Qualifications For

Parker Mills Dam Consulting Services

Submitted to

Town of Wareham, Massachusetts

August 19, 2021

FUSS & O'NEILL

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Derek Sullivan, Town Administrator
Town Hall
54 Marion Rd
Wareham, MA 02571

RE: Qualifications for Parker Mills Dam Consulting Services

Dear Mr. Sullivan:

The Parker Mills Pond Dam is located in an important historic district that outlines the history of Wareham, and that hosts urban and natural elements common in an idyllic New England community. The dam, with its high hazard classification, poses a risk to downtown businesses and the community, as well as the adjacent historic structures. This project is an opportunity for the Town to not only address dam safety, but to create an amenity that provides long-term economic, ecological, and recreation opportunities to the community.

Because of these issues, we propose **a fresh start to identify a design approach that would best balance project needs** (e.g., efficiency at passing fish, budget, preserve and enhance historic structures, provide recreational access to the public, and improve climate resilience). In order to provide the engineering and scientific information needed to select the best design approach, we have assembled a multi-disciplined team of experts. **We will provide a diversity of experience that is essential when evaluating complex design approaches that require a holistic assessment of a range of project elements.**

Elsa Loehmann, PE (Associate) will be your Project Manager and Dean Audet, PE (Senior Vice President) will be the Principal-in-Charge. Each will represent the firm when working with the Town. Project staff members are listed and detailed in Section 3. Dean Audet is an owner and principal of Fuss & O'Neill and is duly authorized as a representative of the corporation to sign and execute contracts.

We know this project is important to you – it is important to us and we look forward to this opportunity to serve the Town of Wareham. We acknowledge receipt of Addendum 1. This proposal shall remain valid for 90 days. If you have any questions please call either of the undersigned at 617-282-4675 ext. 5339 and ext. 4560 respectively.

Sincerely,

Elsa Loehmann, PE
Project Manager

Dean E. Audet, PE
Principal-in-Charge

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SECTION 1

Project Approach and Level of Effort

Lower Pawcatuck River Dam Removals - Westerly and Charlestown, RI

Section 1: Project Approach and Level of Effort

Project Understanding

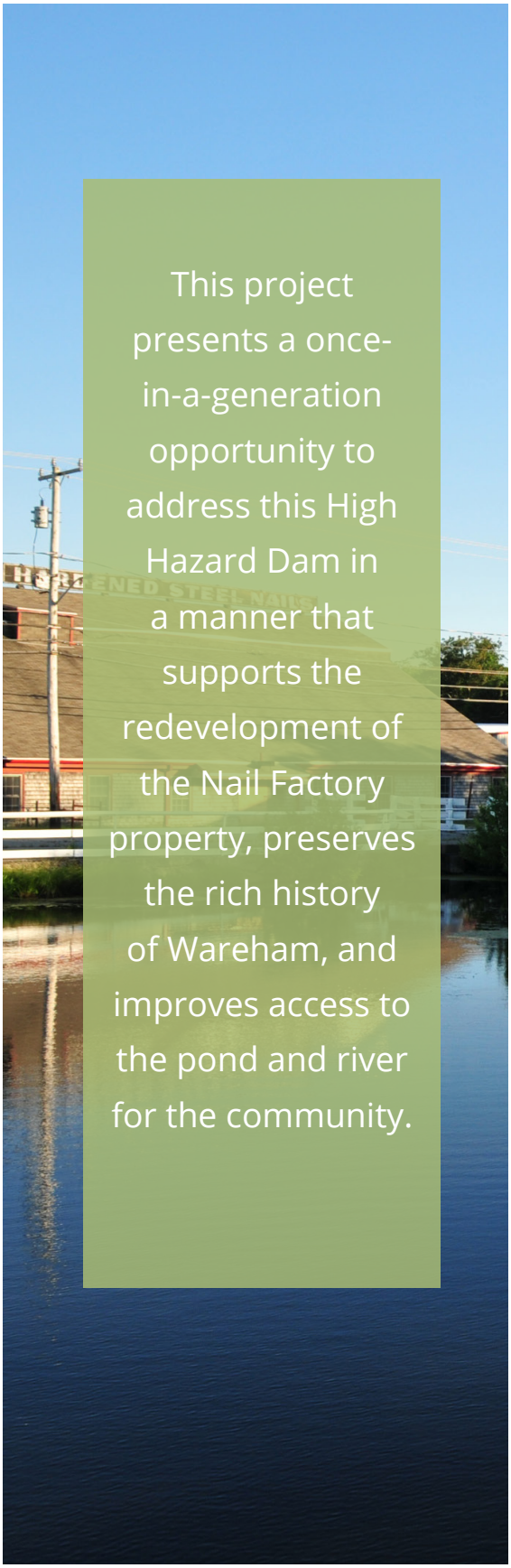
Fuss & O'Neill is excited to be a part of this pivotal project. Removal of the Parker Mills Dam can provide many benefits, including:

