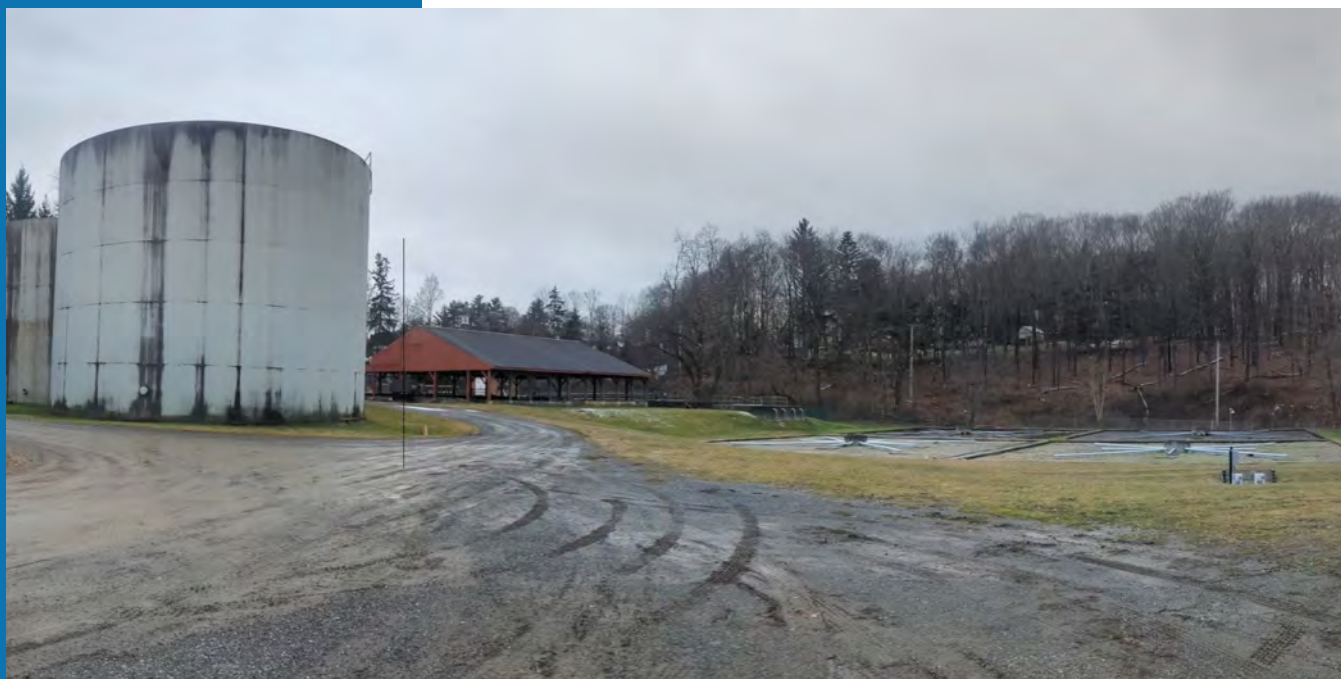




QUALIFICATIONS FOR

Engineering Services for Wastewater Treatment Plant Upgrade



SUBMITTED TO

Village of Millbrook, NY

M-5146-P001
February 13, 2024

Village of Millbrook
Sarah Witt
PO Box 349
Millbrook, NY 12545

Re: **Request for Qualifications
Wastewater Services**

Dear Ms. Witt,

Tighe & Bond is pleased to submit this response to your Request for Qualifications and respectfully asks to be selected to provide wastewater engineering services to the Village of Millbrook. We believe our capabilities make Tighe & Bond an excellent match for the Village's needs for wastewater engineering services. Our proposal describes how Tighe & Bond, who provides services in NY through T&B Engineering and Landscape Architecture, PC (Tighe & Bond), meets or exceeds all the Village's requirements and has the qualifications to provide these services efficiently and cost-effectively. Our advantages include:

- **Extensive technical expertise** in wastewater engineering. While we are a comprehensive multidisciplinary firm, Tighe & Bond has spent more than a century focused on water resources engineering. We believe our expertise in this area provides the Village a partner who knows the project process from evaluation through construction and will be here to support the Town with its needs long after project completion.
- **Local key staff** will provide services to the Village out of our Rhinebeck office, about 30 minutes away. We are proud to provide wastewater services to communities throughout Dutchess County. However, while our skilled local staff will provide direct services to the Village, Tighe & Bond does not see office location or service geography as boundaries, thus the expertise of our 550-person staff is available to ensure the highest level of technical specialists are available to solve technical challenges.
- **Grant Success.** In addition to our technical qualifications, the Tighe & Bond team has been very successful in assisting communities with project financing, including grant funding and reporting compliance. Over the last 5 years, we have secured more than \$50M in grant and loan funding for the Hudson Valley communities we serve and know how to meet funding requirements during design and construction.

Thank you for the opportunity to submit our proposal for this important project. If you require additional information or would like to discuss our proposal further in relation to your needs, please contact me at 845-516-5835 or EKMoore@tighebond.com

Very truly yours,

T&B Engineering and Landscape Architecture, PC



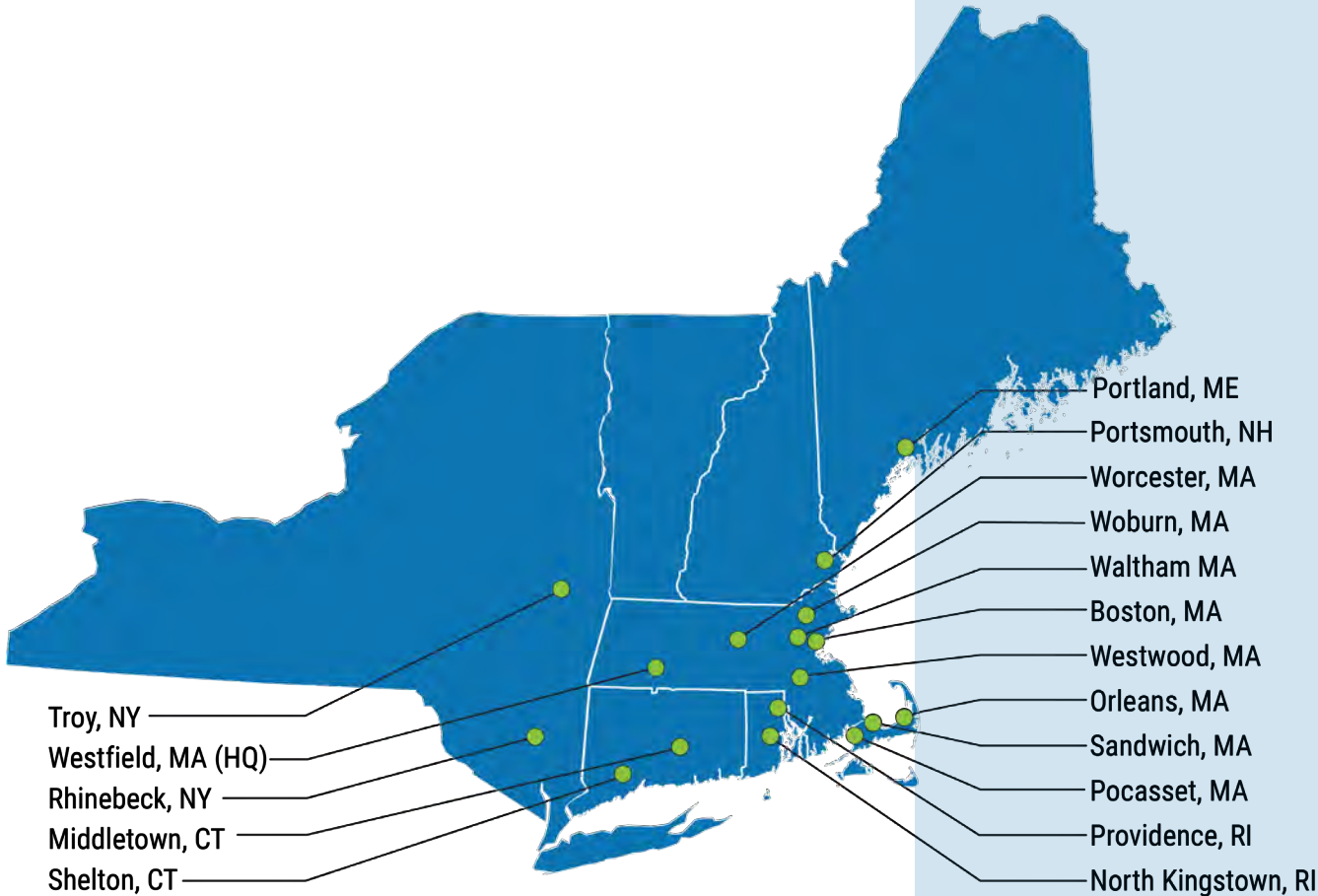
Erin K. Moore, PE
Project Director
ekmoore@tighebond.com



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OUR LOCATIONS



With offices across the Northeast, we are ready to provide responsive, high-quality professional services to efficiently meet your project goals, schedule, and budget.

Firm Overview

FOUNDED

1911

TEAM MEMBERS

550+

ZWEIG GROUP

BEST FIRMS
TO WORK FOR

BANKER & TRADESMAN'S
BEST OF 2022

#1 IN ENGINEERING
& ENVIRONMENTAL
SERVICES

ENR NEW ENGLAND
TOP DESIGN FIRMS

#8

SMPS BOSTON

2023
EMPLOYER OF
THE YEAR

For over a century, Tighe & Bond has been a leading multi-disciplinary consulting firm in the Northeast, manifesting its clients' vision for a better-built environment by providing full-service engineering, landscape design, site planning, and environmental services. Innovative thinking and exceptional service have always been at the core of our work.

In addition to our engineering and environmental expertise, Tighe & Bond's landscape design studio (Halvorson | Tighe & Bond Studio) offers a unique perspective, creating more holistic solutions to unlock each site's potential.

Our experienced professionals provide concept-to-completion expertise to address our public and private clients' needs comprehensively. The Tighe & Bond team develops creative, collaborative responses to complex challenges by focusing on bright ideas, green strategies, and clear solutions. We always continue evolving to keep pace with our ever-changing industry because moving forward is what we do.



SERVICES

Building Services: MEP,
Structural & Geotechnical
Engineering

Coastal & Waterfront
Solutions

Environmental Consulting
GIS/Asset Management

Landscape Architecture
& Urban Design

Site Planning & Design

Transportation
Engineering

Water & Wastewater
Engineering



Our local office in Rhinebeck will allow us to respond rapidly to the Village of Millbrook's needs.

About Tighe & Bond

As a full-service professional consulting firm focused on serving clients throughout the Northeast, Tighe & Bond offers concept-to-completion expertise. Our array of services includes water and wastewater engineering; site planning and design; transportation engineering; environmental consulting; GIS and asset management; coastal and waterfront solutions; and building engineering (MEP, structural, and geotechnical).

With our signature attention to detail and project advocacy, we devise effective solutions to meet the unique needs of our clients and their stakeholders. Our team provides professional services for clients in education, healthcare, government (federal, state, and local), industry, real estate development, renewable energy, power utility, and water/wastewater utility markets.

Our firm continues to grow to meet the needs of our clients across the Northeast, both organically and through acquisition:

- In 2020, we strengthened our urban planning and landscape architecture practice with the addition of Halvorson | Tighe & Bond Studio
- RT Group joined the firm in 2021, augmenting our waterfront and geotechnical service offerings.
- In 2023, acquiring WorldTech Engineering bolstered the firm's transportation services.
- In 2024, acquiring Coastal Engineering Co., Inc. (Coastal), we bolstered our broad array of services in Cape Cod, the islands, coastal Massachusetts, and Rhode Island.

Professional Engineering Services in New York

Our headquarters is located at 53 Southamptn Road, Westfield, MA 01085. However, to best serve the Village of Millbrook for this contract, we will be operating out of our local office in Rhinebeck, NY.

T&B Engineering and Landscape Architecture, PC. (Tighe & Bond) 47 West Market Street, Suite #2 Rhinebeck, NY 12572. We are a professional service corporation authorized to provide Professional Engineering and Landscape Architecture services in the State of New York.

Introduction & Approach



The Village of Millbrook has requested qualifications from firms to provide wastewater engineering services, including evaluation, design, and construction phase services related to wastewater treatment improvements. The Village has strived to provide efficient and cost-effective municipal wastewater service to its residents and wishes to continue to do so with the support of a firm experienced in maintaining and rehabilitating wastewater treatment systems.

Tighe & Bond has an excellent resume of evaluating treatment systems that are facing equipment and/or processes that have reached the end of their service life and need replacement with the most appropriate, economic and operator friendly systems. We come to the Village with several qualifications that we feel would be an asset to this project:

- We have provided rehabilitation approaches to several similar wastewater treatment plants including the Greenfields WWTP in Hyde Park. We understand how high I&I impacts plant operations and how different technologies can be used to provide flexibility between high and average flow conditions.
- While we regularly work with communities similar to Millbrook, including Millerton, Rhinebeck, Red Hook, and Tivoli, we also provide engineering services to larger municipal facilities such as Kingston, Poughkeepsie, Beacon, and large communities throughout New England. In order to serve this wide variety of communities, our deep bench of wastewater designers must stay educated on new technologies and emerging regulatory trends.
- Tighe & Bond staff includes several wastewater treatment operators ensuring we approach system design with a priority on its successful operation. Operators are a key stakeholder and their input drives our design direction.

Maintaining a high level of communication, delivering a quality product, and managing costs are critical factors to the success of our firm and is the reason we have maintained relationships with clients for decades. We look at each design project within the context of the client's overall needs and long-term goals. We are strategic thinkers and creative problem-solvers, and our multidisciplinary team will work with the Village to find practical, cost-efficient, and sustainable solutions that will best serve its current and future needs.

Qualifications & Relevant Experience



Designing efficient, cost-effective wastewater management systems helps our clients achieve compliance with federal, state and local regulations. Projects range from small industrial pretreatment systems to large municipal collection and treatment facilities.

Our modeling capabilities include assessing the hydraulics of the collection system, as well as treatment process performance. We have completed combined sewer overflow abatement programs and designed hundreds of miles of sewer extensions and separations. We also design pump stations that are part of either new construction or rehabilitation projects.

For many cities and towns, we have prepared detailed facilities plans and permit applications. We also have completed detailed designs of collection, pumping, and treatment facilities. Other services include assistance in obtaining funding, construction administration, and startup services.

We have outlined the areas of expertise we believe to be most relevant to the Village, followed by a project experience table and select project descriptions representing our previous experience with similar municipal projects.

Wastewater Collection

Tighe & Bond's expert wastewater engineering team understands the challenges of planning for and funding these types of projects. We are dedicated to designing efficient, cost-effective wastewater management systems that comply with federal, state, and local regulations.

Our projects range from small industrial pretreatment systems to large municipal collection and treatment facilities. We have experience developing hydraulic models of collection systems, as well as assessments of treatment process performance. We have completed combined sewer overflow (CSO) abatement programs and designed hundreds of miles of sewer extensions and separations. We also design pump stations that are part of new construction and rehabilitation projects.

Our staff includes engineers, scientists, grant writers, funding and asset management specialists, permitting experts, and GIS analysts and developers. Our goal is always to help communities better manage infrastructure assets, thinking strategically to improve system capacity, address overflows, and meet the client's financial and regulatory needs.



Tighe & Bond's wastewater projects range from small industrial pretreatment systems to large municipal collection and treatment facilities.

The following list is an overview of many of the wastewater services that Tighe & Bond provides associated with wastewater permitting, design, and construction.

Permitting

- NPDES Permit Renewal
- NPDES Permit Appeal Support
- Groundwater Discharge Permit Applications & Renewal
- Industrial Pretreatment Permitting (IPP)
- Compliance Studies & Reporting
- Sewer Extension & Connection Permits
- Incinerator Air Permitting

Funding Assistance

- State Revolving Fund
- Rural Development/USDA
- Hazard Mitigation Grants
- Water Infrastructure Improvement Grants
- Consolidated Funding Applications

Planning

- Facility Planning
- Asset Management
- Integrated Water Resource Management Planning
- CSO / Long-Term Control Plans
- Geographic Information Systems (GIS)
- Health & Safety
- Rate Studies
- Vulnerability Assessment & Resiliency

Pump Stations / Force Mains

- Evaluation
- Replacement
- Upgrades
- Resiliency Improvements

Wastewater Treatment

- Preliminary Treatment
- Primary Treatment
- Secondary Treatment
- Biological Nutrient Removal
- BioWin Process Modeling
- Metals Removal
- Tertiary Treatment
- Disinfection
- Odor Control Systems
- Residuals Handling & Processing
- Biosolids Thickening, Dewatering, and Stabilization
- Biosolids Pelletization/ Stabilization
- Biosolids Disposal
- Operational Support

Collection Systems

- CMOM
- Planning
- Permitting
- Collector Sewers
- Hydraulic Modeling
- Infiltration / Inflow Mitigation
- Pipe & Manhole Rehabilitation
- Trenchless Pipeline Design
- Sewer System Evaluation Surveys
- Sewer System Rehabilitation
- Sewer System Extensions/ Replacement



We have a fully staffed GIS team in-house, ready to assist the Village with utility mapping, parcel updates, and other tasks.

