wisconsin. Lead Structural Engineer: Design of modifications to an existing building to house a new centrifuge. Tasks included inspecting and assessing the existing building's ability to house a large piece of equipment on a second story floor, and adding a new monorail support frame and opening in the upper level wall for equipment access.

Tyson Foods Aeration Basin Baffle Wall, New London, Wisconsin. Lead Structural Engineer: Design of a new concrete baffle wall located in an existing concrete aeration basin. A condition assessment of the tank was required to determine its ability to support a new concrete wall. The aged existing concrete and thin walls and slab required the new baffle wall to be designed as a retaining wall supported on its own foundation.

Biosolids Storage Facility, West Bend, Wisconsin. Lead Structural Engineer: Design of a cast-in-place 90-foot diameter x 32-foot high biosolids storage tank and multi-level pump room.

Water Utility Garage, Stevens Point, Wisconsin. Lead Structural Engineer and Project Manager: Design of a 37,500-square-foot utility garage. Building includes a garage area and a 3,000-square-foot office area with locker rooms, offices, kitchen, and a large computer room. Building construction consists of precast sandwich panel walls, precast double tee roof, and a slab-on-grade floor with in-floor heat.

Wastewater Treatment Plant Additions, Naperville, Illinois. Structural Engineer: Design services for biosolids thickening and digestion additions and improvements. Structures included pump stations, membrane thickening building, digestion aeration building, centrifuge building, gravity belt thickening building, and digester tanks.

Wastewater Treatment Plant Additions, Naperville, Illinois. Structural Engineer: Design services for biosolids thickening and digestion additions and improvements. Structures included pump stations, membrane thickening building, digestion aeration building, centrifuge building, gravity belt thickening building, and digester tanks.

Illinois Department of Transportation Pump Station Assessment. Lead Structural Engineer: Inspection and assessment of numerous pump stations located throughout the State of Illinois. The project included structural inspection of each station followed by developing a report outlining the condition of each station and recommended repairs and/or modifications required to bring the station in line with current codes and safety regulations. Pump station conditions ranged from new construction with no recommended modifications to critical condition in need of immediate repairs or replacement. A cost estimate was included for each station.

Water Pollution Control Plant Improvements, Fort Wayne, Indiana. Lead Structural Engineer: Additions and modifications to the Fort Wayne WPCP. The project was broken into three phases and consisted of new concrete overflow boxes mounted above existing below-grade concrete structures, removal and replacement of existing digester tank covers, and numerous other additions and modifications to existing buildings. Several leaks were observed in the below grade tunnels around the digesters that required further investigation and recommendations for repair.

Nutrient Recovery and Reuse Project, St. Cloud, Minnesota. Structural Engineer: Additions and modifications to the City of St Cloud WWTP. Design includes a new below grade concrete wet well and additions to several existing structures, including converting an existing utility garage into a new biosolids loadout building. Challenges included fitting the new biosolids equipment and access platforms into the existing garage, and an addition of a penthouse to the roof of the garage to allow for extension of a tank above the existing roof level.

Easton Avenue Water Pollution Control Facility, Disinfection Facilities, Waterloo, Iowa. Lead Structural Engineer: Design of a new ultraviolet disinfection facility, a multi-level facility consisting of below grade cast-in-place walls and foundation with concrete masonry unit upper level walls and a precast roof.

Water Pollution Control Facility Improvements, Denver, Iowa. Lead Structural Engineer: Design of facility improvements. New buildings included wood framed administration building, concrete and concrete masonry unit treatment building, activated sludge tank, ultraviolet disinfection building, pre-engineered wood frame cake storage building, and miscellaneous other small concrete structures.

DONOHUE

DAVID W. GOECKS

YEARS OF EXPERIENCE
31

EDUCATION
Bachelor of Science
Industrial Technology
University Wisconsin - Platteville
1989

AWARDS
2018 ACEC Indiana Merit Award, Controls Engineer: City of Rushville Utilities - Cloth-Media Disk Filters for CSO Treatment, Rushville, Indiana

2013 ACEC Indiana Engineering Excellence Honor Award, Controls System Engineer: Overflow Reduction through CSO Abatement Projects, Goshen, Indiana

Mr. Goecks has experience as a Control Systems Engineer in the Process Control environment, as well as experience as an Electrical Design Engineer in the Industrial environment. His experience includes the design, specification/documentation, and programming of relay and automated power and control systems utilizing PLCs, HMIs, and VFDs.

Wastewater Treatment Facility Preliminary Design, La Crosse, Wisconsin. Lead Control Systems Engineer: Preliminary design for equipment replacements, infrastructure rehabilitation, aeration basin configuration basin enhancements to improve bio-P performance, effluent disc filtration for phosphorus compliance (0.1 mg-TP/L), biosolids dewatering, biosolids drying, biogas conditioning, and biogas utilization (biogas-fueled engine generators).