- Support economic development at the Tremont Nail Factory site;
- Provide recreational access to the public;
- Improve fish passage and water quality; and
- Support resilience to future climate change and flood events.

The Parker Mills Pond Dam was originally constructed in the mid-1800s to support adjacent mill operations including the Tremont Nail Factory that are no longer in operation. Today, this dam is classified as a High Hazard Dam because of its risk to downstream properties and infrastructure and has also been found to be in Poor condition that amplifies that risk. Other deficiencies have also reduced its value to the community including impacting fish passage as well as negatively impacting adjacent structures.

This project is an opportunity for the town to not only address a dam safety problem, but to create an amenity that provides long-term economic, ecological and recreational improvements to the community. Some of these opportunities include:

- Supporting the redevelopment of the Tremont Nail Factory site. The Parker Mills Pond Dam is a critical piece of infrastructure on this site. Any future work needs to be developed in a way that preserves or enhances critical structures, infrastructure, and incorporates features that add value to the area.
- Providing recreational access to the public. This could range from active uses such as providing kayak access to passive uses such as places for people to picnic or observe fish passage. Recreational features will both provide direct value to people in the community as well as attract visitors to future redevelopment.
- Improve fish passage through the site as well as the overall ecological conditions



- Improve resilience to future climate change and flooding events. This will be a growing challenge and now is an opportunity to begin building resilience into the program.

A successful project begins with well-defined goals. We will work with you to refine and develop your vision.

The Town of Wareham has received a grant from the EEA to develop a Permit-Level Study to determine the impacts and benefits associated with removal of the Parker Mills Pond Dam. The goal of this project is to take a holistic approach that builds a plan that addresses the range of issues that this dam could influence.

Project Approach

This project is a once-in-a-generation opportunity to both reduce the risks currently posed by the dam as well as build value for the community and maximize its investment in this project. Building value in this project includes restoring the natural functions of the river (e.g. fish passage), improving flood resilience, as well as creating an opportunity to support the redevelopment of the Tremont Nail Factory.

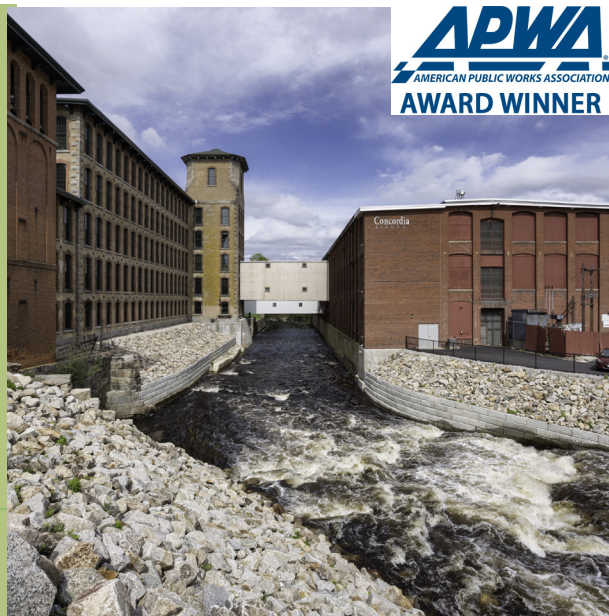
The first step we take in any project is to engage the Advisory Group. We will work closely with the advisory group at the initial stages of the project to develop and define project goals, and to balance many benefits. We will host project initiation and scoping meetings with the Advisory Group.

The following paragraphs summarize several key elements of our approach to develop alternative to maximize this opportunity for the Town of Wareham.