Hydraulics and Hydrology

Integration of hydraulic models with GIS and other computer systems provides significant benefits and has become increasingly common. Tighe & Bond provides GIS services to a wide range of clients including municipalities, water and sewer utilities, state and federal government agencies, and private businesses. Our staff has experience in a wide variety of vendor applications such as ESRI, AutoDesk, Intergraph, and Bentley. We have expertise in performing Needs Assessment studies, customized application development including desktop, server, and web applications, data conversion, and analysis. Tighe & Bond is an ESRI Business Partner, providing a close working relationship with one of the most popular GIS software vendors.

GIS / Asset Management

Our broad range of GIS services include asset inventory and management, hydraulic modeling, utility mapping, as well as parcel and land use data management. In addition, we offer web-based GIS hosting applications, full-scale GIS implementation planning, and GIS software training. As part of our full-service offerings, we also develop cutting-edge and customized GIS applications for both public and private clients.

Grant Experience

Tighe & Bond understands that funding is more crucial than ever with municipal budget cuts and decreasing tax revenues. Our firm has a wealth of experience and expertise helping clients to find and obtain essential funding for their important projects using various types of federal and state grant programs. We identify funding sources and are often called upon to assist with preparation of grant applications including preparation of conceptual design alternatives and cost estimates. Some examples include:

- Grant applications consistent with the Consolidated Funding Application process
- Dutchess County Community Development Block Grants
- FEMA Disaster Assistance Grants
- Environmental Facilities Corporation financing through the Drinking Water State Revolving Fund
- Environmental Facilities Corporation financing through the Clean Water State Revolving Fund
- New York State Energy Research and Development grants
- USDA Infrastructure financing and grants
- US EPA Brownfield Grants

The following table details our experience with successful grant submissions for projects related to municipal engineering.

Grant Experience in New York	
Project	Grant Financing
Red Hook ADA Accessible Challenger Field & Facilities	\$200,000 Dutchess County CDBG
Red Hook Red Park East ADA Improvement	Dutchess County MIIG & CDBG
Tivoli Local Waterfront Revitalization Program (LWRP)	\$66,500 EPF LWRP NYSDOS Grant
Village of Millerton Rail Trail Composting Toilet Facility	\$75,000 Dutchess County CDBG
Town of Marlborough Milton Landing Pier	\$313,000 RCCF Capital ESD Grant
Watershed Connectivity – Towns of Coeymans, Esopus, Fishkill and New Baltimore	\$41,850 NEIWPCC/ HREP Grant
Village of Millerton Municipal Wastewater Feasibility Evaluation	\$23,500 Engineering Planning Grant Program
Salisbury Wastewater Phosphorus Evaluation & Capital Plan	\$40,000 CWF Grant w/ \$2.5 USDA Rural Development Loan
Hyde Park Pinebrook Water & Wastewater Evaluations	\$2.8M WIIA Grant w/ SRF Loan
Hyde Park Greenfields Water & Wastewater Evaluations	\$1.0M WIIA Grant w/ SRF Loan
Tivoli Water & Wastewater System Evaluations	\$3.7M WIIA Grant w/ SRF Loan
Kingston Hasbrouck Sewer System Evaluation	\$2.2M WQIP Grant w/ SRF Loan
Kingston WWTP Permit Compliance Evaluation	\$0.6M WIIA Grant w/ SRF Loan
Esopus Water System Evaluation	\$2.5M WIIA Grant w/ SRF Loan
Rensselaer County Sewer District CSO Storage & Aeration	\$8.7M WQIP, \$0.3M WIIA w/CWSRF Loan
Poughkeepsie WTP UV Replacement	\$3.0M WIIA w/ DWSRF Loan

Relevant Project Experience

As a mid-sized firm, we have the staffing resources to meet challenging project demands, yet we are nimble and able to be sensitive and responsive to our client's needs. Our culture of client-focused service is exhibited by the extensive number of clients that we have served for decades throughout the Northeast.

To demonstrate our relevant experience, we have included project descriptions that include client contact information, the year constructed, and project cost.

WATER AND SEWER SYSTEM EVALUATION

TIVOLI, NY

OWNER

Village of Tivoli

CLIENT CONTACT

Jonathan Churins
Deputy Director
Dutchess County Water &
Wastewater Authority
(845) 486-3624
jchurins@dutchessny.gov



SERVICES

Engineering Evaluation of Water
and Wastewater System

PROJECT COST

\$108,000

YEAR CONSTRUCTED

No Construction

Preliminary Engineering Report
Complete in 2022

Tighe & Bond developed comprehensive Preliminary Evaluation Report in EFC compliant format for the Village of Tivoli's wastewater system including the collection and treatment system. This work has included land development and zoning review to estimate future potential development and wastewater production, evaluating the existing infrastructure and recommending short and long term improvements. All of the system's manholes were inspected and contribution to inflow and infiltration estimated based upon noted deficiencies. Flow metering was completed, and using hydraulic modeling, volumes of stormwater entering the collection system were estimated for various design storms.

Due to age, capacity and effluent quality, the existing treatment facility was recommended for complete complement. Preliminary design evaluated:

- Flow equalization
- In Channel Rotating Drum Screens
- Vortex Grit Removal
- Moving Bed Biofilm Reactors
- Rapid Clarification
- Cloth and Disk Media Filtration

Life cycle cost estimates and process system layouts were prepared. A financial assessment was also completed identifying existing system budget requirements and system use fees resulting from the recommended improvements. Tighe & Bond has continued to assist the Village as they work to address projects recommended by the assessment including additional I/I assessment and remediation.

CLIENT CONTACT

Jonathan Churins
Deputy Director
(845) 486-3624
jchurins@dutchessny.gov

GREENFIELDS WASTEWATER TREATMENT PLANT AND COLLECTIONS SYSTEM

HYDE PARK, NY

OWNER Dutchess County Water and Wastewater Authority
PROJECT COST \$725,000
YEAR CONSTRUCTED 2022



The Greenfields Sewer District (GFSD) is located in the Town of Hyde Park. The Greenfields Wastewater Treatment Plant serves the customers of the Greenfields Sewer District. It is a tertiary treatment facility providing secondary treatment through Rotating Biological Contactors, and tertiary treatment through gravity sand filters. The treatment plant has a permitted average flow of 132,000 gpd, but experiences much higher flows during precipitation events.

When evaluated by Tighe & Bond in 2014, the plant was found to be generally operating in permit compliance, but many of its components had reached or were exceeding their intended design life. Tighe & Bond completed a design for rehabilitation of the Greenfields plant including Bypass Influent Channel, Inflow Flow Metering, Primary Clarifier Mechanisms, Rotating Biological Contactors, Secondary Clarifiers, Sand Filter Dosing, and UV Disinfection. Construction Administration, observation and facility start-up services were also provided to result in a well functioning, modernized facility.

Due to the high level of I/I at the plant, Tighe & Bond also completed a comprehensive evaluation on the Greenfields collection system. The majority of pipes in the collection system are asbestos concrete pipe installed from 1950 to 1970.

Preliminary evaluation identified significant amounts of inflow within the sewer system, and sections visually inspected contained sags/dips in grade, as well as structural deficiencies such as cracked and broken pipe, and a significant number of lateral connections were noted to contain high volumes of clear flow. A thorough field effort was then completed to differentiate infiltration/inflow sources, as well as identify specific flows sources originating from private laterals where possible. I/I Evaluation work included Flow Metering, Smoke Testing, Video Inspection, and Inflow Flow Metering.

The analysis results were used to prepare a collection system rehabilitation plan, which is expected to reduce peak flows at the treatment plant. Tighe & Bond developed design documents for two rehabilitation contracts and managed the construction of both.

SERVICES

Secondary Clarifiers
UV Disinfection
Rotating Biological Contactors
Inflow and Infiltration
Sewer Rehabilitation/Replacement

CITY OF KINGSTON WWTP UPGRADE AND OUTFALL MODIFICATIONS

KINGSTON, NY

OWNER

City of Kingston

CLIENT CONTACT

John M. Schultheis, PE
City Engineer
845-334-3967
jschultheis@kingston-ny.gov



SERVICES

SPDES Permit Compliance

PROJECT COST

\$1,800,000

YEAR CONSTRUCTED

Currently in Construction

The City of Kingston (City) received a renewed SPDES permit which included effluent ammonia limits requiring upgrades to the existing Wastewater Treatment Plant (WWTP) to treat wastewater to a higher level of quality. While the City had completed preliminary analysis and engineering reports which indicated extensive and energy intensive WWTP upgrades were required, the City determined that additional evaluation was necessary and asked Tighe & Bond for a fresh perspective. Tighe & Bond worked with the City to provide an acceptable plan to NYSDEC (Region 3) which outlined the proposed steps forward to achieve SPDES permit compliance.

Tighe & Bond collaborated closely with NYSDEC to determine how mixing and dilution impacted the WWTP effluent in the Rondout Creek (Rondout). Through detailed analysis and effective communication, the Tighe & Bond team was able to negotiate increased permit limits through improvements to the WWTP outfall and upgrades to the existing aeration system.

With the project approach accepted by NYSDEC, Tighe & Bond began design of the modifications to the WWTP outfall and aeration system upgrades. The outfall modifications included extending and lowering the outfall piping into the Rondout to achieve a depth above invert of 20-feet at mean low water (MLW), driven piles to support the outfall piping, a steel frame and wood fender protection system for the outfall piping exposed to potential ice and impact at the water line, a marine mattress system to protect the outfall piping below the water line, a corrosion protection system, and installation of a steel bulkhead to reinforce the existing timber bulkhead at the shoreline.

CITY OF KINGSTON WWTP UPGRADE AND OUTFALL MODIFICATIONS (CONTINUED)

KINGSTON, NY



Due to the location and potential environmental impacts, substantial coordination with permitting agencies was required for the outfall modifications. Tighe & Bond began early communication and collaboration with the US Army Corp of Engineers (Nationwide Permit 7), NYSDEC (Article 15.5 Water Quality Certification), NYSDOS (Coastal Zone Management Area Certification), and NYSOGS (Lands Underwater Easement for Utilities).

The upgrades to the WWTP aeration system included modifications to the existing aeration tanks for the Ludzack-Ettinger (LE) process for nitrification, diffuser replacement, blower replacement, new ventilation system for blowers, SCADA system expansion for improved automation and efficiencies, and safety and structural improvements at the aeration tanks. The modifications to the aeration tanks include installation of a baffle wall and mixer to create a swing zone (anoxic or aerobic) to allow operational flexibility during the summer/winter nitrification seasons and replacement of the influent gates to allow for step-feed operation during increased wet weather flows.

WEST MAIN STREET PUMP STATION UPGRADE BEACON, NY

OWNER

City of Beacon

CLIENT CONTACT

Ed Balicki
Water & Wastewater
Superintendent
845-831-3136
ebalicki@beaconny.gov



SERVICES

Facilities Assessment
Design Services

PROJECT COST

\$187,000

YEAR CONSTRUCTED

Still in Design Phase

Tighe & Bond has provided multiple wastewater evaluation and design services to the City of Beacon.

Wastewater Consolidation Evaluation: Tighe & Bond prepared a feasibility study for the City of Beacon, Town of Fishkill and Village of Fishkill to address the potential of reorganization, merger or other consolidation scenarios of the wastewater systems in these three communities. This included a Condition assessment of 3 wastewater treatment plants, 13 wastewater pump stations, interceptor sewers and forcemain. A Capital Improvement Plan was created for each community. Tighe & Bond supported subconsultants who prepared the legal and financial analysis. Potential consolidation alternatives were developed based on existing and future wastewater flows and cost estimates were prepared for each of these selected consolidation alternatives.

West Main Street Pump Station: The West Main Street pump station in Beacon, NY is a dry pit pump station located on a small site adjacent to the Beacon Metro North Train Station. The brick building houses an influent channel and three dry pit pumps on the lower level, with the pump motors and electrical equipment installed on the upper level. In 2020, Tighe & Bond initiated engineering design services to upgrade the capacity of the pump station from 2 MGD to 3 MGD to allow for construction of a new development within the pump station's service area. The design rate of the pumps was increased from 700 to 900 GPM.

In addition, VFDs were included in the pump design to allow the station to handle the wide range of expected influent flows. The new station will be constructed on an easement obtained from Metro North. Final design has been completed for this pump station, and it has been approved by NYSDEC and Dutchess County Department of Health. Construction is anticipated to commence in 2023, but this is dependent on approval from

WEST MAIN STREET PUMP STATION UPGRADE BEACON, NY

the Metro North Railway System.

Solids Handling System Upgrade: Tighe & Bond completed an evaluation of alternative solids handling systems at the Beacon WWTF to replace a Belt Filter Press that had reached the end of its service life. The evaluation considered capital, operation & maintenance, energy, and solids disposal costs. Centrifuge technology was selected as the preferred alternative. A structural analysis was completed to establish the suitability of the technology for a second floor deployment and #D scanning technology was utilized to conceptualize conveyance and truck loading space requirements. The completed design also includes odor control considerations and building rehabilitation including roof and window replacement. Construction is scheduled to commence in 2024.

CLIENT CONTACT

Curtis Rand
First Selectman
(860) 435-5170
crand@salisburyct.us

SALISBURY PUMP STATION AND WASTEWATER SYSTEM UPGRADES SALISBURY, CT

OWNER Town of Salisbury
PROJECT COST \$257,000
YEAR CONSTRUCTED 2021



SERVICES

Pump Station Design
Collection System Rehabilitation
Water Pollution Control Facility
Infrastructure Assessment and
Upgrades
Nutrient Removal Evaluation
USDA Rural Development Funding
Bidding
Construction Phase Services
Construction Observation

The Town of Salisbury's wastewater collection system and treatment facility that was installed in 1971. In addition to replacement of equipment that has reached its service life, new regulatory requirements resulted in the need for improvements to the treatment system. Tighe & Bond work with the Town to secure funding from USDA Rural Development, evaluated the plant's treatment systems and prepared a 20-year capital improvements plan. This plan provides guidance for budgeting and anticipated scheduling for important capital improvements.

In addition to the capital improvements plan, Tighe & Bond completed evaluation, design and construction phase services for improvements to the treatment system to meet new phosphorus effluent discharge limits and collection system rehabilitation including a pump station replacement and infiltration/inflow remediation.

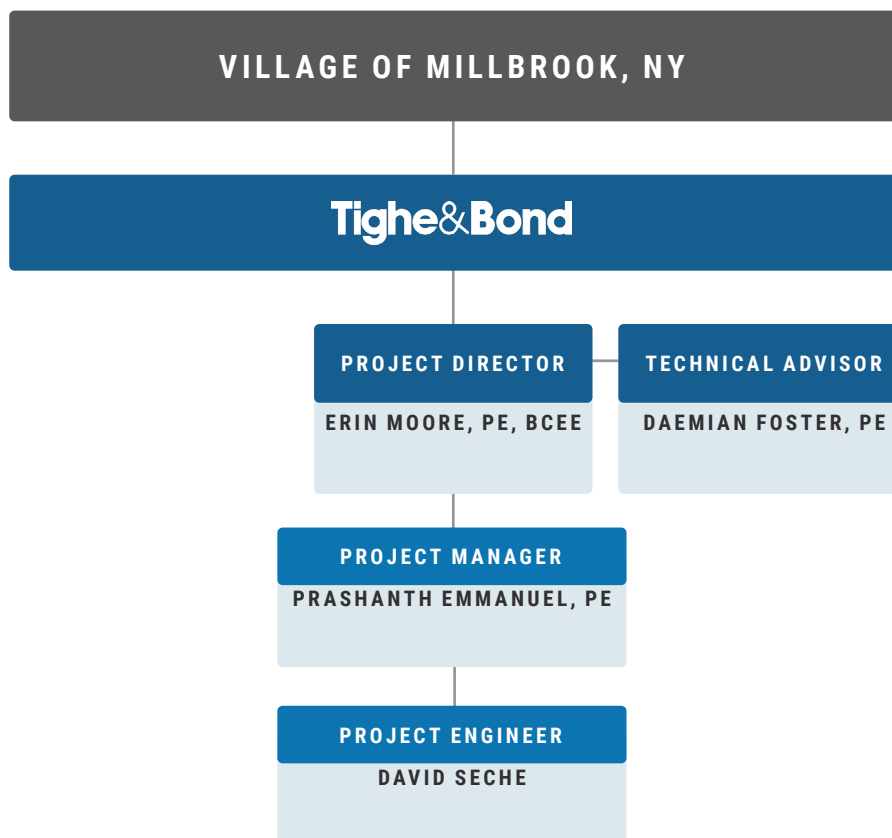
WPCF Phosphorus Removal Improvements: This project includes improvements to the wastewater treatment facility in order to achieve compliance with new regulatory limits including chemical storage and feed equipment, aerator and return sludge pump replacement, variable frequency drives, instrumentation and control system installation. Tighe & Bond provided construction phase services and the plant upgrades are performing well. This project also provided the plant with their first PLC based supervisory control and data acquisition (SCADA) system.