Wastewater Treatment Plant Improvements, Eau Claire, Wisconsin. Lead Control Systems Engineer: The wastewater treatment plant upgrades which included the addition of an extensive automated control system consisting of a redesigned SCADA control room, four redundant PLCs, integration of PLCs at 25 lift station locations, ten Cisco Ethernet switches on twin redundant GB fiber networks, 39 VFDs networked using Ring Topology, nine CCTVs, two automated plant gates utilizing IR technology, 33 door FOB readers, expanded telephone and paging systems, over 400 IP addresses, and over 1,400 hardwired PLC I/O points allowing the Plant to be run with minimal staff. Plant security (including CCTVs) was designed to be compatible with county-wide security platform and protocols. The project had a construction cost exceeding $40 million, with the controls portion being $2.3 million.

Wastewater Treatment Facility Project, Preliminary Design, Wausau, Wisconsin. Lead Control Systems Engineer: Preliminary planning and design of major equipment, capacity upgrades, and phosphorous removal for the entire facility. The capital budget for the recommended plan is $78.9 Million.

Secondary Treatment and Power Distribution System Improvements, Superior, Wisconsin. Lead Control Systems Engineer: Replacement of twin 125hp blowers controlled by VFDs, aeration basin mixers with integral VFDs, DO and ORP probes matching existing sensor manufacturer, and main switchgear replacement.

Jones Island Pickle Liquor Feed System, Milwaukee Metropolitan Sewerage District, Wisconsin. Control Systems Engineer: This project included the oversight of the install, checkout, and functional testing of a pickle liquor feed system including four 30,000-gallon storage tanks, two chemical feed variable speed pumps, and a constant speed transfer pump with associated controls, PLC programming, and SCADA incorporation.

RAS Pump Station Improvements, Brookfield, Wisconsin. Lead Control Systems Engineer: Design of seven RAS and two WAS flowmeter replacements. One additional RAS pump and two VFD replacements were also included in the project. Existing pipe profiles with limited up/down diameters made setup and calibration of the meters critical for accurate measurement and operation.

Disinfection System Upgrade, Brookfield, Wisconsin. Lead Control Systems Engineer: Preliminary engineering, design, and construction services for upgrading the existing gaseous chlorine/sulfur dioxide feed, storage, and mixing systems to chemical disinfection/de-chlorination feed, storage, and mixing systems for filtered secondary effluent up to 31.2 mgd and for combined filtered secondary effluent/primary effluent up to 50.1 mgd.

Wastewater Treatment Plant Improvements, Whitewater, Wisconsin. Lead Control Systems Engineer: The wastewater treatment plant upgrades included the addition of an extensive automated control system consisting of a new SCADA control room, redundant PLCs, integration of existing I/O systems, Owner-provided Ethernet switches on GB fiber loop network, 20 VFDs networked using Ethernet, segregated rack-mount network equipment, wireless access points and wireless tablets allowing Plant staff to access

SCADA network throughout facility and remotely. The project had a construction cost exceeding $20 million, for 1.5-mgd plant.

Influent Pumping and pH Control, Stevens Point, Wisconsin. Lead Control Systems Engineer: Design of low flow RWW pump controlled by VFD as power/cost saving measure. Project included manual transfer switch allowing RWW pump to be run using portable generator if needed. Project included effluent pH monitoring and acid metering control

High Strength Waste Receiving and Force Main, Stevens Point, Wisconsin. Lead Control Systems Engineer: Design of high strength waste tank and pumping located at local brewery and high strength waste equalization tank and pumping at WWTP. Project included connecting brewery and WWTP with nearly 4,000 feet of fiber optic cable for monitor/control communications utilizing existing City conduit between the two facilities.

Nutrient Recovery and Reuse Project, St. Cloud, Minnesota. Lead Control Systems Engineer: Design of biosolids processing including biogas storage, biosolids dewatering, Class A biosolids processing, biosolids storage and load-out pumping, waste activated sludge phosphorous release, and Struvite harvesting to include the replacement of two older PLCs with ControlLogix platform.

CHP Biogas Engine Generators and Siloxane Removal, Western Lake Superior Sanitary District, Duluth, Minnesota. Lead Control Systems Engineer: Design of major improvements for the District's power generation and distribution systems. The design included three 874KW biogas/natural gas generators, unit substation switchgear, siloxane removal, and H2S polishing. PLCs for the project included conformal coating by request of the Owner.

Oxygen Supply and CHP Switchgear Improvements Project, Western Lake Superior Sanitary District, Duluth, Minnesota. Lead Control Systems Engineer: Design of major improvements for the District's high purity oxygen generation system including twin 40TPD Vacuum Pressure Swing Adsorption oxygen generation systems located in a new structure, relocation of twin 25,000 gallon liquid oxygen storage tanks, and new ambient air vaporizers. Project included decommissioning and removal of the old Cryogenic production systems. Project also included 13.8kV switchgear and distribution system replacement.

Eastside Wastewater Treatment Plant Phosphorus Removal and Improvements, Joliet, Illinois. Lead Control Systems Engineer: Design of mixed liquor selectors and modifications to twin existing aeration basins, two new GBTs, a new portable centrifuge that will be moved between three separate sites as needed, new TWAS Pumping and a new process drain pump station. Design included networking of 24 electric actuators for automating select aeration basin gates and valves, 12 DO and 12 ORP networked sensors, Ortho-Phosphate monitoring, and the addition of multiple new CompactLogix PLCs. The addition of a new administration building and main gate included security and access controls.