The Alternatives Analysis

There are several design approaches available that can accomplish the Town's objectives; each has different advantages and disadvantages. To form a solid foundation for the project, we recommend an alternatives analysis. The purpose of the alternatives analysis is to allow selection of a design that balances the costs and benefits of different design approaches. We suggest an

We have experience working with historic infrastructure in riverine environments. Shown here is the Pawtuxet River restoration during construction (left) and restored (right). The design prioritized protection for the adjacent mill buildings.



alternatives analysis to determine the solution that best meets project partner goals. Once this alternative is selected, we can work with project partners to enhance the value of their investment.

Project Webpage
A project webpage is an effective way to both gather and distribute information.

Build Support with Public Engagement

Given that this project could potentially impact everything from the upstream pond to the redevelopment of the Factory site, public engagement will be crucial. The role of public engagement is to:

- Build broad support for the project in the community;
- Educate the public regarding project benefits; and
- Identify items of concern by the community.

Our approach is to engage stakeholders early in the process. In addition to working with the Advisory Group, we will conduct outreach to the greater community. We commonly work with municipalities to engage with local residents to better understand their issues and challenges. This feedback is critical to building a project that the community not just supports but is excited about. We routinely use tools such as a project web page to help provide information and gather feedback outside of the public meeting process. Given the complex issues that could impact the public that are associated with this project, a comprehensive public engagement program will be critical for eventual project success.

We will support the Town and project partners in developing and implementing public engagement materials, including development of project specific webpage that can be used to both gather and disseminate information; development of project flyers that can be distributed to community residents; hosting public presentations and design charrettes to gather public feedback and input; and contribute to social media updates.

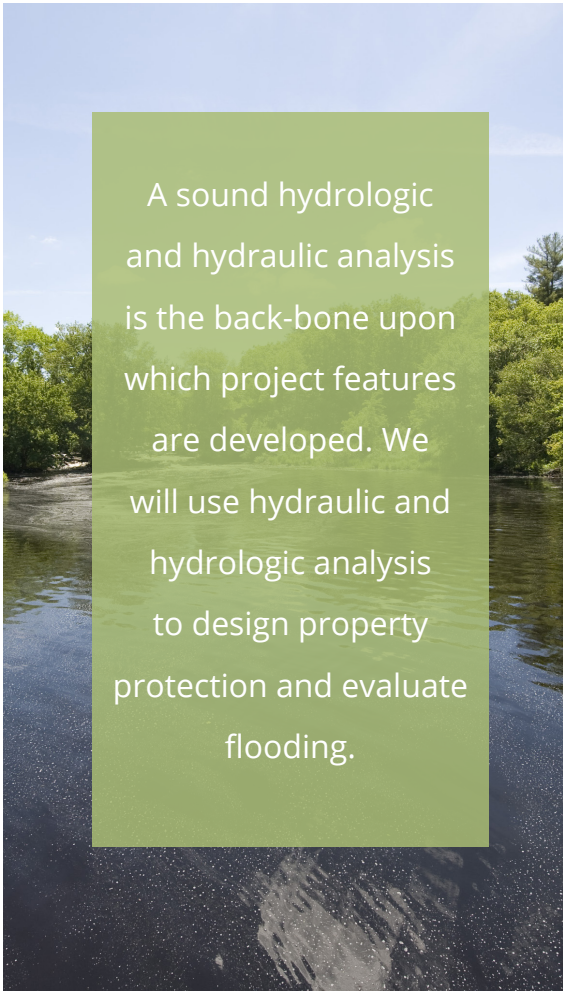
Maximize Redevelopment Opportunities

Removal of the Parker Mills Dam provides an opportunity for economic revitalization in the surrounding historic district. Working with the Advisory Group, we will develop a design approach for this dam that maximizes the goals of the Advisory Group and maximizes redevelopment opportunities.

As part of the alternatives analysis, we will evaluate the best vehicular access to support the proposed development at and around the Tremont Nail Factory. Based on what we know to date, it appears that maintenance of Elm Street as a commercial access point will relieve congestion on Route 28, and will provide multiple ingress and egress points to the proposed mixed-use development. Our multidisciplinary team includes structural and transportation engineers that will develop Elm Street and Bridge.