Salmon Kill Road Pump Station Replacement: A critical component in the Salisbury wastewater system, this pump station contributes 25% of influent flow to the Salisbury Water Pollution Control Facility (WPCF). We designed and coordinated construction of a bypass system for the station to maintain flow in case of catastrophic failure of the dry well prior to replacement of the system. A full station replacement design was completed; the existing wet pit/ dry pit pump station was replaced with a duplex submersible station with a new valve vault, electrical equipment, controls and emergency generator.

Collection System Rehabilitation: Tighe & Bond also performed a review of the Town's collection system using closed-circuit television (CCTV) inspection. A design for selective pipe lining was completed that resulted in infiltration reduction and structural rehabilitation.

Project Team

Our **Project Director, Erin Moore, PE, BCEE**, will serve as the primary point-of-contact for Millbrook. Below, please find the organizational chart of our team, followed by brief descriptions of our key staff. Tighe & Bond is a multi-disciplinary engineering, design, planning, and environmental consulting firm and can offer MEP and structural services in addition to our services outlined in this proposal. We would be happy to provide resumes for those disciplines as requested. Resumes of key staff can be found in Appendix A.



Key Personnel



ERIN MOORE, PE, BCEE | PROJECT DIRECTOR

Erin is a project manager with over 20 years experience in municipal water, wastewater and stormwater projects. With the majority of her work in New York, she manages Tighe & Bond's Rhinebeck, NY office. Her project experience covers a broad range of analysis and design including evaluation phase studies, design development, permit procurement, construction document preparation, and construction phase services.



DAEMIAN FOSTER, PE | TECHNICAL ADVISOR

Daemian Foster is an experienced Design Engineer who has worked on a broad range of water, wastewater, and environmental projects for both municipal and industrial clients. His background in water and wastewater treatment process design includes experience with various conventional treatment processes, as well as ultraviolet disinfection and membrane technologies. In addition to his treatment experience, he has participated in the design and construction of water and sewage transmission systems, including both pumped and gravity systems.



PRASHANTH EMMANUEL, PE | PROJECT MANAGER

Prashanth Emmanuel specializes in the planning, evaluation, design, and construction management of wastewater projects. His wastewater experience includes facilities planning, design and construction management of pump stations, odor control systems & wastewater treatment facilities and inflow/infiltration studies.



DAVID SECHE | PROJECT ENGINEER

David Seche is a staff engineer with a focus on wastewater and municipal engineering. He has experience in wastewater treatment data analysis and design; inflow and infiltration evaluation and improvement recommendations; hydraulic modeling; odor control technologies; construction document preparation; and USDA Rural Development applications and documents.

Appendix A: Resumes





ERIN MOORE, PE

VICE PRESIDENT

Erin Moore is a project manager with experience in municipal water, wastewater and stormwater projects. Her project experience covers a broad range of analysis and design including evaluation phase studies, design development, permit procurement, construction document preparation, and construction phase services. She also has expertise in hydraulic modeling.

WASTEWATER—COLLECTION & TREATMENT

WATER AND WASTEWATER SYSTEM EVALUATION—TIVOLI, NY

Evaluated municipal wastewater collection and treatment system and water treatment and distribution system for the Village of Tivoli, NY. Included determination of compliance with current design and regulatory standards; evaluation of equipment, facilities and systems; determination of useful service life; cost estimations for improvements and recommendations of short and long term improvements.

WATER POLLUTION CONTROL FACILITY TREATMENT UPGRADE—SALISBURY, CT

Served as Project Manager for upgrade of a wastewater treatment facility to meet new phosphorus permit limits. Completed alternatives analysis of chemical and biological treatment. Design included conversion of room formerly used for gaseous chlorine disinfection, upgrades to the aeration system, maintenance of all plant operations during construction. Coordinated project funding from USDA Rural Development.

WASTEWATER TREATMENT FACILITY (WWTF) EVALUATION—HYDE PARK, NY

Evaluated two municipal wastewater collection and treatment systems for Dutchess County Water and Wastewater Authority. Included determination of compliance with current design and regulatory standards; evaluation of equipment, facilities and systems; determination of useful service life; cost estimations for improvements and recommendations of short and long term improvements.

WASTEWATER TREATMENT PLANT (WWTP) UPGRADES—HYDE PARK, NY

Design of upgrades to secondary RBC treatment facility. Included improvements to headworks, primary clarifiers, new secondary clarifiers, new rotating biological contactors, sand filters and conversion from chemical disinfection to UV.

WASTEWATER TREATMENT PLANT (WWTP) UPGRADES—KINGSTON, NY

Devaluation of treatment plant and receiving water body conditions to address new discharge permit limits. Design for upgrades to aeration treatment system including blowers and diffusers and new WWTP outfall. Work included extensive coordination with NYSDEC.

EXPERIENCE

22 Years

SPECIALTIES

Wastewater Facility Evaluation
& Design

Wastewater Collection Systems

Hydraulic Modeling

Water Treatment Facility Design

Stormwater Design

Permitting

EDUCATION

Bachelor of Science
Environmental Engineering
Wentworth Institute of Technology

Master of Science
Environmental Engineering
Worcester Polytechnic Institute

Professional Certificate
Technical Communications
Wentworth Institute of Technology

LICENSES & REGISTRATIONS

Professional Engineer
NY #84665
MA #46640
CT #28198
VT #135082

Professional Soil Evaluator
#13709

PROFESSIONAL AFFILIATIONS

New York Water Environment Association

New England Water
Environment Association

NYSDEC Water Management
Advisory Committee

WASTEWATER TREATMENT PLANT (WWTP) REPLACEMENT—PINEBROOK, NY

Complete WWTP replacement preliminary design and construction management of 50,000 gpd modular biofiltration treatment system with influent pump station, UV disinfection and surface discharge.

HASBROUCK CSO SEWERSHED EVALUATION—KINGSTON, NY

Evaluation of the City's largest combined sewershed to determine if phased sewer separation could be utilized to cost effectively replace large CSO storage facility LTCP alternative. Developed preliminary design of phased approach for sewer separation. Managed field investigation, data collection, SWMM modeling, cost estimates, approach phasing and completion of evaluation report in EFC approved format. Evaluation used to obtain NYSEFC grant and loan funding for subsequent design and construction phases.

WASTEWATER ENGINEERING STUDY AND SYSTEM DESIGN—KINDERHOOK, NY

Completed wastewater disposal evaluation to determine the most appropriate and cost effective solution for Village Business District. Design of wastewater collection system and pump station. Coordinated permit procurement from several regulatory agencies. Successful application to state agencies for project funding.

WASTEWATER COST ANALYSIS—NEW YORK, NY

Provided reproduction cost less new "RCNLD" cost analysis report for three wastewater treatment facilities and collection systems for the New York Department of Environmental Protection (NYCDEP) watershed. Analysis required extensive wastewater system inventory, analysis of current process and equipment usage, and coordination with plant operators and NYCDEP legal department.

WPCF SECONDARY TREATMENT BYPASS UPGRADE—CHICOPEE, MA

Assisted in design and bid document preparation of 15 MGD Chicopee WPCF secondary treatment bypass upgrade in Chicopee, MA Included pump station, chlorine contact chamber, and chemical feed systems.

WASTEWATER FEASIBILITY STUDY—AMENIA, NY

Prepared wastewater disposal evaluation to determine most appropriate and cost effective solution for the Town of Amenia. Project focused on alternative treatment technologies and was successfully used to obtain \$3M in interest free project financing.

WASTEWATER COLLECTION AND TREATMENT SYSTEM DESIGN—HILLSDALE, NY

Provided design and construction management of septic tank effluent pump (STEP) wastewater collection system and modular biological filtration treatment system in Hillsdale, NY. Included procurement of state and federal grant funding.

SCHOOL WASTEWATER SYSTEM EVALUATION AND DESIGN—CANAAN, NY

Evaluated existing wastewater facilities for Berkshire Farms School and identified required improvements for system discharge quality compliance. Completed wastewater treatment system design that utilized packaged treatment technology, on-site disposal and incorporated treated wastewater reuse at ornamental horticulture facility.

WATER POLLUTION CONTROL FACILITY (WPCF) SECONDARY CLARIFIER DESIGN—CHICOPEE, MA

Rehabilitation of two 40-year old common wall style draft tube clarifiers utilizing clarifier optimization improvements including mid radius baffling and energy dissipating inlets. Design documented and utilized improvements to clarifier mechanisms developed by WPCF staff.



DAEMIAN FOSTER, PE

PRINCIPAL ENGINEER

Daemian Foster is an experienced Design Engineer who has worked on a broad range of water, wastewater, storm water, and environmental projects for both municipal and industrial clients. His background in project management, pumping system design, water and wastewater treatment process design includes experience with various conventional treatment processes, ultraviolet disinfection, and membrane technologies, as well as pumping and transfer of various media. He has particular experience in the design and construction of water and sewage transmission systems, including both pumped and gravity systems.

EXPERIENCE

31 Years

SPECIALTIES

Water and Wastewater Treatment Processes

Water System Upgrades

Water Distribution Systems

Wastewater Treatment Facility Upgrades

Water, Sewer, and Storm Water Pumping Systems

EDUCATION

Bachelor of Science
Civil & Environmental Engineering
Cornell University

Master of Science
Environmental Engineering
Worcester Polytechnic Institute

LICENSES & REGISTRATIONS

Professional Engineer
MA #49163
NY #079914

WASTEWATER/STORMWATER

WASTEWATER TREATMENT FACILITY (WWTF) UPGRADES—DUCHESS COUNTY, NY

Designed of upgrades to the wastewater treatment facility Dutchess County, NY. Design included pumping, conveyance, head works grinder, primary and secondary settling, biological treatment utilizing RDTs, in addition to improvements to sludge storage. Upgrades to the facility also included the replacement of the sodium hypochlorite disinfection with an ultraviolet disinfection system.

WWTF REPLACEMENT—SOUTH ROYALSTON, MA

Prepared preliminary engineering and environmental designs for replacement of a 40,000 GPD wastewater treatment facility, and evaluation and repair of associated sewers, in Royalston, MA. Prepared a Rural Development application and secured a combination of grant and loan funding for the project. Evaluated wastewater treatment alternatives to replace an existing package-type activated sludge system by comparing repair, replace in kind, and replace with best available technology. Responsible for evaluation of the membrane bioreactor technology option, including preliminary sizing of equipment and preparing economic evaluation. Responsible for project management during design and construction.

WWTF SEPTAGE PUMP AND HEADWORKS UPGRADES—NORTH ATTLEBOROUGH, MA

Assisted in the design and construction of upgrades to the WWTP septage pumps and headworks area grating and odor control. Responsible for the design of the double disc pumps and piping for the septage transfer pumps, as well as the odor control system replacement for both the headworks and the septage receiving areas.

WATER TREATMENT DEWATERING DESIGN AND CONSTRUCTION—BEACON, NY

Provided assistance with the evaluation of alternatives for sludge dewatering and pumping. Designed the pumping, conveyance, and solids dewatering utilizing a decanting centrifuge.

WEST ISLAND WWTF UPGRADES—FAIRHAVEN, MA

Serving as a technical lead for pumping system design for the upgrade for the of 5.0 MGD wastewater treatment facility as part of a major effort to remove nitrogen to below 3.0 mg/L.

WWTF UPGRADES—CHICOPEE, MA

Designed and managed of construction for upgrades to secondary clarifiers in Chicopee, MA. Refurbishment of the existing secondary clarifiers included tank repair and lining, improvements to the settling process through the addition of new EDI, density current baffles and mid-radius baffles.

WASTEWATER TREATMENT FACILITY UPGRADE—SPENCER, MA

Served as a technical lead designer for pumping, sludge thickening, thickened sludge storage, and odor control systems for the upgrade. These design tasks were part of a larger comprehensive upgrade at the facility. Also provided assistance with the construction phase services.

WWTF UPGRADES—SPENCER, MA

Assisted in the design and construction of upgrades to the Spencer WWTF. Responsible for the of new rotary drum thickeners, as well as all the major pumping and GAC odor control system upgrades, for the project.

WWTF UPGRADES—IPSWICH, MA

Designed and managed upgrades to solids handling systems in Ipswich, MA. Design included pumping, conveyance, head works screening and grit removal, in addition to improvements to sludge processing. This was done via refurbishment of the existing secondary clarifiers, sludge thickening, and modifications to sludge holding, improvements to scum removal and solids dewatering utilizing a decanting centrifuge. Upgrades to the facility also included a new ultraviolet disinfection system. Project included coordination and documentation required for State Revolving Fund projects.

STORM WATER EVALUATION AND CONCEPTUAL DESIGN—SACO, ME

Provided storm water pump station evaluation and conceptual design with cost estimates for various alternatives. This work included the conceptual design and evaluation of alternatives which included the use of wastewater and stormwater pump stations in conjunction with other stormwater hardening methods, to protect the WWTP, from future flood events, while allowing for the continued treatment of flow.

WWTP HARDENING PROJECT - PUMP STATION EVALUATION AND DESIGN—FAIRFIELD, CT

Provided storm water pump station evaluation, design, and assistance with cost estimates. Aided during construction. The overall project included the construction of a sheet pile wall to protect the plant from coastal storm surge. This work included the design of two large stormwater pump stations to protect the WPCF and other critical facilities within the berm by evacuating extreme rainfall flooding events from within the flood barrier.

WATER RESOURCE RECOVERY FACILITY RESILIENCY DESIGN—SACO, ME

Provided process design assistance to 30% for the Water Resource Recovery Facility (WRRF) with cost estimates for various areas of the wastewater treatment plant, for a full plant upgrade. This work included the design and evaluation of alternatives for sludge thickening and dewatering as well as, tertiary filtration, disinfection, and site wide wastewater pumping.

WATER TREATMENT DEWATERING DESIGN AND CONSTRUCTION—CHICOPEE, MA

Provided technical process design assistance and cost estimates for the design and evaluation of alternatives for sludge dewatering and pumping. Managed construction of upgrades. Improvements included pumping, conveyance, primary and secondary clarifiers, dewatering centrifuge, polymer equipment, and sludge cake pumping systems. Project included coordination and documentation required for State Revolving Fund projects.



PRASHANTH EMMANUEL, PE

SENIOR PROJECT MANAGER

Prashanth Emmanuel specializes in the planning, evaluation, design, and construction management of wastewater projects. His wastewater experience includes facilities planning, design and construction management of pump stations, odor control systems & wastewater treatment facilities and inflow/infiltration studies.

WASTEWATER

EXPERIENCE

18 Years

SPECIALTIES

WWTF Upgrades

Pumping Station Design

Odor Control

Hydraulic Evaluations

Nitrogen and Phosphorous Removal

EDUCATION

Bachelor of Science

Civil Engineering

Guru Nanak Dev Engineering
College, India

Master of Science

Environmental Engineering
University of New Haven, CT

LICENSES & REGISTRATIONS

Professional Engineer
CT #28710

PROFESSIONAL AFFILIATIONS

Water Environment Federation

New England Water Environment
Association

Connecticut Water Environment
Association

Operations Challenge Committee
Member (CTWEA)

Residuals Biosolids Committee
Member (NEWEA)

SEVEN PUMP STATIONS UPGRADES—FAIRFIELD, CT

Currently managing multi-discipline efforts for study, design, bidding, and construction for seven separate pump stations and force mains. The upgrades are driven mainly to meet resiliency needs as Fairfield is a coastal town. The upgrades include capacity analysis of stations, structural integrity testing of force mains, electrical, mechanical, and site/civil improvements.

ALVANOS DRIVE, COFFIN AVENUE AND HANOVER STREET PUMP STATION UPGRADES—HAVERHILL, MA

Currently managing multi-discipline efforts for design, bidding, and construction for complete replacement of three separate pump stations with new precast submersible style station, valve vaults, resiliency measures, electric and SCADA upgrades.

RYANS LANE PUMP STATION—STRATFORD, CT

Currently providing peer review consulting services for the design and upgrade of the Ryan's Lane Pump Station to ensure that the new station will be designed to meet resiliency and TR-16 standard requirements.

LONZA BIOLOGICS—PORTSMOUTH, NH

Currently managing multi-discipline efforts for a design-build project to construct and 125,000-gallon equalization tank, submersible mixers, pumps including electrical, SCADA, civil, architectural, and structural upgrades.