Aux Sable Creek Basin and Westside Wastewater Treatment Plant's Phosphorus Removal and Expansion, Joliet, Illinois. Lead Control Systems Engineer: Design of second grit removal train, mixed liquor selectors, oxidation ditch modifications, two new final clarifiers, RAS pumping modifications, Biosolids storage tank, new chemical building, Ortho-Phosphate monitoring, and the addition of a new CompactLogix PLC. VFDs and smart MCCs supplied with DeviceNet communications.

Main Substation Replacement, Bissell Point Wastewater Treatment Facility, St. Louis, Missouri. Lead Control Systems Engineer: Replacement of Building 4 – MV Switchgear. Fiber optic communication and coordination with rest of plant via existing Foxboro DCS system.

DONOHUE

MICHAEL B. STOHL, PE

PROFESSIONAL REGISTRATION
Wisconsin: 43845
Illinois: 62063326
Indiana: PE11200403
Iowa: P23026
Missouri: 2014041302
Michigan: 6201065806
Minnesota: 55048
California: 22677

CERTIFICATIONS
2-Hour OSHA, 2017
Confined Space Entry

YEARS OF EXPERIENCE
14

EDUCATION
Bachelor of Science
Electrical Engineering
Illinois Institute of Technology
2006

PROFESSIONAL ASSOCIATIONS
Consulting Electrical Engineers (CEE) – Illinois Division

Illinois Water Environment Association

Electrical, Power, Energy and Controls Committee

AWARDS
2019 ACEC Missouri Engineering Excellence Honor Award, Project Manager/Design Lead: Lemay Pump Station Electrical System Transformation, Metropolitan St. Louis Sewer District, St. Louis, Missouri

2018 ACEC Illinois Engineering Excellence Merit Award, Project Manager/Lead Designer: Electrical Modernization of 20-mgd Water Facility, Illinois American Water Company, Peoria, Illinois

2018 ACEC Indiana Engineering Excellence Merit Award, Electrical Engineer: Cloth-Media for CSO Treatment, Rushville, Indiana

2014 ACEC Illinois Engineering Excellence Grand Conceptor Award, Lead Electrical Engineer: IDOT Pump Station 7 associated with Wacker Drive and Congress Parkway Reconstruction at Chicago, Illinois

2013 ACEC Indiana Engineering Excellence Honor Award, Construction Engineer - Electrical: Overflow Reduction through CSO Abatement Projects at Goshen, Indiana

2013 ACEC Indiana Engineering Excellence Merit Award, Lead Electrical Engineer: Long-Term Control Plan and Plant No. 1 Improvements Project at Auburn, Indiana

2011 ACEC Minnesota Engineering Excellence Honor Award, Electrical Engineer: New Wastewater Treatment Facility at Willmar, Minnesota

2011 ACEC Missouri Engineering Excellence Grand Award, Electrical Engineer: Aeration-Detention System at O'Fallon, Missouri

Mr. Stohl is an electrical engineer whose career experience has specialized in the design and construction of water and wastewater facilities including a variety of pump stations. He has been responsible for project management on complex electrical distribution systems; electrical planning and design for water related infrastructure projects; and construction oversight including attendance at factory witness testing and coordinating electric utility outages. His areas of expertise include:

- Electrical Service and Power Distribution (through 34.5kV)
- Commissioning Assistance
- Factory Acceptance Testing
- Emergency and Standby Electrical Power Systems
- Switchgear and Switchboard design
- Motor Control and Motor Control Center Design
- Voltage Drop Design/Calculations
- Grounding and Lightning Protection Design
- Lighting and Lighting Control Design
- Fire Alarm System Design
- Intrusion and Security System Design
- Code Interpretations and Applications

Wastewater Treatment Facility Preliminary Design, La Crosse, Wisconsin. Senior Electrical Engineer: Preliminary design for equipment replacements, infrastructure rehabilitation, aeration basin configuration basin enhancements to improve bio-P performance, effluent disc filtration for phosphorus compliance (0.1 mg-TP/L), biosolids dewatering, biosolids drying, biogas conditioning, and biogas utilization (biogas-fueled engine generators).

Jones Island and South Shore WRF Variable Frequency Drive Phase IV Replacement Project (J06057D01), Milwaukee Metropolitan Sewage District, Wisconsin. Electrical Engineer for South Shore WRF: Donohue designed the replacement of 23 Variable Frequency Drives at the two plants. South Shore work included documenting motor control centers in the Aeration Buildings, harmonics testing during design to determine a solution which meets IEEE 519, adding surge protection devices to four MCCs and doing final layouts and sizing of eight new 200-hp VFDs which include integral reduced voltage solid state bypass, harmonic filtering, output dV/dt filtering.