We propose to use hydraulic analysis to protect structures and properties. We propose to improve the structure and condition of adjacent infrastructure in the following ways:

- The existing dam embankment that supports Elm Street is in poor condition. Specifically, flow enters the Tremont Nail Factory building through a former mill intake on the upstream embankment face, causing puddling within the building and sinkholes on the surface of the road. We will develop a plan to abandon the intake and associated penstock, and to fortify both the embankment and the mill building.
- Numerous stream crossings have been identified upstream of the Parker Mills Dam. The most notable of these is the Route 28 crossing immediately upstream of Elm Street. The bridge's shallow spread footings may be vulnerable to scour following dam removal. We will design scour protection for the bridge, based on our hydraulic analysis.
- Other upstream stream crossings may be impacted by dam removal, including at Route 25, Tihonet Road, and Charge Pond Road. We will evaluate the need for protection at these crossings.
- We will identify other vulnerable infrastructure, such as stone walls or stormwater outfalls, through field investigation and data gathering.



A sound hydrologic and hydraulic analysis is the back-bone upon which project features are developed. We will use hydraulic and hydrologic analysis to design property protection and evaluate flooding.

Protection of property and infrastructure is of utmost importance. In addition to hydraulic and aquatic habitat engineers, Fuss & O'Neill's skilled team includes structural, transportation, and dam stability engineers to provide the highest level of safety and ease of access.

Maximize Recreational Opportunities

Attracting people to the water can be a valuable element of economic development. The local community enjoys access to and boating on the existing Parker Mills Pond. Through our stakeholder and public engagement process, we will develop an understanding of the long-term recreational goals of the Advisory Group and local community and incorporate elements of this into the design. This may take the form of picnic areas, or access for fishing and kayaking.

Restore Ecology

Our restoration design will focus on fish passage, improvement to aquatic habitat, and re-establishing riverine function. Water quality and aquatic habitat can be improved by including riparian buffer, installing swales at stormwater outfalls, and including habitat features.

The Parker Mills Pond extends almost a mile upstream, to a point upstream of Route 25. Modification to the Parker Mills Dam will therefore impact both the pond as well as the river system up to this point.

Climate change is expected to drive increased precipitation and thereby increased flow in the river. As part of our analysis, we will use guidance from the Resilient MA Action Team RMAT; and utilize flow multiplication factors to account for increased riverine flow.

Our expert team has experience working in similar hydrologic regimes, in which the watershed has a high degree of storage and infiltration. In these settings, it's important to consider low-flow design for habitat and fish passage, as the stream system has little stream power to carve out a different channel on its own. Our team's background in fluvial geomorphology and experience with natural channel design techniques will come in to play, as we are able to target the morphologically appropriate channel geometry and design for long-term stable channel conditions.

The Fuss & O'Neill team will work with the project partners to enhance and protect fish migration and upstream aquatic habitat.

Removal of the Parker Mills Pond Dam has the potential to restore a natural sediment transport regime within the river system. Natural sediment migration is impacted and often blocked by dams, with coarser sediment dropping out at the upstream end of the impoundment and fine sediment collecting closer to the dam. This sediment would normally be transported downstream, where it would deposit in estuaries and embayments, mitigating downstream erosion and replenishing the native biodiversity. Following modification to the dam, this natural sediment regime could be restored.

By testing sediments early, we can design for the highest level of safety and function. If contamination is present, we will evaluate disposal options and design for safe management.

Manage Sediments

To evaluate the risk associated with the sediment behind the dam, we propose sediment sampling and analysis. Not all sediments impounded behind dams are contaminated, but when they are, disposal can be costly, and careful management is necessary.

We propose to complete chemical characterization of the sediment during the earliest stages of the project. This will inform the sediment management approach, which will shape our project approach and the proposed channel alternatives. The sampling scheme will consist of collection of samples from representative areas throughout the project reach. Samples will be collected upstream and downstream of the impoundment for comparison to impounded sediments. Sediment depth and distribution within the impoundment will be assessed by sediment probing within the impoundment.

Sediment management options may include:

- stabilization in place;
- mechanical redistribution of sediment within the impoundment;
- passive sediment migration; or
- a combination of several approaches.

As part of our channel design process, we will evaluate the volume of sediment that is predicted to be displaced as a result of stable channel formation. This information, along with the results of the physical and chemical analysis, will inform potential sediment management options. Sediment management alternatives will be presented in the alternatives analysis, and coordinated with state regulatory agencies early in the process.

Consider A Nature-Like Approach

The value of a nature-like approach is the ability to successfully address competing project goals. A nature-like approach solution to dam removal could achieve many benefits, including:

- protection of adjacent properties;
- maintenance of recreational activities;

- support of recreational activities and upstream wetlands; and
- improved waterfront access.

These benefits can attract the community and support economic development in the area.