PRIMARY AND SECONDARY TREATMENT UPGRADE—STAMFORD, CT

Lead project engineer for the design and construction administration efforts for various improvements to the Stamford Water Pollution Control Facility, including aeration system modifications, aeration blowers, odor control system, influent raw sewage pump, and force main replacement.*

WATER POLLUTION CONTROL FACILITY UPGRADE—FARMINGTON, CT

Designed various improvements to the treatment facility, which included construction of a new final settling tank, equipment replacement in existing final settling tanks, return sludge pumps, plant water system and installation of new ultraviolet disinfection system and new effluent pump station.*

WATER POLLUTION CONTROL FACILITY UPGRADE—MANCHESTER, CT

Designed various improvements to the treatment facility, which included primary sludge pumps, gravity thickener, odor control systems, and gravity thickener sludge pumps.*

PRESENTATIONS

“Challenges in Selecting Biosolids Treatment & Disposal Equipment at the Mattabassett WPCF”
NEWEA Annual Conference Boston, MA 2016

Being a Good Neighbor – Reducing Offsite Odors by Optimizing Odor Removal at the Mattabassett WPCF”
NEWEA Annual Conference Boston, MA 2017

MATTABASSETT DISTRICT WATER POLLUTION CONTROL FACILITY UPGRADE—CROMWELL, CT

Designed various improvements to the treatment facility, which included odor control systems, fluidized bed incinerator and associated equipment, underground fuel storage tanks, primary tank scum skimmer mechanisms, and upgrading the septage receiving station. Assisted in construction administration efforts for the \$110 million upgrade including preparation of operation and maintenance manual for the entire treatment plant.*

WATER POLLUTION CONTROL FACILITY UPGRADE—TORRINGTON, CT

Designed various improvements to the treatment facility, including new bar screen, washer-compactor, primary sludge pumps, primary clarifiers equipment, conversion of biological treatment process from Modified Ludzack-Ettinger to 5-stage Bardenpho, final settling tanks, return sludge pumps, effluent flushing water system, odor control systems, and ultraviolet disinfection system. Oversaw bidding and construction administration efforts for the \$56 million upgrade.*

WASTEWATER ASSET RESILIENCY PLANNING—SMITHFIELD, RI

Managed efforts related to preparation of wastewater resiliency plan to adapt and protect Smithfield's WWTP and each of its twelve pump stations from natural hazards.*

MYSTIC/STONINGTON INTERCONNECTION UPGRADE—STONINGTON, CT

Managed multi-discipline efforts for design, bidding, and construction to replace existing diversion pumps that convey wastewater from the mystic WWTF to Stonington WWTF, replacement of primary and secondary clarifier equipment, primary scum pumps, influent gate, process valves and installation of a new chemical bioxide odor control system.*

PLYMOUTH NUTRIENT ENHANCEMENT STUDY, PLYMOUTH, CT

Managed efforts in the evaluation and recommendation of nutrient enhancement study to improve operation of the Plymouth WWTF 5-stage Bardenpho process for nitrogen and phosphorus removal, including evaluation of new RAS pump station. Additionally evaluated and designed short term measures to be implemented at the WWTF to comply with new phosphorous limits while long term measures were implemented.*

SLUDGE TANK ODOR CONTROL—CONCORD, NH

Evaluated various odor control technologies that can be implemented at the Concord, NH wastewater treatment facility to treat high odorous sources from sludge storage tanks.*

WASTEWATER TREATMENT PLANT ODOR CONTROL EVALUATION—NAUGATUCK, CT

Conducted a facility wide odor control site investigation and monitoring to identify odor sources from various process equipment and recommended measures and improvements that can be implemented to reduce offsite odor impacts from the facility.*

PUMP STATION RESILIENCY EVALUATION—GROTON, CT

Managed efforts related to preparation of resiliency measures for fifteen pump stations that face potential impacts from coastal flooding, sea level rise, and riverine flooding.*

INFLOW AND INFILTRATION STUDY—WALLINGFORD, CT

Determined public and private contribution of excess flows to the treatment plant, including flow monitoring, smoke and dye testing, CCTV, and manhole inspections.*

INFLOW AND INFILTRATION STUDY—FARMINGTON, CT, NH

Determined public and private I/I contribution of excess flows to the treatment plant including flow monitoring and manhole inspections.*

*with previous firm



DAVID SECHE

STAFF ENGINEER

David Seche is a staff engineer who has experience in sanitary sewer evaluation and rehabilitation, wastewater treatment facility evaluation and upgrade, and infiltration and inflow studies and analysis. He has experience with several wastewater treatment processes, including conventional treatment processes, small package systems, and subsurface systems. He has experience with design and installation of several trenchless technologies, including cured-in-place pipelines, joint test and seal, root control, manhole sealing, and manhole inserts. He also has experience in hydraulic modeling.

EXPERIENCE

7 Years

SPECIALTIES

Wastewater Collection Systems

Wastewater Treatment Facility
Upgrades

Sanitary Sewer Rehabilitation

Infiltration/Inflow Studies

Hydraulic Modeling

EDUCATION

Bachelor of Science
Civil Engineering
Cornell University

10-Hour OSHA General Industry
Safety Training

LICENSES & REGISTRATIONS

PACP Certified National Association of
Sewer Service Contractors Pipeline
Assessment and Certification Program

PROFESSIONAL AFFILIATIONS

New York Water Environment
Association

American Water Works Association

WASTEWATER—TREATMENT

WASTEWATER TREATMENT PLANT UPGRADES—HYDE PARK, NY

Assisted in the design of upgrades to secondary RBC treatment facility. Included improvements to headworks, primary clarifiers, new secondary clarifiers, new rotating biological contactors, sand filters and conversion from chemical disinfection to UV.

WASTEWATER TREATMENT PLANT REPLACEMENT—PINEBROOK, NY

Complete WWTP replacement preliminary design and construction management of 50,000 gpd modular biofiltration treatment system with influent pump station, UV disinfection and surface discharge.

WASTEWATER TREATMENT PLANT UPGRADES—KINGSTON, NY

Evaluation of treatment plant and receiving water body conditions to address new discharge permit limits. Design for upgrades to aeration treatment system including blowers and diffusers and new WWTP outfall.

WASTEWATER FEASIBILITY STUDY—POUND RIDGE, NY

Prepared wastewater disposal evaluation to determine most appropriate and cost-effective solution for the Town of Pound Ridge. Project focused on business district service area and utilized alternative treatment technologies.

LOCAL LIMITS EVALUATION—KINGSTON, NY

Specific tasks included coordination of influent/effluent and sludge sampling at the Kingston, NY WWTP as well as within the Kingston collection system, and analysis of sampling results. Engineering analysis resulted in the identification of maximum allowable headworks and industrial headworks loading at the Kingston treatment facility. Final report identified applicable pollutants of concern at the plant, along with recommendations for Local Limits where required.

CSO SAMPLING PROGRAM—KINGSTON, NY

CSO sampling project at several sites within Rondout Creek in the vicinity of the Kingston, NY WWTP outfall, as required by the City's SPDES discharge permit. Sampling was conducted at seven sites, five times per month over a 7-month period, with water samples being evaluated for pH, temperature, coliforms, total solids, and total suspended solids. Once sampling work had been completed, all results were summarized in a report confirming that the treatment plant discharge was not impairing the water quality within Rondout Creek.

WASTEWATER—COLLECTION

GREENFIELDS INFILTRATION/INFLOW EVALUATION/SEWER REHABILITATION

Infiltration/inflow evaluation in the Greenfields Sewer District. Work included nighttime flow isolation measurements, smoke testing, manhole inspections, and television inspection work to identify infiltration and inflow sources. A report was then prepared recommending sewer rehabilitation work. Also assisted in the design of improvements to the collection system based upon the study recommendations. Specific work includes sewer replacement, sewer lining, joint testing and sealing and manhole rehabilitation as part of two separate contracts.

INFILTRATION/INFLOW REMOVAL—SALISBURY, CT

Review of existing TV inspection information conducted in 2013, coordination of additional TV inspection where existing data was incomplete, and preparation of a report recommending rehabilitation based on the results of the TV inspection work.

SEWER REHABILITATION DESIGN—VERNON, CT

Design of improvements to the existing collection system. Improvements include CIP lining, joint test and seal, chemical root treatment, MH sealing and cover inserts, and sewer replacement.

TOWN OF STRATFORD INFILTRATION/INFLOW STUDY

Phase I Infiltration/Inflow Study of the Town's existing collection system, development of a hydraulic model to evaluate the capacity of the Town's trunk sewers and updating the collection system mapping into GIS format.

SSSES PROGRAM—STRATFORD, CT

Sewer System Evaluation Survey project in the Town of Stratford, CT. This project involved flow isolation in 145,000 LF of sewer lines, the TV inspection of over 101,000 LF of sewer mains, smoke testing of 438,000 LF of sewer mains, building and manhole inspections, development of recommendations for sewer rehabilitation as well as a cost-effective analysis of all recommendations.

HASBROUCK CSO SEWERSHED EVALUATION—KINGSTON, NY

Evaluation of the City's largest combined sewershed to determine if phased sewer separation could be utilized to cost effectively replace large CSO storage facility LTCP alternative. Assisted in development of preliminary design of phased approach for sewer separation. Evaluation used to obtain NYSEFC grant and loan funding for subsequent design and construction phases.

INFILTRATION/INFLOW EVALUATION—DOUGLAS, MA

Phase 1 I/I study of the existing collection system. Included continuous flow monitoring of over 60,000 LF of sewer mains, rainfall monitoring, groundwater level data analysis, and manhole inspections to evaluate extent of I/I in the collection system and identify potential sources of I/I.

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Tighe&Bond

M-5146-P001
April 19, 2024

Village of Millbrook
Mayor Tim Collopy
PO Box 349
Millbrook, NY 12545

Re: **Proposal for Engineering Services: Village of Millbrook Wastewater Treatment Plant Upgrade**

Dear Mayor Collopy,

Tighe & Bond, whose services in New York are provided through T&B Engineering & Landscape Architecture, P.C. (Tighe & Bond), is pleased to submit this proposal to you and the Village Board for professional services related to upgrades to the Village of Millbrook Wastewater Treatment Plant (WWTP).

We appreciate the opportunity to present our alternative approach to the rehabilitation of the WWTP to allow the facility to achieve NYSDEC SPDES permit compliance. We recognize the Village's dedication to providing efficient and cost-effective wastewater services to its businesses and residents and understand the significance of the project.

Proposed Approach

Tighe & Bond is proposing upgrades that would improve the preliminary treatment (screenings and grit removal); replace the existing biological treatment process with a Sequencing Batch Reactor (SBR) process; and provide filtration prior to disinfection and discharge, using cloth disk filters. The proposed SBRs use the same activated sludge treatment approach that has been the backbone of most WWTP operations for the past 100-years including the current process at the Millbrook WWTP. The existing wastewater treatment system is based upon conventional activated sludge, a wastewater treatment process which includes the following: Aeration, where the biological reactions occur; and Clarification, where settleable materials are separated from the stream and either recycled or sent to waste, while clarified liquid passes on for further treatment. Floatable materials are also captured within the clarifier process. The Village currently has tankage for these processes; however, they are finding it difficult to meet current regulatory standards under all flow conditions, due to the capacity of the current process tankage. As a result, to meet the standards using the existing process, additional tankage would be required, while the current tanks would need to be rehabilitated if maintained in the same functional capacity. As suggested above, with the existing conventional activated sludge system the process occurs across multiple tanks. The SBR process we are proposing requires a single tank per train, which provides lots of options and flexibility to react to changes in conditions and regulations. By providing two new concrete tanks to house the SBR equipment, existing tanks can be used for other purposes or eliminated. By switching to cloth disk filters, the existing sand filters with old and deteriorating feed piping and underdrains can be eliminated as well.

As you can imagine, taking treatment processes and tanks down during construction to perform repairs and upgrades creates significant disruption and requires either bypass treatment equipment or would cause the facility to accept even further reduced capacity, thus increasing the risks of NYSDEC SPDES permit compliance issues during construction. Upgrading the WWTP in the manner that has previously been put forth will be challenging, as the treatment plant must remain successfully operating during construction and after completion must treat to the levels required by the permit under the anticipated flow conditions.

Tighe & Bond's approach is intended to allow the existing WWTP liquid process to remain in operation through construction. After communicating with Village WWTP operations personnel, it has been agreed that the facility wishes to move away from the use of the sludge drying beds in lieu of having sludge hauled as liquid. Based on this, Tighe & Bond believes that by demolishing the drying beds and associated structures, sufficient space will be available to phase the work of our approach, to maintain flow. Bypass pumping and treatment as well as permit violations can add significant cost to WWTP construction projects. Our approach would therefore not only reduce interference with plant operations but would also reduce the costs of construction.

Tighe & Bond's intent is to provide a modern treatment system that is the right size for the Village's current flows and allows for future flexibility to meet current and potential future NYSDEC SPDES permit requirements.

There are numerous advantages to our approach:

- 1) Eliminates all use of the existing steel ORF tank
- 2) Provides equipment that treats sewer flows entering the WWTP, eliminating backups and overflows
- 3) Replaces WWTP equipment at the end of its useful life with new cost effective equipment
- 4) Meets the facility's permit requirements under expected flow conditions
- 5) Provides flexibility, resiliency, and ease of maintenance
- 6) Utilizes the existing disinfection system without changes
- 7) Utilizes the existing aeration tanks to provide equalization and increased volume for aerobic digestion of sludge
- 8) Allows for largely unhindered operation of the WWTP during construction

Project Description

The Village of Millbrook, New York intends to upgrade their WWTP in order to be able to receive sewer flows and treat the flows to achieve NYSDEC SPDES permit compliance, without backups or overflows in their system.

As generally described above, Tighe & Bond proposes a design based on their described approach to meeting the Village's needs regarding the WWTP upgrades, and offers grant assistance, design, bidding, and construction phase services as described below.

The design elements offered under this proposal will include the following components:

- Design of new influent screenings removal
 - Design of new influent grit removal
 - Replacement of the existing influent flow meter with a new meter
 - Design of new influent pump station, piping and valves with submersible pumps (Note: Site conditions allow for gravity flow to the process equipment, the pump station may be eliminated)
 - Design of a new SBR based treatment system
 - Repurposing of the two aeration tanks and their associated diffusers, and blower, for use as new equalization and increased volume for aerobic digestion of sludge
 - Design of a new cloth media disk filters
 - Design of new building to house the new disk filters, electrical equipment, and controls for the upgrades systems
-
- Prepare a Preliminary Design Report that includes the following tasks:

- Confirm NYSDEC SPDES discharge permit limits
- Confirm SBR Equipment
- Confirm Filter Equipment
- Confirm flows and loads for the WWTP are unchanged
- Testing for hazardous building materials and/or lead and asbestos, which could be found associated with the existing sludge drying bed roof structure, and if necessary, provide specifications for their removal and disposal per NYSDEC and EPA regulations
- Design of the decommissioning and solids removal from the existing ORF tank

Proposed Scope of Services

The Village has made substantial progress with the funding of this critical project with the successful application to the NYSEFC Water Infrastructure Improvement Act Grant program. However, time is of the essence, and it is anticipated that the NYSDEC Water Quality Improvement Program grant, through the Consolidated Funding Application (CFA) will be open within the next month. The Village has been encouraged to apply for this grant and is well poised for this additional funding. As such we have proposed an initial phase that will allow the Village to be well positioned for grant success. We request this first Task be approved immediately to allow sufficient time to accomplish the work by the anticipated grant deadline should Tighe & Bond be selected as the qualified engineer for the Village's WWTP upgrade. The additional Tasks represent the complete scope of engineering services through project completion for review and discussion. In order to comply with the grant requirements, NYS Certified Minority and Women Owned Businesses will be an important part of the design team. As developing these sub-consultant agreements and fees require substantial coordination, should Tighe & Bond be selected by the Village, we will finalize the team and provide a proposed budget for the remaining tasks in concert with Task 1.

Task 1 Preliminary Engineering Report Update & Grant Assistance

1.1 Update Preliminary Engineering Report (PER)

A workshop will be conducted with Village staff to build consensus on key decisions for the WWTP Upgrades and discuss conceptual equipment layouts, and conceptual project costs. Key discussion items at this meeting will include headworks screenings and grit removal, SBR, and cloth disk filter equipment, as well as the re-use the existing aeration tanks and associated equipment. Additionally, a confirmation of items to be included in the project scope will be verified (for instance at this time the preliminary budget we have prepared does not include a new emergency generator to be consistent with previous estimates). In addition, a preliminary project schedule will be reviewed with Village staff. Workshop meeting discussions and action items will be documented in meeting minutes to be submitted to all attendees.

Following the Preliminary Engineering Report (PER) Workshop Meeting, Tighe & Bond will prepare a draft PER Update as required for the NYSDEC WQIP grant. The report will be prepared in EFC/DEC approved format and will build upon the 2022 report prepared by Delaware Engineering. The draft report will be submitted to Village staff for review and serve as the foundation for the Basis of Design Report to be prepared as part of the Task 2 Design Phase. The PER will include updated project budget and schedule.

Tighe & Bond will prepare the NYSDEC WQIP grant application via the Consolidated Funding Application website and provide coordination for application execution and appropriate resolutions needed to support the grant application.

We note the NYSDEC WQIP grant does not cover engineering planning or design services, thus progressing design will not impact work reimbursable by this funding source.