Generator and Controls Upgrade, Brookfield, Wisconsin. Project Manager and Electrical Engineer: Donohue was responsible for the design of a 24.9 kV switchgear replacement. The new switchgear was designed with an integral automatic throw-over system to transition to emergency generator power in the event of a loss of disrupted utility source. Close coordination was required with the electric utility to ensure the emergency source could not parallel with the dual utility sources. One 1,750 kW diesel generator was designed and installed within an existing, un-used building to replace two smaller outdated generators. The design also included bus modifications to 480V synchronization switchgear, addition of 24.9 kV – 480V step-down padmount transformers, and electrical distribution system upgrades to provide additional long-term reliability. Special projects challenges included maintaining plant treatment throughout construction while the 24.9 kV switchgear was replaced in kind. Donohue attended factory witness testing and provided oversight throughout construction.

Bissell WWTF Main Substation Switchgear Replacement, St. Louis MSD, St. Louis, Missouri. Lead Design Engineer: Current project to replace the equipment and conductors in the original main switchgear equipment enclosure (Building 1 – Allis Chalmers Ruptair switchgear and Building 2 – General Electric switchgear); replace resistance grounding; replace four motor control centers in the Primary Building tunnel; and coordination with Ameren including multiple workshops to delineate work responsibilities, compliance with Ameren's CE-10 standard, and future growth projections. The new 4,160 volt, 2,000 amp switchgear will be arc resistant rated and consolidate Buildings 1 and 2 so the new gear is of the same vintage. The switchgear will utilize SEL

AWARDS (continued)

2010 ACEC Wisconsin Engineering Excellence State Finalist, Electrical Engineer: Wastewater Plant Expansion & Optimization at Two Rivers, Wisconsin

PRESENTATIONS

"Lincoln Source Water – The Odyssey," Illinois AWWA Source Water Summit, May 2019

"Addressing Single Point Failures in Electrical Systems," Wisconsin AWWA Annual Meeting, September 2018

"Conquering Floods, Maintaining Historic Sites, and Re-Purposing a 45-Year-Old Asset: The Story of Peoria Main Station's Electrical Improvements, "Illinois WATERCON Conference, March 2018

"Stormwater Pump Station 101: Keeping the Pavement Dry" Association of Highway Engineers Annual Conference, September 2017

"Electrical Upgrades at a 21 MGD Water Plant" Stewart Spreading Field Day, September 2017

"Identifying Weak Points in Electrical Systems," Missouri WEA and Missouri AWWA Joint Meeting, March 2017

"Electrical Distribution System Vulnerabilities" Illinois AWWA WATERCON Conference, March 2015

protective relaying to the automatic throw-over system using a main-tie-tie-main-tie-tie-main arrangement. The switchgear will be located in a power distribution center (PDC) with climate control. Project challenges included tying into an existing third bus and adding a tiebreaker such that Ameren metering is configured for bus monitoring (cold sequence); developing detailed construction sequencing to maintain two of three electric sources at all times; and locating the new building in a space confined substation.

Coldwater Creek Final Clarifier Replacement, St. Louis MSD, St. Louis, Missouri. Lead Electrical Engineer: The project involves design modifications to the Final Clarifier System to replace four rectangular clarifiers with one large circular clarifier. Electrical design included modifications to the existing Return Activated Sludge Pump Station for the addition of the new Final Clarifier, modifications to an existing 480V motor control center, new 480V panelboard and a variable frequency drive.

WPCP Plant No. 1 Improvements, Auburn, Indiana. Lead Electrical Engineer: Provided design, including preparation of plans and specifications, of new electrical distribution system for plant improvements that included a new grit removal facility and new blower building. The electrical design consisted of a new larger electric service consisting of a 2,500kV transformer, new 4,000-amp main switchgear, new 1,600kW emergency diesel generator, and re-feeding existing motor control centers and power panels in existing buildings. Special project challenges including keeping the plant in operation while switching over to new electrical system, designing an outdoor emergency generator with sub-base fuel tank to fit on an existing above grade concrete slab, and routing conduits and providing capacity on the main switchgear / generator to handle additional loads that will be added as part of a future Long Term Control Plan. Construction related services including site observations, correspondence with contractors, shop drawing reviews and quarterly site visits were also provided.

WPCP No. 1 Long Term Control Plan, Auburn, Indiana. Lead Electrical Engineer: Provided design, including preparation of plans and specifications, of a new Store-Treat tank, expanded Headworks Building, tying in three new precast buildings to the electrical system, utilization of an existing building for chemical treatment and storage as well as modifying the existing Stormwater Pumping Station to handle increased capacity and meet current codes. Electrical design consisted of nine variable frequency drives ranging in size from 1 hp to 150 hp, harmonic filters, lighting, and replacing equipment that did not meet code with explosion-proof rated equipment. Special project challenges included installing variable frequency drives in an obsolete motor control center from a different manufacturer, tying into an existing electrical system that was in the construction phase, and replacing equipment that did not meet current electrical codes.

WPCP Digester No. 6 Upgrade, Fort Wayne, Indiana. Electrical Engineer: Project included installation of new jet mixing and a new gas holding cover on Digester No. 6. Electrical design included tying into the 480V distribution system to power a new recirculation pump and a new mixing pump that are replacing sludge recirculation pumps. Construction related service including shop drawing reviews were also provided.