A nature-like approach may consist of partial vertical removal of the spillway and fishway, with installation of an in-stream feature such as a roughened ramp or riffle. The ramp would appear as a natural channel feature with riffling surface flow, and varied pool conditions to support fisheries migration. Additionally, the ramp could provide additional support to the adjacent Tremont Nail Factory building and associated walls. An installation of this type could improve local ecology, through support of upstream wetlands to a much greater extent than would be achievable through full vertical removal, while also supporting upstream water levels that allow for kayaking and recreational access.

WINNER
ACEC
American Council of Engineering Companies of Rhode Island
2019 Gold Anchor
Engineering Excellence Award

A nature-like fishway can:

Provide structural protection for infrastructure.

Anchor upstream pools and wetlands.

Support successful fish passage with varied pools conditions.

Maintain kayaking and recreational access.

Project Photo: Bradford Dam Removal and Rock Ramp Fishway, Westerly and Hopkinton, RI

Level of Effort

Using the above approach, we can complete the work described above within the project budget of $175,000. As presented, this approach includes data collection, hydrologic and hydraulic analysis, sediment sampling and management approach, a cultural resources assessment, and report of findings. During the scoping phase, we will work with the Advisory Group to determine the extent of resources that can be put toward permitting efforts.

SECTION 2

Experience and References

Briggsville Dam Removal & Hoosic River Restoration - Clarksburg, MA

Partnering with our clients to bring their communities to life.

Section 2: Experience and References

Fuss & O'Neill is a full-service planning, scientific, and engineering firm whose expertise includes developing innovative engineering solutions for ecological restoration and fish passage challenges. Our ecological restoration and fish passage practice is supported by a team of biologists, water resource engineers, hydraulic engineers, structural engineers, geotechnical engineers, and construction specialists. Our 300+person firm has 9 regional offices located in all 6 New England states and has successfully completed a number of fish passage projects throughout New England. Our professional staff maintains licenses and certifications across a wide range of engineering, planning, landscape architecture, design build, scientific, and manufacturing disciplines in Massachusetts and other states.

Given the complexity of the environments in which our Water Resources Team routinely works, we work closely with our clients and other project stakeholders to develop a project that will best achieve their vision.

The following pages highlights our experience with relevant services, provides a list of similar dam removal and modification projects, and provides detailed project profiles for similar projects.

Fuss & O'Neill drives a culture of creativity and innovation so that our clients can understand the full range of possibilities. This project will be led by Principal-in-Charge, Dean Audet, PE. Dean is a Senior Vice President and Officer of Fuss & O'Neill and leads our Water Resources Practice. He has more than 30 years experience restoring water resources throughout New England.

Dam Removal and Modifications

Fuss & O'Neill has worked extensively with New England state, municipal, private, and nonprofit owners on dam safety, design, rehabilitation, and removal projects. Our clients trust us to conduct feasibility studies for dam removal and stream restoration planning and design, and to develop conceptual and final designs for dam removal projects. We have decades of experience completing all phases of dam removal, including site investigation, geotechnical analyses, hydrologic and hydraulic (H&H) analyses, planning, evaluation of alternatives, final plan selection and implementation, permitting, construction, and post-construction services. Our experience includes dam removal and floodplain restoration, geomorphic channel design, flood resiliency planning, sediment characterization and transport analysis, scour analyses, and riverbank stabilization, After careful analysis, we help our clients make informed decisions regarding removal, and our in-house team completes the process, regardless of the option chosen.

Dam Removal and Modification Projects

- Dam Removal and River Restoration Master Service Agreements, Massachusetts Department of Fish and Game, State-wide, MA
- Veterans Memorial Park Dam Removal and South River Improvement Project, Massachusetts Division of Ecological Restoration, Marshfield, MA
- White Rock Dam Vegetative Reuse, Bioengineering, and Bank Stabilization, The Nature Conservancy, Westerly, RI
- Kenyon Mill Dam Removal and Nature-Like Fish Passage, Wood-Pawtucket Watershed Association, Kenyon, RI
- Bradford Dam Removal and Rock Ramp Fishway, The Nature Conservancy, Westerly and Hopkinton, RI
- Echo Lake Dam, MassDCR, Princeton, MA
- On-call Dam Engineering Services, MassDCR
- On-call Dam Safety Support Services, National Park Services
- Millbury Dam Removal, Blackstone River, Millbury, MA
- Briggsville Dam, North Branch Hoosic River, Clarksburgh, MA
- Green River Dams, Green River, Greenfield, MA
- Thousand Acre Pond Dam Repairs, Thousand Acre Brook, Athol, MA
- Hovey Pond Dam Removal, Grafton, MA
- Springborn Dam Removal, Enfield, CT
- Watson Road Dam Removal, Hinsdale, MA
- Eames Pond Dam, Oxford, MA
- Wayside Pond Dam Flood Protection, Gardner, MA
- Kenyon Mill Dam Removal and Fish Passage, Wood-Pawcatuck Watershed Association, Charlestown, RI
- Lower Shannock Falls Dam Removal Fish Passage, Wood-Pawcatuck Watershed Association Shannock, RI