Task 2 - Design Engineering Services

2.1 Preliminary Design

Basis of Design Report

Building off the work completed for the PER Update, Tighe & Bond will prepare and submit a Basis of Design Report that will document the basis of design, the design criteria, and proposed equipment product data and sizing. The report will include the following sizing criteria, calculations, schedules, and preliminary specifications:

- Design criteria for process equipment, document equipment capacities and design assumptions
- Process equipment and structure sizing calculations. Specific structures include the SBR tanks, and the new building.
- Hydraulic profile calculations
- HVAC and electrical design criteria
- Required permits and permit application schedule
- List of anticipated drawings
- List of anticipated specifications

Preliminary Drawing Development

Tighe & Bond will prepare preliminary design drawings for the proposed treatment system in accordance with the Preliminary Engineering Design Report recommendations. The preliminary drawings will include WWTP site plans, SBR tank plans and section, and a floor plans of the new building.

Opinion of Probable Construction Cost

Prepare opinion of probable construction cost and total project cost at the 30% design completion stage.

Workshop Meeting - We will meet with Village of Millbrook personnel at the conclusion of the preliminary design phase to develop consensus on final project direction prior to proceeding with final design.

2.2 Equipment Pre-Selection

Sequencing Batch Reactor Equipment Pre-Selection

- Develop equipment vendor pre-selection documents for public bidding and evaluate bid proposals from the manufacturers of sequencing batch reactor systems. The results of the evaluation will be reviewed with the Village, will consider both monetary and non-monetary factors, and will include a present worth analysis. Following the evaluation, a sequencing batch reactor manufacturer will be recommended as the proprietary basis of final design. Provide conceptual layouts for building and tankage, site layout, and hydraulics for the recommended alternative.

Cloth Disk Filter Equipment Pre-Selection

- Develop equipment vendor pre-selection documents for public bidding and evaluate bid proposals from the manufacturers of disk filtration systems. The results of the evaluation will be reviewed with the Village and will consider both monetary and non-monetary factors and will include a present worth analysis. Following the evaluation, a disk filter manufacturer will be recommended as the proprietary basis of final design. Provide conceptual layouts for building and tankage, site layout, and hydraulics, for the recommended alternative.

2.3 Final Design

Project Management and Communications

We will provide a project update to the Village to update project status and review upcoming milestones, at least monthly for the duration of the design phase.

Opinion of Probable Construction Cost

Prepare opinion of probable construction cost and total project cost at the 100% design completion stage.

Maintenance of Plant Operations

Design the project to maintain plant operations to the extent possible during construction and define construction constraints with input from Village staff that are necessary to allow the Village to keep the plant in compliance with its permit.

Final Design Documents

Prepare documents suitable for public bidding and in compliance with New York bid laws and NYSDEC requirements. The documents will include plans, specifications, bids forms, contract and insurance forms and general terms and conditions needed to obtain competitive and responsive public bids from qualified contractors. The Contract Documents will include the following details:

Civil

- Revisions to site grading as necessary to accommodate the proposed site improvements
- Temporary construction erosion and sediment control measures
- Yard piping plan detailing existing layout around area of construction and proposed underground conduits and structures

Structural

- Foundations, process tankages, building, equipment pads, concrete base slabs, slabs-on-grade, and elevated slabs as required to suit the new process equipment
- Aluminum grating and handrails as required to suit new process equipment in the process treatment area
- Aluminum walkway and stairs for access to suit the new process equipment

Process Mechanical

- Hydraulic profile for the upgraded plant at the design average daily flow and peak hourly flow
- A process flow diagram that schematically depicts all major processes for the final WWTP processes and indicates how these improvements tie into existing facilities
- Influent screening equipment to be installed in the former sludge digester/storage tank with controls either adjacent to or in the new filter building
- Aerated grit equipment, equipment will be installed in the former sludge digester/storage tank with controls either adjacent to or in the new filter building
- Influent wet well with submersible pumps, equipment will be installed in the former sludge digester/storage tank with controls either adjacent to or in the new filter building
- A magnetic type influent flow meter downstream of the headworks system. The flow signal will be used for NYSDEC SPDES compliance reporting.
- SBR equipment, equipment will be installed in the new tanks or adjacent to the tanks with controls in the new filter building
- Cloth Disk Filters, filters, and ancillary equipment in the new filter building

HVAC

- Air handling units in the Filter building. Make-up air heating systems at both locations.

Plumbing

- Plumbing systems include sump pumps, wash sinks, floor drains, and roof drains for the filter building as required by code or process requirements

Instrumentation

- Monitoring and control systems for the new process equipment located in the filter building. Tie new process equipment monitoring and control systems into the WWTP's SCADA system. Process and instrumentation diagrams (P&IDs) will be created for each new process.
- Control system to enable monitoring and process control to support biological treatment and possible future nitrogen and phosphorus removal in the SBRs

Electrical

- Evaluate existing electrical service, distribution system, main switchgear, and motor control centers (MCCs) that will be impacted by new work. Document the existing electrical distribution equipment for condition and identify necessary improvements. Prepare electrical design criteria to be used for the design of the new processing equipment and the new filter building process equipment and building lighting, HVAC, and electrical systems.
- New 480 volt distribution system from the existing switchgear to new MCCs and panel boards located at the filter building. It is assumed that the existing electrical infrastructure is inadequately sized and does not have available spare capability to support the additional electrical load of the filter building and new process equipment. Furthermore, it is assumed that the WWTP generator is at the end of its useful life and in need of replacement. (Note: Tighe & Bond recommends adding a new standby generator and transfer switch sized to power the entire WWTP facility. The generator could be located outdoors in a weatherproof and sound reducing enclosure. The generator could run on diesel fuel and be equipped with a belly fuel tank that is integral to the unit.)

2.4 Regulatory Approval

Local, state, and federal requirements will be reviewed and assessed with respect to the design. The design will include consideration of regulatory requirements, and these requirements will be incorporated into the early stages of design.

This proposal includes submission of the final design, specifications and basis of the design report. A meeting with the Village and NYSDEC and Dutchess County Department of Community and Behavioral Health to review design comments and update of the contract documents to address NYSDEC/DCDCBH comments.

The proposed work is to be conducted in the area of existing WWTP equipment and structures which are not within 100 feet of a wetland resource. Thus, at this time, no additional permitting effort has been included.

Task 3 - Special Services

3.1 Field Survey

- A topographic survey conforming to class T-2 accuracy based on NAVD88 Datum and horizontally to NGVD 29 (to match existing plant drawing elevations) depicting the existing conditions within the limits of the proposed work area. The survey will include surface features such as first floor elevation of existing buildings, top of tank elevations and weirs. It will also depict contours at 1-foot intervals and spot elevations at critical points. The surveyor will gather existing utilities such as manholes, water lines and other from observed field locations, complemented with existing mapping. Based on the proposed project scope, property lines will be presented from available data and a title survey will not be completed.

Additionally, all subsurface utilities lines will be based upon surface structures or as presented on as-built drawings. The survey will not include the use of subsurface utility location services.

3.2 Subsurface Geotechnical Exploration Program

- Conduct a subsurface exploration program to evaluate the suitability of the site's subsurface conditions to support the proposed SBR tanks and filter building.
 - For the purposes of this proposal, it has been assumed (and probable) that the building will be founded on non-cohesive and reasonably dense soils suitable to support a conventional, shallow spread footing foundation system. If actual subsurface conditions require a deep foundation or ground improvement to support the proposed structure, additional explorations, laboratory testing, and analyses may be required under a revised scope and fee.
 - For the purposes of this proposal, it has been assumed (and probable) that the tanks will be founded on non-cohesive and reasonably dense soils suitable to support a conventional, shallow mat slab foundation system. If actual subsurface conditions allow a deep foundation or ground improvement to support the proposed structure, additional explorations, laboratory testing, and analyses may be required under a revised scope and fee.
- *Site History and Geologic Conditions* – Review available existing United States Geologic Survey (USGS) mapping for the area to aid in preparation of the subsurface exploration and sampling program.
- *Exploration Layout and Coordination* – Mark the proposed exploration locations prior to performing the required utility clearance notification. Locations will be established by taping off of existing site features. Coordinate the exploration efforts, including "UDig NY" notification, upon completion of the field marking.
- *Test Borings* – A drilling contractor will perform up to two days of field work to include the following:
 - Drilling borings for the SBR tanks and the filter building
 - Borings will be advanced with hollow-stem augers or flush joint casing using drive and wash methods. The first boring for the SBR tanks and the filter building will be advanced to a depth of 60 feet below the existing ground surface, or refusal, whichever is shallower, to evaluate potential liquefaction susceptibility due to the potential presence of loose alluvium and sandy soils. All other borings for the SBR tanks will be advanced to a depth of 40 feet, or refusal, whichever is shallower. A single 10 foot core sample shall be taken in each boring upon refusal in borings for the SBR tanks. All other borings for the filter building will be advanced to a depth of 25 feet, or refusal, whichever is shallower.
 - Split-spoon samples using Standard Penetration Test (SPT) procedures will be obtained continuously through existing fill or organic soils to a maximum depth of 6 feet, and at 5 foot maximum intervals thereafter. Groundwater monitoring wells are not proposed but groundwater levels will be noted during drilling, if encountered.
 - Boreholes will be backfilled with cuttings or sand if there is an insufficient amount of cuttings to fill the hole. No other surface repair is anticipated or included. Any cuttings unable to be returned to the hole will be spread near the boring location in a vegetated upland area.
 - It is assumed that all cuttings will be returned to the borehole and no investigation derived waste (IDW) will be generated. However, if IDW is generated then it will be drummed. The cost of the drum and disposal of drummed soils is not included in the proposed fee but can be included under a contact amendment.
 - A geotechnical engineer, geologist, or environmental scientist will be onsite to observe and document the test borings.

- *Permits/Coordination* – Scheduling of field work will be coordinated with Village WWTP personnel. No permit preparation is anticipated to be needed or included in this proposal.
- Noise from the test boring drill rig can be disruptive. However, it is assumed that explorations will be performed within an 8-hour period during weekdays sometime between 7 am and 5 pm without interruption.
- *Material Testing* – Conduct four index tests (grain size analyses or Atterberg limits) on select samples obtained in the explorations to aid in soil classification, assist with correlating properties of the subsurface materials, and evaluate the suitability of materials for re-use as fill on-site.

3.3 Geotechnical Evaluation and Recommendations

- *Subsurface Conditions* – Provide a description of observed subsurface conditions, including exploration logs, a subsurface exploration location plan, and laboratory test results.
- *Subsurface Suitability* – Provide an evaluation of the subsurface conditions with regard to their suitability as a bearing stratum to support foundations. This evaluation will be based upon review of the SPT data, laboratory testing, and visual observation of the subsurface conditions.
- *Foundation and Slab Requirements* – Provide recommendations regarding suitable foundation and slab types for the subsurface conditions encountered and a commentary on building code provisions as they pertain to foundation design, including frost depth and minimum footing dimensions.
- *Bearing Pressure and Settlement* – Provide an allowable bearing pressure, and estimated elevation for the anticipated stratum. Provide an estimate of anticipated total and differential settlements under the recommended allowable bearing pressures.
- *Foundation and Under Slab Drainage* – Provide recommendations for foundation and under slab drainage, if necessary.
- *Lateral Earth Pressures* – Provide recommendations for anticipated lateral earth pressures for site retaining walls, if any, and below grade basement and tank walls.
- *Seismic Design Criteria* – Identify the seismic design parameters as specified in the State of New York Building Code, including Site Class and mapped spectral response accelerations for short and 1-second periods. This will include a review of the liquefaction susceptibility of the soil based on the SPT data and groundwater depth. If a more detailed evaluation to estimate the factor of safety against liquefaction and anticipated seismic induced settlements is recommended based on the results of this review, the additional cost for this evaluation will be mutually agreed upon under a contract amendment.
- *Geotechnical Construction Recommendations* - Provide a memorandum report with commentary concerning geotechnical aspects of construction. This report will include excavation and backfilling, temporary excavation support and dewatering, protection of adjacent structures to remain, demolition of existing structures to avoid conflicts with new foundations, suitability of site soils for re-use as backfill, and foundation and slab subgrade preparation.

3.4 Hazardous Building Materials Inventory

A hazardous building materials inventory (HBMI) will be completed in the areas impacted by construction to identify potential materials which will require special care during construction of the proposed work. If hazardous materials are identified, we will develop specifications which provide the Contractor with direction on how these materials are to be addressed.

We will contract a qualified environmental testing subconsultant to conduct the following tasks:

- Provide a licensed NYS/AHERA Asbestos Inspector to perform a pre-construction asbestos survey and collect material samples for analysis.
- Perform analysis of up to 16 PLM bulk samples and 10 PLM/NOB samples.
- Prepare a Final Asbestos Report identifying hazardous materials, estimated quantities, locations, types and/or conditions.
- Provide a Niton-certified XRF Technician to perform representative in-situ measurements on accessible, representative interior and exterior painted surfaces and immovable objects.
- Prepare a Final XRF Lead Summary Report identifying hazardous materials, estimated quantities, locations, types and/or conditions.
- If hazardous materials are identified, develop abatement specifications and contract documents.

Additionally, certain building materials such as paints, adhesives, roofing materials, tar, etc. are also listed on EPA's webpages and guidance documents as potentially PCB containing building materials. Tighe & Bond will not collect samples of suspect PCB containing materials. Instead, a written inventory of suspect PCB containing materials observed in association with the proposed work areas such as caulking, paints, and adhesives, will be prepared. Using the assumption method for suspect PCB materials is recommend for some select areas. Using the assumption method, the suspect PCB materials would be considered at concentrations greater than or equal to ($\geq$) 50 parts per million and will require removal, management, and disposal in accordance with state and federal regulations when conducting the proposed improvements. The concern with physical sampling of the materials in a limited renovation is that additional materials in other locations of the area would then need to be considered for abatement per EPA regulations if the same materials were found to be present above regulatory limits.

In addition to potentially hazardous building materials, it is our understanding that the wastewater treatment plant site may have historical fill or has the potential for soil contamination from previous industrial uses. The HBMI subconsultant will provide environmental investigation to chemically characterize soil that will be subject to disruption by excavation and excess soil that may not be able to be accommodated on-site as part of the proposed construction project. Analytical soil data will be used along with geotechnical data to evaluate soil suitability on-site or whether soil will require special handling and off-site disposal.

Tighe & Bond's subconsultant will provide field oversight to confirm all asbestos containing material has been removed, as well as review of the Contractor's close out documentation.

Task 4 – Bidding Services

4.1 Bidding Assistance

Upon completion of the design, Tighe & Bond will advertise and bid the project. Throughout the process, we will assist the Village during the bidding process. Work elements during the bidding process will include the following:

- Make bid documents (drawings and Project Manual) available for distribution on-line through Tighe & Bond's website for the electronic distribution of bidding documents.
- Prepare advertisement for a local paper and other Town and State required advertisement locations; Village will advertise and pay cost.
- Respond to questions/comments during the bidding period and issue addenda (assume one addendum) as may be deemed necessary.
- Bid openings (at the Village Office) to be conducted by Village personnel.
- Provide a bid tabulation, review bid packages, check contractor references, and make a

recommendation to the Village as to the “lowest qualified bidder” and as to the award.

- Prepare Notice of Award and Notice to Proceed.
- Review Insurance and Bonds and assemble 5 copies of Contracts.

Engineering effort included under the bidding task is estimated assuming that the project will be bid as a single construction contract.

Task 5 – Construction Services

5.1 Construction Administration

Preconstruction Meeting

Tighe & Bond will prepare an agenda, schedule, and attend a preconstruction meeting to be held at the WWTP. A meeting summary will also be prepared and distributed to all meeting attendees.

Progress Meetings

Tighe & Bond will prepare agendas and attend up to 12 monthly progress meetings to be held at the WWTP. A meeting summary will also be prepared and distributed to all meeting attendees.

Document Management System

Tighe & Bond will utilize Procore, a computer-based document management system to manage, track, and store all relevant documents between the Contractor, Engineer, and the Village, produced during the Bid/Award, Construction and Closeout phases of the project. Copies of all relevant documents will be sent to the Village for its files at the completion of the project.

Shop Drawing Reviews

Tighe & Bond will review the Contractor’s proposed shop drawing and submittal schedule identifying all shop drawings, samples, and submittals required by the Contract along with anticipated dates for submission. We will also log, track, and review the Contractor’s shop drawings, samples, equipment O&M manuals and other submittals. Our proposal assumes the review of up to 100 submittals including resubmittals.

RFI Responses

Tighe & Bond will review up to 12 requests for information from the Contractor and issue responses to the Contractor and the Village. We will also log and track the Contractor’s requests.

Pay Requests

Our proposal includes the review of up to 12 Contractor’s requests for payment to evaluate whether the amount requested reflects the progress of the Contractor’s work and is in accordance with the Contract. Recommendations will be provided to the Village as to the acceptability of the requests. Recommendations for payment will be based upon Tighe & Bond’s knowledge, information, and belief from observations of the work on site and discussions with our on-site observer.

Change Orders

We will review Contractor requested changes to the Contract and make recommendations to the Village regarding the acceptability and reasonableness of the request. Our review will also include the evaluation of the potential impact of the proposed change on the construction schedule and contract completion date. Tighe & Bond will assist the Village with negotiations of the requested change. Upon agreement and approval, we will prepare final change order documents and assist with coordinating the execution of change orders. Our proposal includes an allowance for the preparation of five change orders.