East Side Wastewater Treatment Plant, Joliet, Illinois. Lead Electrical Engineer: Project included new 50-mgd influent pump station with screening equipment to replace existing aged equipment. The electrical design included modifications for the existing 4.16kV switchgear, 4.16kV feeder across the site, 4.16kV-480V padmount transformer and motor control center with dual, draw-out interlocked main circuit breakers for connection to a portable generator connection cabinet, two 250-hp variable frequency drives and harmonic filters and two 135 hp VFDS and HFs for the dry pit submersible pumps with one of the larger drives was provided with a 3-contactor bypass utilizing a reduced voltage solid state starters. Design also included providing power to additional loads via a new 480V motor control, two 5-hp VFDs, panelboards, grounding, lightning protection and lighting. Design also included power distribution and explosion-proof devices for Class 1, Division 1 and 2, Group D hazardous locations as required by NFPA 72 and 820 for presence of methane and sewer gas. Construction related services including answering contractor questions and shop drawing reviews were also provided.

DONOHUE

JOSEPH C. HOLZWART, PE

PROFESSIONAL ENGINEER
Wisconsin: 41064

YEARS OF EXPERIENCE
15

EDUCATION
Bachelor of Science
Environmental Engineering
Michigan Technological University 2006

Bachelor of Science
Civil Engineering
Michigan Technological University 2006

ADDITIONAL TRAINING
Introduction to WinSLAMM - Uses and Basic Operation

Designing Bio/Infiltration Best Management Practices for Stormwater Quality Improvement

PROFESSIONAL ASSOCIATIONS
American Society of Civil Engineers

American Public Works Association (APWA), Wisconsin Chapter

Mr. Holzwart is a committed professional with experience in a wide variety of civil municipal-related infrastructure projects. His design experience includes subdivision design, sanitary force main design, sanitary sewer design, site grading, and site utilities. He has worked on a variety of street reconstruction projects, pedestrian facilities, and bicycle facilities. He also has experience with storm sewer design, stormwater storage, and stormwater treatment facilities. Design work includes preparing project plans and specifications for bidding and construction.

Wastewater Treatment Facility Preliminary Design, La Crosse, Wisconsin. Civil Engineer: Preliminary civil/site layout design for equipment replacements, infrastructure rehabilitation, aeration basin configuration basin enhancements to improve bio-P performance, effluent disc filtration for phosphorus compliance (0.1 mg-TP/L), biosolids dewatering, biosolids drying, biogas conditioning, and biogas utilization (biogas-fueled engine generators).

Wastewater Treatment Plant Improvements, Whitewater, Wisconsin. Design Engineer: Prepared civil drawings for new paving, grading, fencing, and site piping. Project included the construction of a process building, splitter box, septage receiving station, drying pads, aeration tanks, and other miscellaneous building revisions. Attended layout meetings, prepared specifications, and prepared civil cost estimate.

West Bend Wastewater Treatment Plant, Biogas Utilization Facilities, West Bend, Wisconsin. Design Engineer: Provided site design for the addition of a high strength waste receiving station, gas conditioning building, service building, and existing plant buildings. Design included new utilities and pavement. Coordinated with multi-discipline design team.

Wastewater Treatment Facilities Alterations and Additions Construction-Related Services, Watertown, South Dakota. Design Engineer: Reviewed shop drawings and assisted inspectors and project manager with engineering support during construction. Made design changes when necessary to adapt to changes in the field.

Wastewater Treatment Facilities Alterations and Additions, Watertown, South Dakota. Design Engineer: Prepared civil drawings for a new headworks building site and 1,500 feet of 42-inch sanitary sewer. Project included the abandonment of existing lift station and force main and construction of new headworks building and new 42-inch gravity sewer. Site design included piping, grading, fencing, and new pavement. Sewer design included pipe material design, horizontal, and vertical layout. Attended layout meetings, prepared specifications, prepared civil cost estimate, and answered questions during bidding.

Wastewater Treatment Plant Lower Level Ponds Closure, Pfizer, Terre Haute, Indiana. Design Engineer: Prepared specifications and bid documents to receive competitive bids for the filling and grading of the ponds. Worked closely with construction manager to specify seeding, hauling of soils, and other related construction requirements for grading and seeding.

Interceptor System Master Plan, NEW Water, Green Bay Wisconsin. Civil Engineer: Donohue performed a two-phase system-wide assessment of NEW Water's current and future needs. Phase 1 culminated in a Master Plan that evaluates infrastructure condition and models current and future sanitary sewer flows. Phase 2 includes flow monitoring, developing and calibrating a hydraulic model, and developing and ranking collection system improvement alternatives to help guide NEW Water and stakeholders through a decision-making process in the preparation of a risk-based 20-year Capital Improvement Plan. This plan serves as a basis for capacity allocations and as a roadmap for the future system improvements.

De Pere Mill Waste Conveyance Force Main, NEW Water, Green Bay, Wisconsin. Design Engineer: Used AutoCAD 2006 and Eagle Point software to design plan and profile views of a 4-mile 12-inch force main. The force main was designed to eliminate high strength (corrosive) waste from a gravity sewer from a single customer. The force

main extends from Fox River Fiber in De Pere to the De Pere wastewater treatment facility. Assisted in acquiring necessary easements. Attended meetings when necessary. Assisted with project permitting. Developed design specifications and bid documents. Assisted with bidding procedures and prepared addendums when necessary.