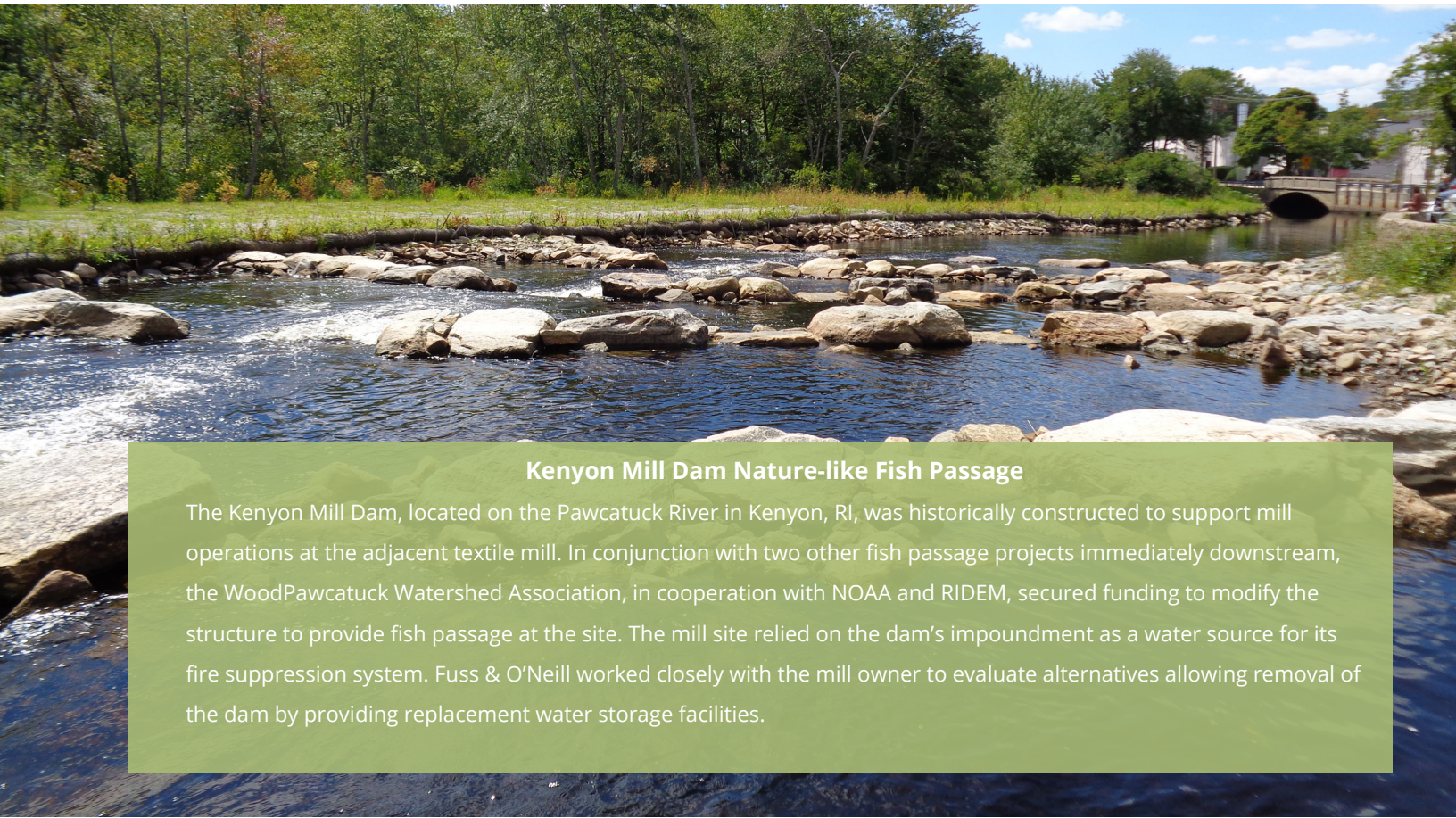
Often, dam removal involves a scenario in which the spillway is removed, but much of the dam embankment remains. Our geotechnical engineers provide skilled assessment of earthen embankment and foundation soil conditions to assess seepage potential and stability, enabling us to mitigate deficiencies such as piping erosion, slope instability, and liquefaction potential. Additionally, we perform evaluations to properly size and design the removal geometry using accepted computer applications such as HEC-RAS 1D and 2D, HEC HMS, and TR-20 for current and future potential increased flows due to climate change.