Site Visits by Technical Specialists

As needed, Tighe & Bond will coordinate periodic visits to the sites by individual project team members to review progress and quality of the work. The team members will observe the general quality of the work at the time of the visit and review any specific items of work that are brought to the attention of Tighe & Bond by the Contractor or the Village.

Start Up Services

Tighe & Bond's team members will observe the start-up of the new equipment to determine if the work generally conforms to the Contract.

We will also conduct a field visit once work is nearing completion to determine if the work is substantially complete and will develop a punch list of deficiencies observed during the inspections that require completion or correction. Village staff will be invited to be a part of the punch list walk through. Once the walk through has been completed, we will estimate the cost value of the punch list and will issue them to the Contractor. Once the work is confirmed to be substantially complete, a Certificate of Substantial Completion will be issued to the Contractor.

Project Closeout

Once the work is complete, Tighe & Bond will assist the Village in issuing documents for final completion and acceptance of the work. We will advise the Village on final payment, release of retainage, and release of insurance and bonds.

Record Drawings

Tighe & Bond will revise the original design drawings to reflect available record information provided by the Contractor and equipment suppliers. Three reproducible sets of 22-inch by 34-inch drawings and one electronic copy in PDF format will be delivered to the Village.

5.2 Construction Observation

Tighe & Bond will provide a Resident Project Representative (RPR) to conduct on-site observations of the Contractor's work for the purposes of determining if the work generally conforms to the contract for construction and that the integrity of the design concept as reflected in the contract for construction has been implemented and preserved by the Contractor.

For the purpose of estimating the preliminary budget, it has been assumed that 8 months of full-time observation and 4 months of part-time observation will be required. Therefore, this proposal includes a total of 2,020 hours will be provided for this purpose.

Task 6 – Grant Services

6.1 Grant Management Assistance & Project Reporting

Under this subtask Tighe & Bond will coordinate and provide necessary reporting to the NYSEFC/NYSDEC for continued project funding. While the Village and chosen contractor each have documentation to prepare, Tighe & Bond will assist with the administration of this process.

Tighe & Bond is not responsible for the Contractors preparation of an acceptable WMBE utilization plan, nor Contractor's WMBE Waiver Request documentation. However, the requirements for this will be clearly included in the Contract Documents and emphasized during the bidding process.

EXCLUSIONS

The following services are not included in this proposal:

- Payment for any police details for data collection or design activities. If required, police details will be scheduled and billed directly to the Village of Millbrook.
- Recording of any permits at the Registry of Deeds
- Permit applications beyond the anticipated permits listed
- Permit application fees
- Easements or land acquisitions assistance
- Pavement coring

PROPOSED SCHEDULE

At this preliminary stage, we anticipate the following schedule for this project, assuming authorization to proceed for Task 1 is received April 24, 2024, and additional Tasks authorization are received by May 31, 2024:

Preliminary Engineering

Kickoff Meeting	05/10/2024
Preliminary Engineering Design Report Update	07/12/2024
WQIP Grant Application via CFA Submission	08/16/2024 (Est.)

Design Phase

Preliminary Design Report	09/20/2024
Equipment Pre-Selection	12/20/2024
100% Design Review Meeting	07/25/2025
NYSDEC Approval	11/29/2025
Final Design Ready for Bidding	12/19/2025

Bidding Phase

General Bid Opening	01/16/2026
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Construction Phase

Notice to Proceed with Construction	03/01/2026
Substantial Completion	03/01/2027
Final Completion	05/01/2027

VILLAGE'S RESPONSIBILITIES

The responsibilities of Village relative to this project will be as follows:

- Furnish information available in Village files to Tighe & Bond in a timely manner so as not to delay completion of the work.
- Provide drawings, WWTP operating data, operation and maintenance manuals, record drawings, shop drawings, storm water permits/plans, and other plant information as required to the extent such information is available for all previously constructed portions of the WWTP. Provide access to all existing facilities at the plant site.

ENGINEERING BUDGET

Tighe & Bond will perform the scope of work noted above in Task 1 for a not to exceed fee of \$24,500. We will undertake this work on an hourly plus expense basis, and you will be billed in accordance with the company's standard billing rates. In the event that the scope of work is increased for any reason, the limiting fee to complete the work shall be mutually revised by written amendment. The included schedule and fees are based on the above scope of work and assumptions. In the event that the scope of work is increased for any reason, the limiting fee to complete the work shall be mutually revised by written amendment. Our attached Terms and Conditions is part of this letter agreement. Additionally, we understand this project is funding by the NYSEFC Water Infrastructure Improvements Act Grant and the Clean Water State Revolving Fund. The mandatory NYSEFC Terms & Conditions are also part of this letter agreement. The schedule includes reasonable allowances for review and approval times by applicable parties. This schedule may need to be adjusted as the project progresses, allowing for changes in scope, character or size of the project requested by you, or for delays or other causes beyond our reasonable control.

As provided in this proposal, upon formal selection of Tighe & Bond for this project, we will provide a fee proposal for Tasks 2 – 6 in accordance with the scope presented above.

Thank you for the opportunity to submit our proposal for your WWTP upgrade project. If you require additional information or would like to discuss our proposal further in relation to your needs, please contact me at 845-516-5835 or EKMoore@tighebond.com

Very truly yours,

T&B Engineering and Landscape Architecture, PC



Erin K. Moore, PE, BCEE
Project Director
ekmoore@tighebond.com



Peter Valinski, PE
Director
pmvalinski@tighebond.com

ACCEPTANCE:

On behalf of **Village of Millbrook** the scope, fee, and the attached terms and conditions are hereby accepted.

Authorized Representative

Date

Enclosure: Terms and Conditions – REV 04/2020

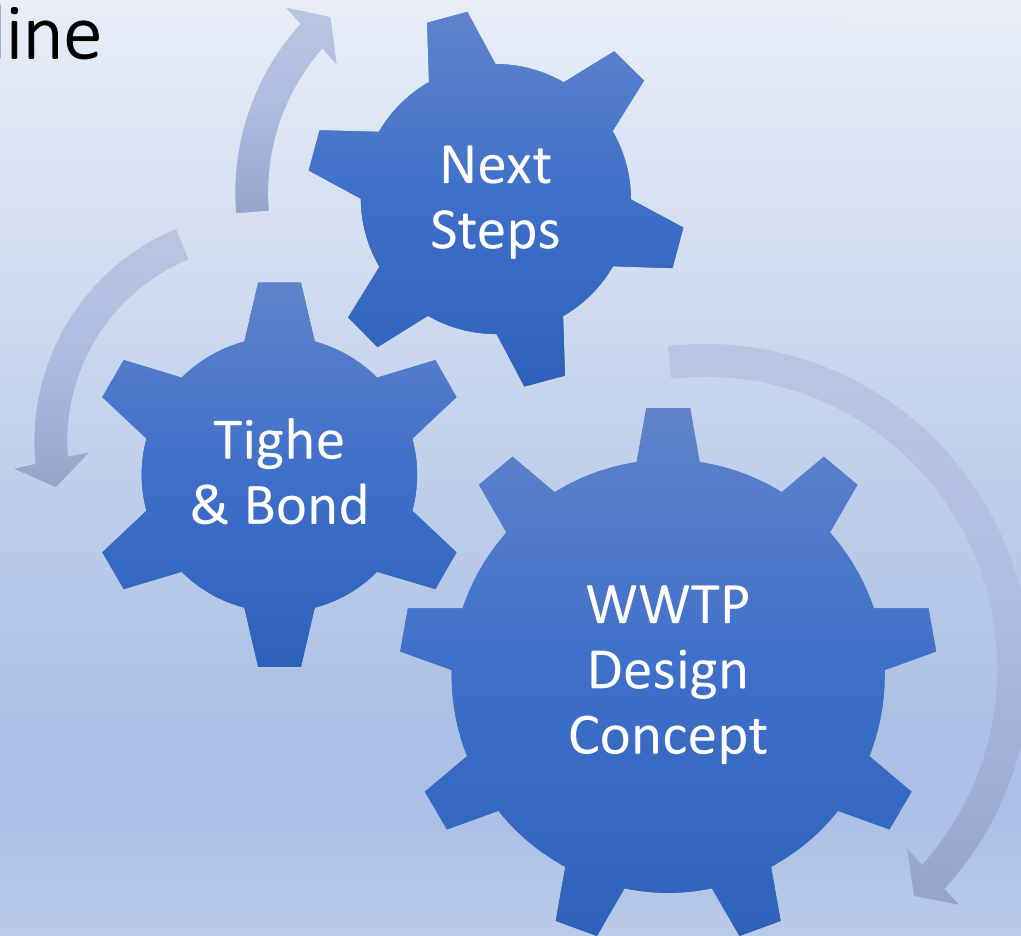
Attachments: Mandatory State Revolving Fund Terms and Conditions
Copy: Daemian Foster, Tighe & Bond

Engineering Services for Wastewater Treatment Plant Upgrades

April 24, 2024



Presentation Outline



Tighe & Bond Project Team

PROJECT MANAGEMENT



Erin Moore PE, BCEE
Vice President
24 years of experience



Emmanuel Prashanth, PE
Project Manager
18 years of experience

PROCESS DESIGN



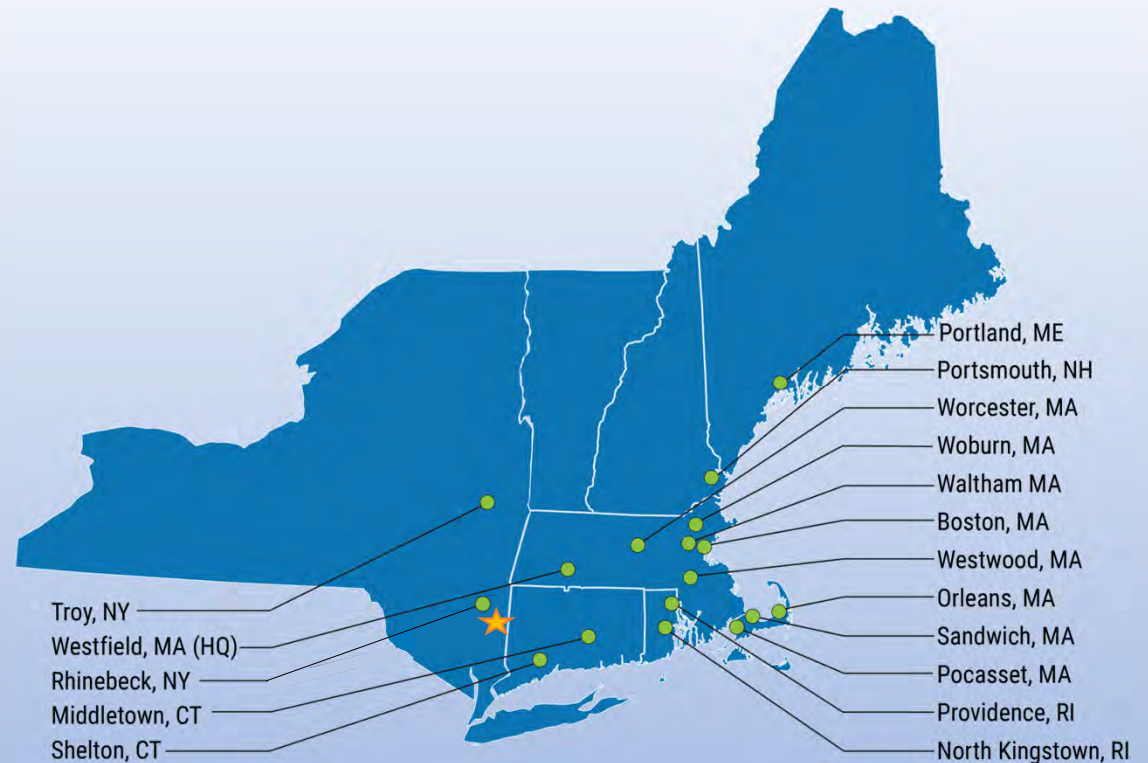
Daemian Foster, PE
Technical Lead
31 years of experience



David Seche
Staff Engineer
8 years of experience

About Tighe & Bond

- **1911** Year Established
- **550+** Professionals
- **16 Offices**
in the Northeast



Tighe & Bond has a deep, discipline-diverse, bench for **one-stop shopping** for civil and environmental engineering, and we are always at the forefront of **new technologies** and **regulatory changes**.

Tighe & Bond Full Service Capabilities



Civil Engineering

- Dams & Levees
- Geotechnical Engineering
- Infrastructure
- Land Use Planning
- Low Impact Design
- Parking & Circulation
- Site Planning & Design
- Transportation



Environmental Consulting

- Brownfields
- Demolition & Asbestos/Hazardous Materials
- Environmental Permitting & Planning
- Fuel Storage
- Health & Safety
- Regulatory Compliance
- Site Assessment & Remediation
- Wetlands and Ecological Services



Environmental Engineering

- Drinking Water
- Solid Waste
- Stormwater
- Wastewater



Building Services

- Geotechnical Engineering
- Electrical & Mechanical Engineering
- LEED Green Design
- Owner's Project Manager
- Structural Engineering



Technology

- 3D Modeling
- GIS

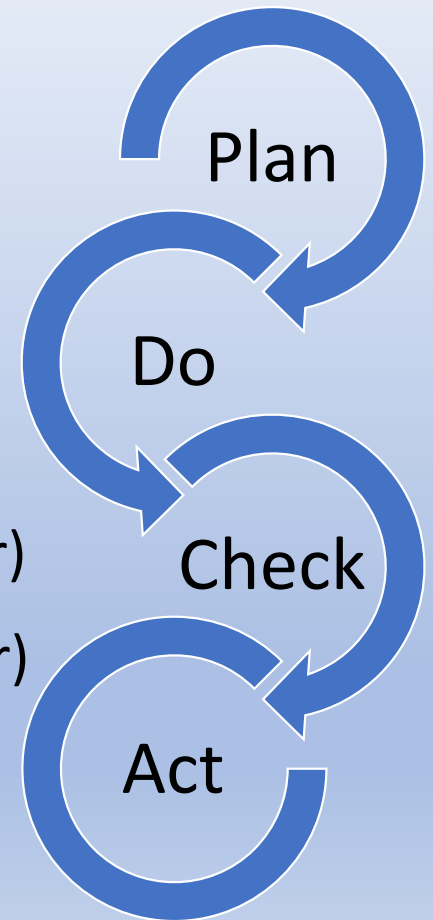
Sustainability

- Energy & Resource Conservation
- LEED Green Design
- Low Impact Design
- Renewable Energy

Tighe & Bond Project Benefits

- **Quality Control/Quality Assurance**

- Project Management Plan
- Design Check Lists and Guidelines
- Independent Technical Review (QC – Technical Advisor)
- Milestone & Deliverable Review (QA – Project Director)
- QAQC Documentation