De Pere Siphon Analysis (Task IX), NEW Water, Green Bay, Wisconsin. Design Engineer: Reviewed data from Sonar Tech, the contractor that used sonar to obtain slope and elevation data of the existing 24- and 30-inch siphon that crosses under the Fox River directly east of the wastewater treatment facility. Investigated other testing techniques that would be able to give representative data on the structural integrity of the siphons. The only way found to test the siphon without digging or damaging was to drain and record using closed-circuit television. Compiled information that was incorporated into a memo and given to the client as part of the facilities study.

Scott Bayshore Interceptor Rehabilitation, NEW Water, Green Bay, Wisconsin. Project Manager/Design Engineer: Prepared drawings, specifications, and bid documents for approximately 3,500 feet of 24-inch sanitary sewer and manhole rehabilitation. Project also included the placement of riprap stone revetment over a portion of the sewer that has been exposed along Michigan due to years of erosion. Completed necessary project permitting and obtained construction permits from private landowners for access during construction.

De Pere Eastside Interceptor Rehabilitation, NEW Water, Green Bay, Wisconsin. Design Engineer: Provided technical support and quality reviews for rehabilitation of the interceptor sewers and manholes of the De Pere siphon crossing, and the Northeast, Southeast, and Charles St. Interceptors.

Dutchman Creek Interceptor Rehabilitation and Replacement, NEW Water, Green Bay, Wisconsin. Project Manager/Design Engineer: Design for the replacement of existing 15 and 18-inch sewers with a 24-inch pipe. The existing 21-inch north leg of the interceptor will be rehabilitated with cured-in-place pipe. The majority of the project area is located in a sensitive environmental corridor with limited construction access points. Permit applications with WDNR include wetlands, utility crossings, temporary culverts (access), and bank stabilization. Other services being provided include utility coordination, public meetings, and meetings with wastewater customers (Hobart & Ashwaubenon) to review flow allocations.

Ashwaubenon Creek Interceptor Segment 3, NEW Water, Green Bay, Wisconsin. Design Engineer: Assisted in changing the redesign of a 24-inch gravity sanitary interceptor sewer to 27 inches. Assisted with reapplying for permits with the US Army Corps of Engineers, Wisconsin Department of Natural Resources, and the Brown County Plan Commission. Edited the design specification and bid documents to receive competitive bids. Attended bid opening and pre-construction conference. Made recommendation of award to client. Calculated engineer's construction estimate, which was slightly higher than the low bid. Reviewed shop drawings.

Sanitary Sewer System Evaluation/Assessment, Mequon, Wisconsin. Design Engineer: Created force main plan and profile drawings and technical specifications. Project work included design for 8-inch force main for lift station G and 1,500 feet of 16-inch force main for lift station A. Both of the force mains were designed to use directional drill and open cut construction methods. Jacked casing pipes were also used to cross major roads and intersections. Assisted in project permitting with Wisconsin Department of Natural Resources, Wisconsin Department of Transportation, and the Milwaukee Metropolitan Sewerage District. Provided civil site design for lift station A.

Mill Creek Water Reclamation Facility Expansion, Lake County, Illinois. Design Engineer: Prepared civil drawings for new paving, grading, fencing, and site piping. Project included the construction of an alum building, splitter box, septage receiving station, drying pads, aeration tanks, and other miscellaneous building revisions. Attended layout meetings, prepared specifications, prepared civil cost estimate, and answered questions during bidding.

SUSAN M. WOJTKIEWICZ, PE

PROFESSIONAL ENGINEER
Wisconsin: 33988

YEARS OF EXPERIENCE
25

EDUCATION
Bachelor of Science
Civil and Environmental Engineering
Harvard University
1995

PROFESSIONAL ASSOCIATIONS
American Water Works Association
- A100 Committee on Wells Voting Member

Wisconsin Section American Water Works Association
- Leader for 21st Annual Water Supply Regulatory Affairs Seminar
- Past Chair Regulatory Affairs Committee

National Groundwater Association
- Well Development Standard Task Group Member

Wisconsin Water Well Association
- Past Board Member

PRESENTATIONS
"Alliance for Water Stewardship: Water Stewardship in Wisconsin and Around the Globe," Wisconsin AWWA, September 2017

"Water Supply in the Public Eye: Good Reads for Water Professionals," Wisconsin Rural Water Association Annual Technical Conference, March 2017; Wisconsin Section American Water Works Association Annual Meeting and Expo, September 2016

"Wellhead Protection Approaches in the Upper Midwest," Wisconsin Section American Water Works Association Annual Meeting and Expo, September 2016

"Construction Authorization Panel: Eau Claire Waterworks' New Wells 22 & 23 and Treatment Facility," Water Supply Regulatory Affairs Seminar sponsored by Wisconsin Section American Water Works Association, Wisconsin Rural Water Association, Wisconsin Department of Natural Resources, Public Service Commission of Wisconsin, and Municipal Environmental Group, May 2016

"Arsenic in Sandstone Bedrock: A Small System's Struggle to Meet the 10 ppb Standard," American Water Works Association, June 2013

"Energy Use in Wisconsin's Drinking Water Utilities: Monitoring Changes Since Year 2000," (Poster Co-Presenter) American Water Works Association, June 2013, poster co-presenter

Ms. Wojtkiewicz is a senior water engineer and project manager with extensive experience in civil, environmental, and municipal engineering. Her background includes well design and construction, groundwater sampling and modeling, aquifer testing, as well as distribution system planning and design. She has also conducted contaminant source investigations, managed groundwater remediation projects, and developed wellhead protection plans. Ms. Wojtkiewicz's experience in water treatment includes source water investigation, pilot test planning, process design, and obtaining regulatory approvals.