Fish Passage and Ecological Restoration

Fuss & O'Neill performs targeted field investigations and detailed hydrologic and hydraulic analyses to develop a holistic understanding of the dynamic relationships among water, soils, natural ecosystems, and human uses unique to each site. This understanding provides the foundation for us to work with our clients and project partners to maximize benefits and effectively manage risks for technical fish passage, dam removal, river restoration, and bridge/culvert replacement projects.
Our approach is to work with natural systems to provide free passage of target fish species and other aquatic and riparian terrestrial organisms along stream and river corridors, recognizing and balancing competing concerns for human uses and our built environment.

Fuss & O'Neill has partnered with many federal, state, and local government and private, non-profit entities to investigate, design, permit, and construct fish passage and stream and river restoration projects, including:

- Massachusetts Department of Fish & Game Riverways Program under a Multi-year Master Services Agreement
- USDA Natural Resources Conservation Service in Rhode Island under a Multi-year IDIQ Contract



Kenyon Mill Dam Nature-like Fish Passage

The Kenyon Mill Dam, located on the Pawcatuck River in Kenyon, RI, was historically constructed to support mill operations at the adjacent textile mill. In conjunction with two other fish passage projects immediately downstream, the WoodPawcatuck Watershed Association, in cooperation with NOAA and RIDEM, secured funding to modify the structure to provide fish passage at the site. The mill site relied on the dam's impoundment as a water source for its fire suppression system. Fuss & O'Neill worked closely with the mill owner to evaluate alternatives allowing removal of the dam by providing replacement water storage facilities.

- CTDEEP Water Resources Division under a Multi-year on-call Master Services Agreement
- The Nature Conservancy
- Connecticut River Watershed Council
- Wood Pawcatuck Watershed Association
- Avalonia Land Trust

Historic Mill, Waterway, and Landscape Structures

Fuss & O'Neill has decades of experience investigating and developing repair approaches for historic mill, waterway, and landscape structures throughout southern New England, many of which are listed on the National Register of Historic Places or located within historic districts. Our approach is site-specific and tailored to define the natural and causal factors in the observed deficiencies. This approach ensures that remedial measures under consideration result in cost-effective and long-lived solutions.

We combine structural, geotechnical, and hydraulic engineering services with natural resource sciences and historical/archaeological expertise as part of our holistic approach to understanding each structure's current condition, its history, cultural significance, and future needs for use, occupation, and operation/maintenance.

Our experience extends over a wide variety of dam, bridge, landscape, and mill structures (owned by federal, state, municipal, and private entities) in locations ranging from major waterways to forgotten canals in now-forested sites. Our primary focus in all of our work is partnering with our clients to understand their goals for these structures, maintaining each structure's historic integrity and developing solutions that are historically compatible with the original structure to ensure their integrity and safety for future generations.

Historic Horseshoe Falls Dam and Eel Passage Design, Richmond, RI

The Horseshoe Falls Dam is an iconic landmark and is listed on the National Register of Historic Places. Fuss & O'Neill conducted structural and diving inspections of stone masonry spillway, adjacent bypass canal, and powerhouse building, which are within a designated historic district. We developed an innovative approach to provide level flow control autonomously at the Horseshoe Falls Dam, addressing a critical impediment to eel passage.

Hydrology and Hydraulics

Hydrology and hydraulics are integral components to water resources projects. Hydrology focuses on how water interacts with the land (whether natural systems like rivers or man-made systems like stormwater systems); hydraulics centers on the engineering analysis of how water flows through systems. Often two sides of the same coin, proper hydrology and hydraulics assessment is the foundation of dam, flood control, stormwater management, and riverine projects.