Tighe & Bond Qualifications



Kingston, NY - \$10.2M
WWTP Upgrade



Hyde Park, NY - \$3.5M
WWTP Upgrade



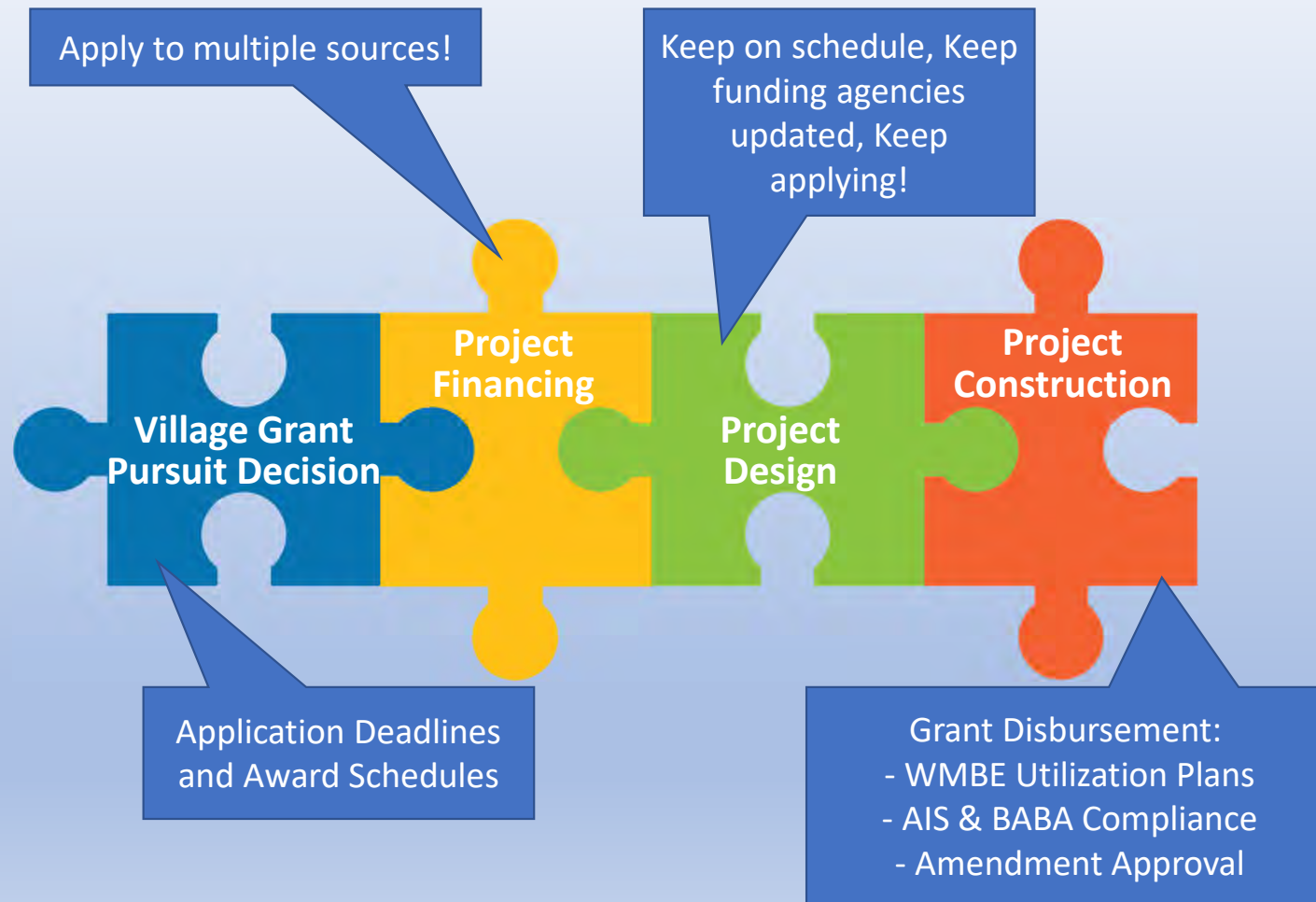
Poughkeepsie, NY -
\$4.0M WTP Upgrade



Beacon, NY - \$5.9M
WWTP Upgrade



Tighe & Bond Qualifications Grant Funding



WWTP Design Goal

- Eliminate untreated overflow from the WWTP (Cease use of the ORF Tank)
- Treat sewer flows entering the WWTP, eliminating backups and overflow
- Replace WWTP equipment at the end of its useful life with new cost effective equipment
- Meet the facility's permit requirements under current and future flow conditions
- Provide flexibility, resiliency, and ease of maintenance



Proposed WWTP Upgrades

- Replace Existing Screenings and Grit Removal Equipment
- Replace Influent Pump Station and Influent Flow Equipment
- Incorporate New Sequencing Batch Reactors (SBR) Process
- Repurpose the Existing Aeration Tanks, Diffusers, & Blowers for Use in as Equalization and Aerobic Sludge Digestion



Proposed WWTP Components

Liquid Stream

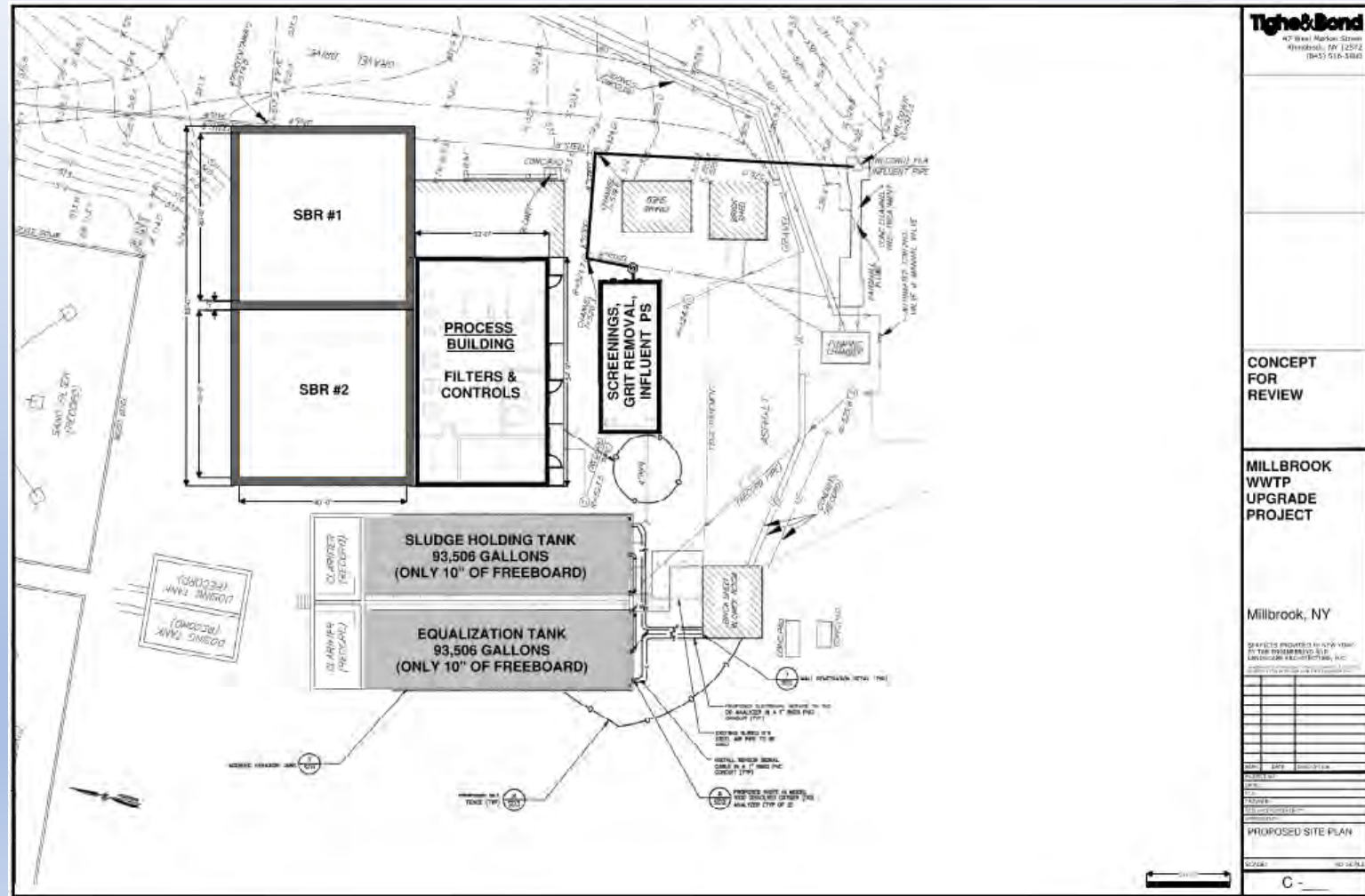
- Influent Screening
- In-Line Aerated Grit Chamber with Collector
- Influent Pump Station
- Influent Flow Meter
- Sequencing Batch Reactor (SBR) Treatment
- Effluent Equalization
- Cloth Disc Filtrations
- Hypochlorite Disinfection
- Dechlorination
- Effluent Reaeration

Solids

- Screenings Removal to Dumpster
- Grit Removal to Dumpster
- Aerobic Digester (Waste Sludge from SBR)
- Digested Sludge Hauled of As Liquid



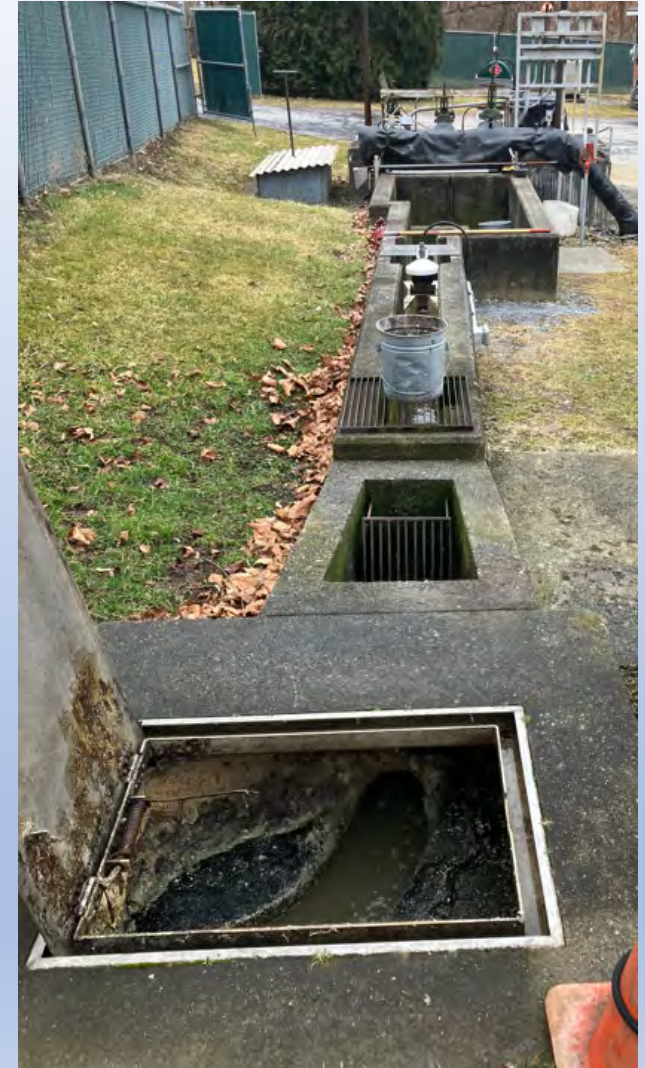
PROPOSED SITE PLAN FOR UPGRADES



PRETREATMENT/HEADWORKS

Headworks Design Goal:

- Replace the existing headworks, flow equipment, and influent pump station, with cost effective equipment
- Pretreat the flows entering the facility without backup and overflow
- Protect the downstream treatment processes to allow them to operate properly to meet the facility's permit requirements
- Provide flexibility, resiliency, and ease of maintenance



PRETREATMENT/HEADWORKS

- **Screening Considerations**

- Systems Considered
 - Drum Type
 - Rake Type
 - Dual Auger Type
- Selection Driver
 - Small System Footprint
 - Ease of Maintenance
 - Inside or Outside
 - Screenings Passage ($\frac{1}{4}$ " to $\frac{1}{2}$ ")
 - Cost



DRUM TYPE



DUAL AUGER TYPE



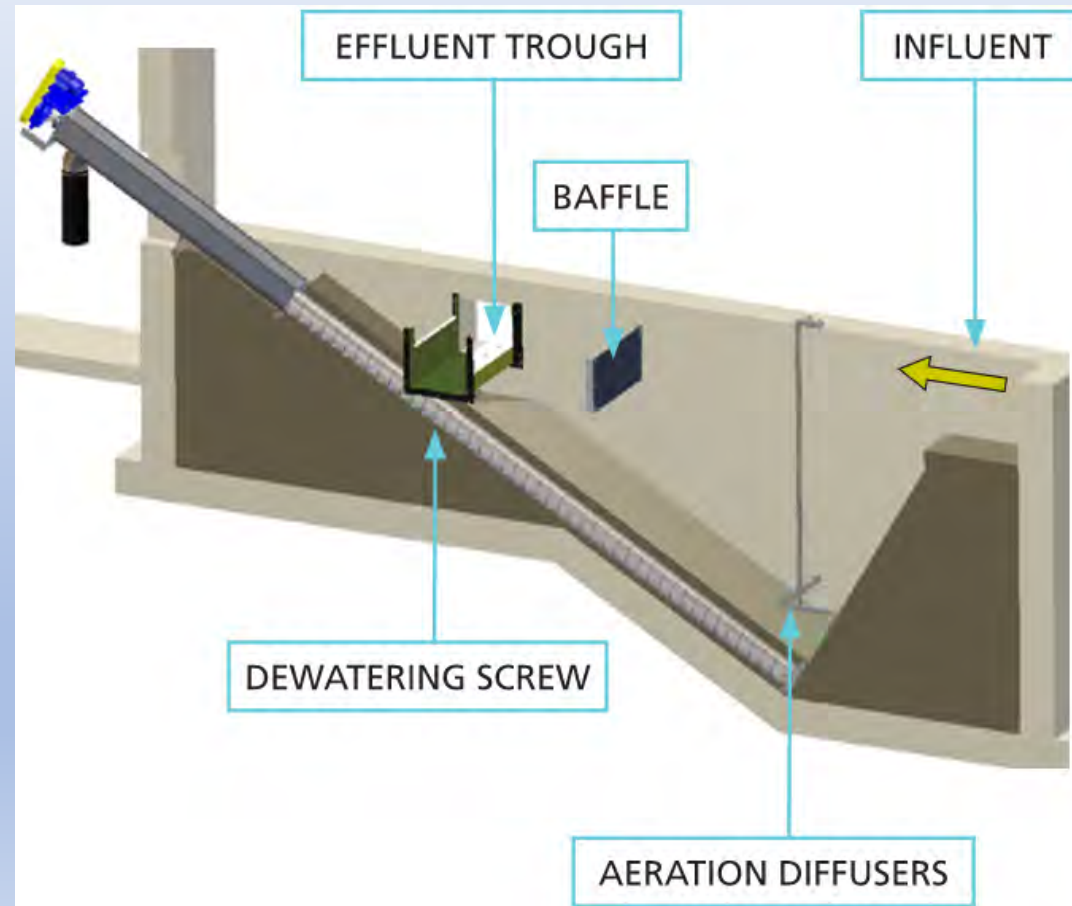
PRETREATMENT/HEADWORKS

• Grit Removal Considerations

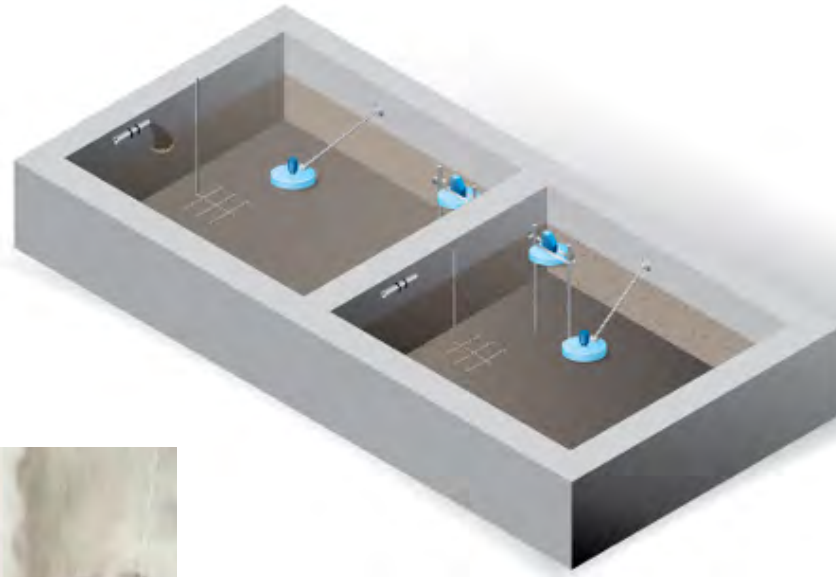
- Systems Considered
 - Aerated Grit
 - Vortex Grit
 - Stacked Tray
- Selection Driver
 - Small System Footprint
 - Inside or Outside
 - Cost