Her responsibilities have varied from fieldwork to project management, including planning, funding applications and administration, engineering report preparation, plans and specifications preparation, cost estimating, and construction observation. She grew up in a well drilling family in northwestern Wisconsin and has experience in the field, servicing well pumps, performing well rehabilitation and troubleshooting well water quality problems.

Greenmeadow Sanitary Infrastructure Improvements Funding, Waukesha, Wisconsin. Funding Specialist: Assisted the City with Clean Water Fund Application and WDNR funding coordination.

WWTP Improvements and Water Plant Improvements Funding, Wausau, Wisconsin. Funding Specialist: Assisted the City with Clean Water Fund Application, Safe Drinking Water Fund Application, and WDNR funding coordination.

WWTP Improvements Funding, Medford, Wisconsin. Funding Specialist: Assisted the City with Clean Water Fund Application and grant pursuits, resulting in a $1M grant for their wastewater treatment plant.

Private Well Replacements La Crosse County Solid Waste Department, La Crosse, Wisconsin. Project Engineer: La Crosse County worked with two property owners adjacent to their state of the art waste handling and landfill facility, to provide new, deeper private water supply wells. Responsibilities included development of plans and specifications, coordination with property owners, and observation of well drilling including evaluation of formation samples for Mt. Simon sandstone formation.

French Island Rest Area #31, I-90 Eastbound, Wisconsin Department of Transportation Central Office, La Crosse, Wisconsin. Project Engineer: The new 4,500-square-foot masonry building includes a receptionist area, tourism display, restrooms, office, and break areas. Project included private water supply well.

South Superior Storm Sewer Phase II, Superior, Wisconsin. Project Engineer/Funding Assistance: This $2.2 million project included installation of a new storm sewer system in an area previously served by combined sewer. The project included ARRA funding and was completed with resounding success in achieving the overall project goals of reducing water in basement issues.

Medical Center Well, Grantsburg, Wisconsin. Project Manager: Completed as a design-build project, this work included assistance with funding, permitting, design, and construction of a new emergency well for a critical access medical facility in rural Wisconsin. In addition to design and permitting, responsibilities included coordination with the Village of Grantsburg, coordination with WDNR, and plan approval by DSPS.

Well 1 Rehabilitation and Pump House Replacement, Barron, Wisconsin. Project Manager/Senior Project Engineer: Responsible for leading the project design, WDNR approvals, plans and specifications, and coordination of multiple contractors and project funding.

Industrial Park Utilities and Streets, Ashland, Wisconsin. Project Engineer: Design of USH 2 utility replacements through the heart of the City of Ashland and adjacent to Lake Superior. Responsibilities included water main and sanitary sewer design and

PRESENTATIONS (continued)

"Web Tools You Can Use," Wisconsin Rural Water Association Technical Conference, 2011

"Implementing Disinfection," Wisconsin Rural Water Association 22nd Annual Technical Conference, Green Bay, Wisconsin, 2010

"Development of a Well Construction Standard," Wisconsin Section Water Works Associations Annual Meeting and Expo, Wisconsin Dells, Wisconsin, 2009

preparation of bidding documents, project coordination with the City and WDNR approvals, and funding coordination/assistance for City of Ashland staff.

Library Renovation and Village Hall, Turtle Lake, Wisconsin. Client Service Manager: Facilitated services that included funding and architectural design and construction. The library portion of this project was a one-story, 4,000-sq. ft. renovation that changed an existing bank into a library. It utilized an existing building by altering its previous function to accommodate library staff support spaces and stacks space. The Village Hall project included renovation of the former village hall and library into village offices and a new meeting room.

General Engineering Services, Turtle Lake, Wisconsin. Client Service Manager/Project Manager: Serving the Village of Turtle Lake since 2011. Services provided under the general engineering agreement included wastewater system user charge calculations, development of industrial agreements for major wastewater dischargers, and WWTP reporting and loadings analysis. Also led staff to provide design services for utility relocations required by WisDOT projects and boundary and property surveys for streets and industrial park development.

Wastewater Treatment Facility Plant Monitoring Well Permitting and Construction, Shell Lake, Wisconsin. Project Manager: Design, permitting, and construction of monitoring wells at a wastewater treatment facility plant. In order to meet requirements of their WPDES permit, the City of Shell Lake was required to install additional groundwater monitoring wells.

Well 3 Replacement, Well 4 and Water Treatment Plant, Turtle Lake, Wisconsin. Project Manager: Worked with Village officials to develop and implement solutions using an existing well site and pump house. Arsenic above the drinking water standard of 10 ug/L was detected in Well 3, requiring action by the Village via WDNR consent order. This multi-year project included evaluation of possible Well 3 rehabilitation, water sampling, and pump testing. Eventually, a new Well 4 (producing water meeting the arsenic standard) was constructed along with a water treatment plant that will treat water for the entire system. Well 2 was also rehabilitated and raw water main was constructed to connect Well 2 to the water treatment facility. The WTP currently removes iron and manganese from the water and has the future capacity to remove arsenic and radium. Project also required improvements to a lift station that included new wet well, submersible pumps, valve vault, and building for salvaged control panel. The lift station serves Village schools and provides capacity for backwash wastewater from the water treatment plant. The project was funded with grants from the Safe Drinking Water Loan Program and Community Development Block Grant Program.

Wastewater Treatment Facility Plan, Design, and Construction and Water System Design and Construction, Danbury, Wisconsin. Project Engineer: A new community water system comprised of two new wells, well house, water tower, and distribution system. Responsible for review of comprehensive system design (source of supply, storage, and distribution), report preparation, and preparation of a computer-based hydraulic model of the system. Also responsible for obtaining WDNR and Public Service Commission of Wisconsin approvals for the project. The project was for an unsewered community.

Wastewater Treatment Plant Design and Construction, La Point, Wisconsin. Project Engineer: WWTF required to meet new ammonia limits for Lake Superior. Responsible for design and permitting of water supply well at WWTF.

Well 11 and Water Treatment Plant, Stevens Point, Wisconsin. Project Engineer: Prepared well site investigation, developed pilot study plan and provided design assistance. Well 11 is a Ranney horizontal collector well and the largest capacity municipal well in Wisconsin. The associated 13 MGD water treatment plant removes iron and manganese.

Thomas A. Henning, PE, CHMM

Senior Air Quality Engineer

YEARS OF EXPERIENCE

SEH: 17 years
Industry: 35 years

EDUCATION

Master of Science
Civil Engineering
(Environmental)
University of Minnesota-
Minneapolis (1989)

Bachelor of Science
Natural Science (Chemistry)
St. John's University
Collegeville, Minn. (1984)

CONTINUING EDUCATION

ISO14001 Environmental
Management System
Lead Auditor Trained

PROFESSIONAL REGISTRATIONS

Professional Engineer in:
Minnesota (#21828, 1992),
Wisconsin (#30005-006, 1994),
Nebraska (#E-11136, 2004)
Iowa (#21192, 2012),
Pennsylvania (#PE084228,
2015)
Arkansas (#16974, 2016)
Indiana (#PE11600589, 2016)
Hawaii (#PE-17220, 2016

CERTIFICATIONS

Certified Hazardous Materials
Manager (CHMM) (1997).

PROFESSIONAL ASSOCIATIONS

Federation of Environmental
Technologists (FET), Air Quality
Committee Chair

Water Environment Federation
(WEF), Air Quality Committee
Member

Air & Waste Management
Association

Mr. Henning has 35 years of experience as an Environmental Engineer working in a variety of areas including project management, air permit negotiations, regulatory compliance, and air emission control. Tom has prepared more than 300 air permit applications, compliance evaluations, and air dispersion modeling analyses for facilities located in Wisconsin. He helps clients obtain expedited construction approvals and helps negotiate permit conditions with regulatory agencies to obtain maximum operational flexibility and manageable reporting requirements.

In addition to his work as a consultant, **Mr. Henning worked in the engineering department at a 250 MGD wastewater treatment plant** located in St. Paul, Minnesota. This experience provided 'hands-on" understanding of the operations at a large wastewater treatment plant.

As a co-chair of the Federation of Environmental Technologists (FET) Air Quality Committee, Tom has led workshops and given technical presentations on new Wisconsin and federal air quality regulations. He also serves on the Air Quality Committee for Water Environment Federation (WEF).

EXPERIENCE

Air Quality Compliance Services (Milwaukee Metropolitan Sewerage District) – Milwaukee, Wis.

Project Manager since 2000 to provide air quality services to the District at the two wastewater treatment plants, Jones Island and South Shore, and the Dewatering and Drying Facility. Have provided permitting and regulatory compliance for:

- Engines and Turbines (Natural Gas and Biogas Fired)
- Biosolids Dryers (Natural Gas and Biogas Fired)
- Boilers (Natural Gas and Biogas Fired)
- Flare

Air Permit for R2E2 Project (NEW Water/GBMSD) – Green Bay, Wis.

Project Manager to help obtain an air construction permit for the R2E2 Project consisting of a fluid bed incinerator, anaerobic digesters, three digester gas/natural gas engines, a boiler, an oil heater and ancillary equipment. The project included compliance assessments with several state and federal regulations, air dispersion modeling, and negotiation of final permit terms.

Air Quality Experiences at Other Wisconsin WWTPs:

Madison MSD – Madison, WI
Racine WWTP – Racine, WI
DePere WWTP – DePere, WI
Sheboygan WWTP – Sheboygan WI

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