AERATED GRIT WITH IN-LINE COLLECTOR



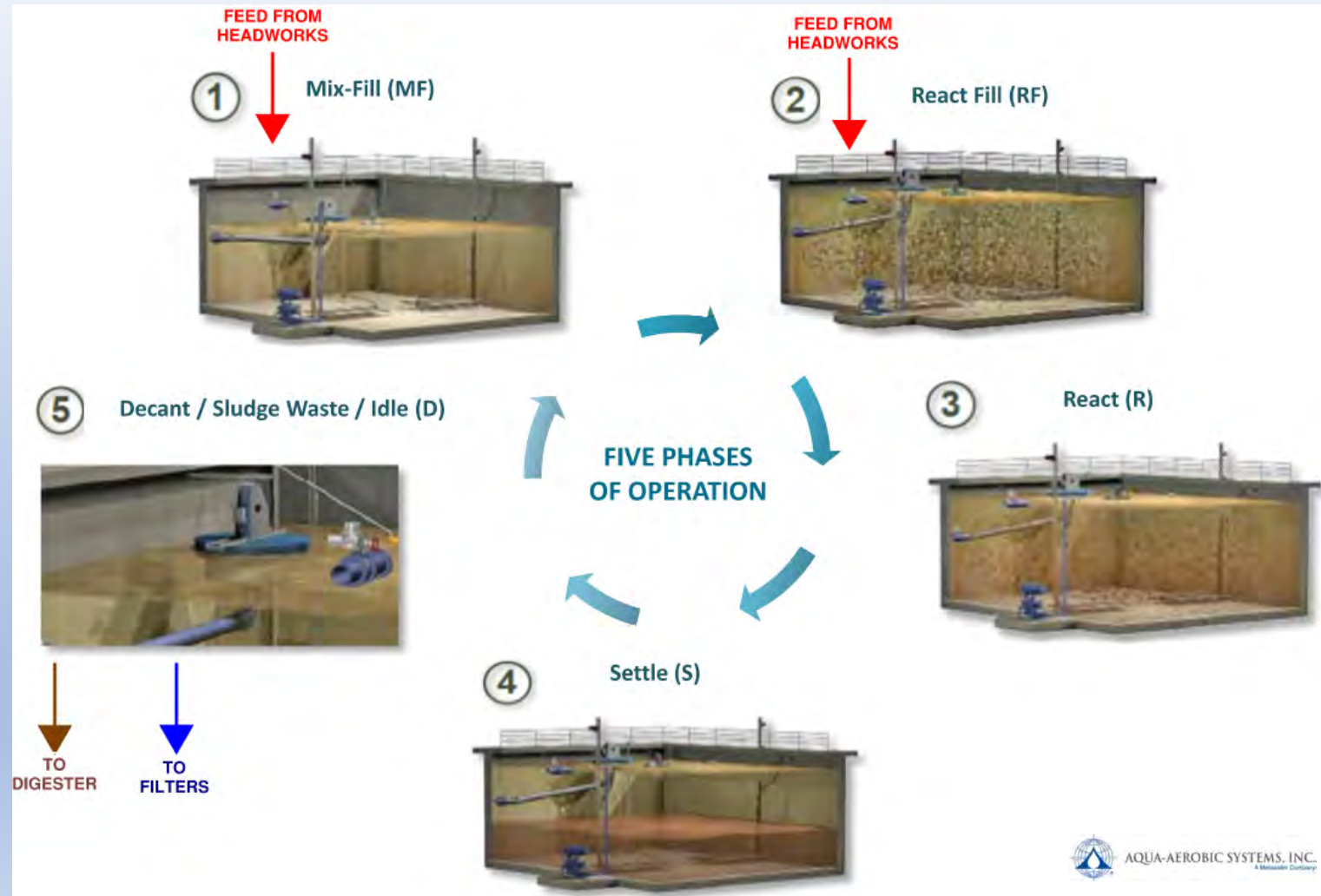
SEQUENCING BATCH REACTOR



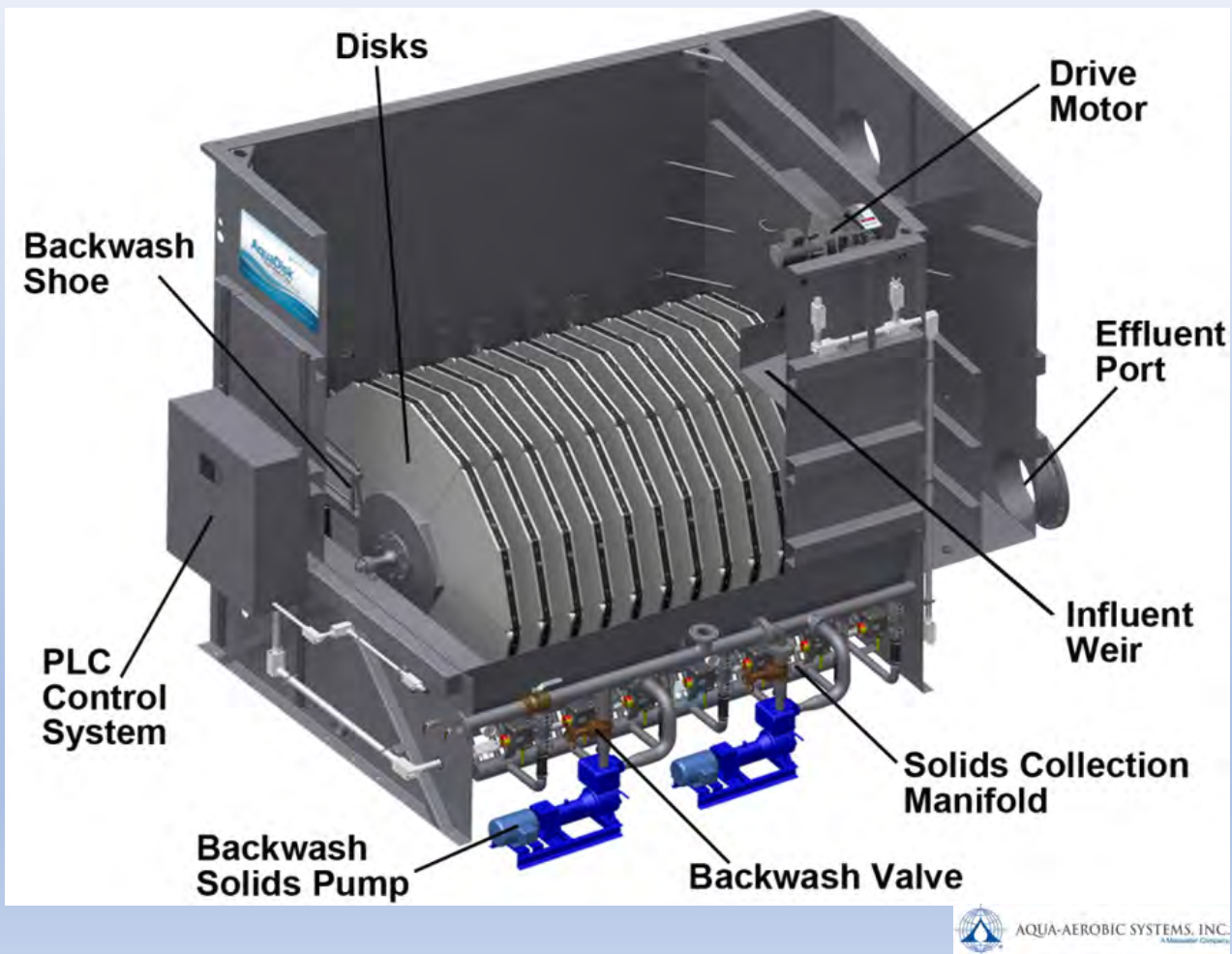
SEQUENCING BATCH REACTOR

Batches

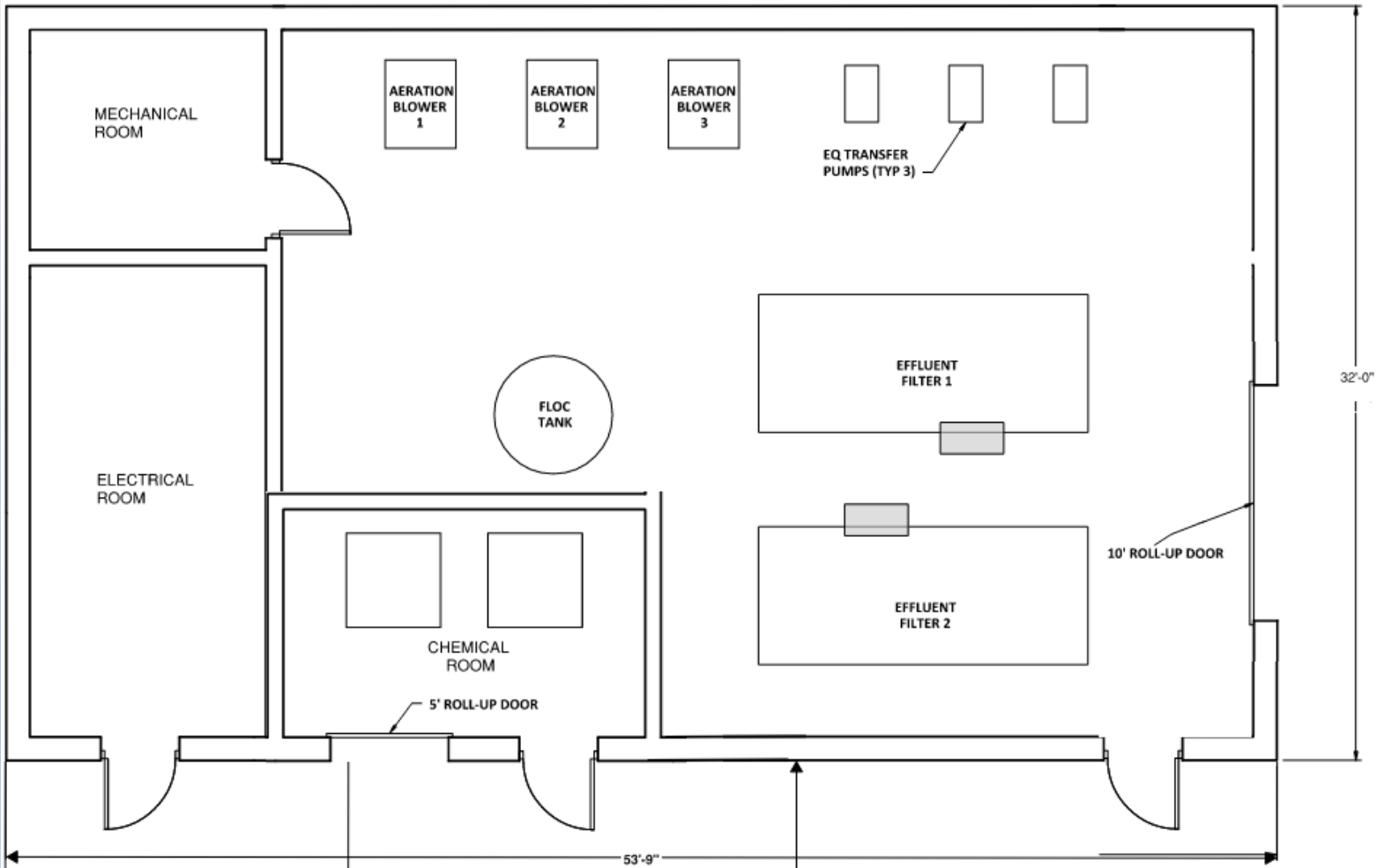
- Mix/Fill,
- React/Fill
- React
- Settle
- Decant/Waste/
Hold (Idle)



CLOTH DISC FILTER IN STEEL TANKS



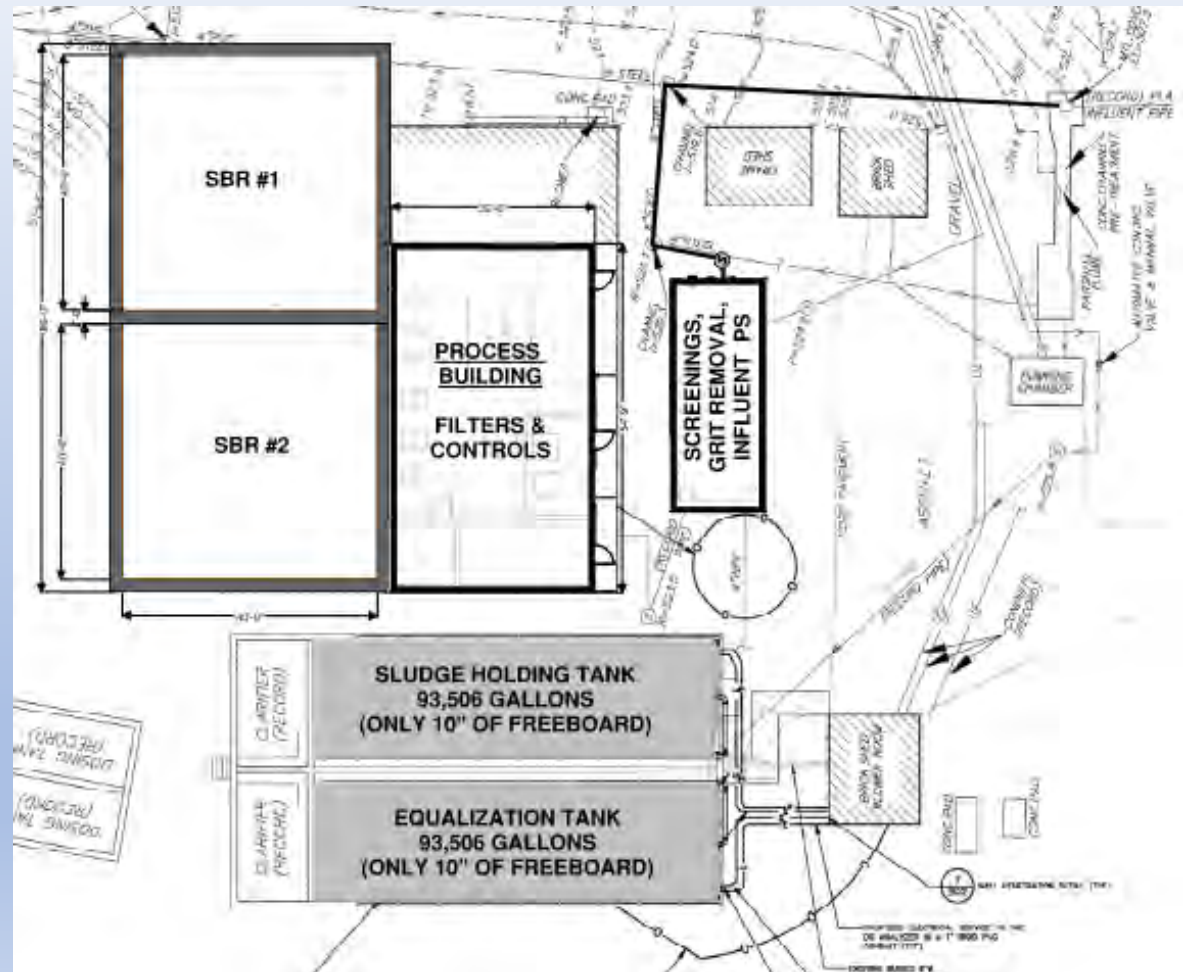
PROPOSED BUILDING FLOOR PLAN



PROPOSED UPGRADE POTENTIAL DESIGN IMPACTS

Potential Impacts to Proposed Design

- Screening Equipment
- Site Geotechnical/Boring Evaluation
- Ground Water Levels
- Reduction of the Peak Flow from (1.0 MGD to ~ 0.88 MGD)
- Potential to utilize clarifiers for additional tankage.



ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST						Tighe&Bond	
Project:		Millbrook WWTP Upgrade Project					
Location:		Millbrook, NY					
Component:		New SBR Based Treatment Plant with Headworks					
Estimate Type:		☒ Conceptual ☐ Preliminary Design ☐ Design Development		☐ Construction ☐ Change Order ☐ % Complete		Designed By: DRF Date: 3/15/2024 Project #: M-50370-P*BD	

Spec. Section	Item No.	Description	Qty	Units	Material/Installed Cost		Installation (If Not Included in Material/Installed Cost)		Total
					\$/Unit	Total	\$/Unit	Total	
SUBTOTAL - DIVISION 1 - GENERAL CONDITIONS						\$500,620		\$0	\$500,600
SUBTOTAL - DIVISION 2 - SITE WORK						\$557,739		\$0	\$557,700
SUBTOTAL - DIVISION 3 - CONCRETE						\$1,824,841		\$51,750	\$1,876,600
SUBTOTAL - DIVISION 5 - METALS						\$218,600		\$54,650	\$273,300
SUBTOTAL - DIVISION 8 - DOORS & WINDOWS						\$23,500		\$9,400	\$32,900
SUBTOTAL - DIVISION 9 - FINISHES						\$20,544		\$8,218	\$28,800
SUBTOTAL - DIVISION 11 - EQUIPMENT						\$1,676,300		\$670,520	\$2,346,800
SUBTOTAL - DIVISION 13 - SPECIAL CONSTRUCTION						\$67,320		\$26,928	\$94,200
SUBTOTAL - DIVISION 15 - MECHANICAL						\$141,026		\$12,177	\$153,200
SUBTOTAL - DIVISION 16 - ELECTRICAL						\$816,720		\$0	\$816,700
CONSTRUCTION SUB-TOTAL									\$6,680,800
CONTRACTOR O&P (8% included above in Div 0, so reduced by 8% here)			7%						\$467,700
TOTAL CONSTRUCTION COST									\$7,148,500
Engineering Design:									\$572,000
Engineering CA - Part-Time CO:									\$612,000
Legal, Bonding, Admin:									\$50,000
Total Project Cost:									\$8,382,500
Project Contingency:			15.0%						\$1,257,400
							TOTAL:		\$9,639,900

Budget evaluation costs are based on:

- Recent construction and materials costs
- Budget quotes from manufacturers

Note: Costs are based on a review of specific equipment as well as March 2024 cost numbers and do not take into account inflation or other potential changes in cost due to time.

Next Steps



NEW YORK
STATE OF
OPPORTUNITY.

**Environmental
Facilities Corporation**

- Update Preliminary Engineering Report
 - Required For Water Quality Improvement Program (WQIP) Grant Application
 - Facilitates early buy-in from NYSDEC
 - Provided to NYS EFC for Water Infrastructure Improvement Act Grant Update
- Apply for WQIP Grant through Consolidated Funding Application
 - Typically open in May, and due in August
 - Similar to WIIA – will need Village Board Resolutions
 - Executed Engineering Contract – scores additional points
- Execute Full Design Contract
 - Will include WMBE Compliance Utilization Plan (20%)

VILLAGE OF MILLBROOK

Additional
Discussion/
Questions

Tighe&Bond