Fuss & O'Neill's team of hydrology and hydraulics professionals perform detailed analyses to identify problem areas and provide data to quantify the magnitude of the problems in each area. As a multidisciplinary firm, we have experience performing hydrology and hydraulics analyses for a wide range of projects, including, but not limited to, dam removal, flood studies, stream restoration, Emergency Action Plans, bridge design, and stormwater systems. Our staff keep current with the latest software and have experience using HEC-RAS 1D and 2D, Geo HEC-RAS, SRH 2D, PCSWMM, HydroCAD, and HEC-HMS. We are experienced with performing one-dimensional and two-dimensional analyses for riverine systems. With mounting concern for increased rainfall due to climate change, we are incorporating precipitation and flow magnification factors in our analyses to provide a comparison of future potential flows to current flows to assist our clients in their planning and decision making processes for infrastructure.

Water Resource Restoration Permitting

We are experts in permitting large-scale water resource restoration projects. Our approach includes working with regulators as a team, providing clear communication, and developing creative designs and construction approaches that minimize permanent disturbances and maximize environmental benefit. A key aspect of our permitting efforts is pre-application meetings or discussions with the regulatory agencies if there is any question regarding the applicability of certain permits, or the specific information
that the regulatory authorities may require.

Fuss & O'Neill regularly secure permits for a wide variety of projects throughout Massachusetts from our three Massachusetts offices as well

Lulu Pond Dam Repair Design, Pittsfield, MA

MASCR hired Fuss & O'Neill to investigate current conditions and design improvements to the Lulu Pond Dam spillway. We conducted a hydrology and hydraulics analysis, performed structural analysis, developed preliminary design for the preferred alternative, and prepared regulatory permit applications.

as our Manchester, Connecticut and Providence Rhode Island offices. We understand that regulatory permitting policy changes, and that staff and their specific interpretation of regulatory requirements can differ as well. For these reasons, we recommend some level of pre-application communication with the regulators. We strive to have these communications in the feasibility stage of a project to properly vet alternatives and their permitting implications. It is also at times prudent to have a more formal pre-application meeting when a project is particularly complex, or may have substantial public scrutiny.

In Massachusetts, we have successfully secured the following permits for many water resource, dam removal, and wetland restoration projects:

- Massachusetts Environmental Policy Act (MEPA) Certificate
- Massachusetts Department of Environmental Protection Chapter 91Waterways License or Permit
- Massachusetts Department of Environmental Protection Section 401Water Quality Certification
- Department of Conservation and Recreation Chapter 253 Dam Safety Permit
- United States Army Corps of Engineers Section 404
- Conservation Commission Order of Conditions or MassDEP Superseding Order of Conditions

On the Blackstone River Canal in Uxbridge, the Massachusetts Department of Conservation and Recreation (DCR) engaged Fuss & O'Neill to design and permit the restoration of water control structures, while preserving the historical features of the structures. Our restoration techniques met the Standards and Guidelines for Archaeology and Historic Preservation and the Standards and Guidelines for the Treatment of Historic Properties. We successfully secured a waiver of the Environmental Impact Report as part of the Final Record of Decision. for the Watson Road Dam Removal in Hinsdale. For D.W. Field Park in Brockton, we secured permits for repairs to several stone masonry dams and spillway structures in a historic park.

Wetland Mitigation

Fuss and O'Neill's experience includes wetland design and monitoring for a variety of wetland mitigation and restoration projects in New England. Our approach includes a comprehensive field inventory of existing conditions to ensure that our designs are compatible with the existing environment. Our mitigation work includes ponds, wet meadows, vernal pools, forested wetlands, and riparian buffers. Fuss and O'Neill wetland monitoring protocols are based on applicable state and federal mitigation standards. We work closely with clients and regulatory agencies to ensure successful projects and outcomes.

Fuss & O'Neill has performed extensive wetland planning, mitigation, and replication work for the utility industry. Our wetland mitigation services range from delineations and planning for resource avoidance to full-scale wetland replication design, construction, and monitoring. We bring a planning and engineering background to wetland protection that meets permitting obligations of our clients while advancing natural resource protection in an economic manner for major projects.

Municipal Vulnerability Preparedness (MVP) Program, Statewide, MA

Fuss & O'Neill organizes and orchestrates workshops to bring together community stakeholders to identify common and locally-unique climate change vulnerabilities and strengths, and then develop prioritization for implementation of projects.

Community Outreach and Stakeholder Engagement

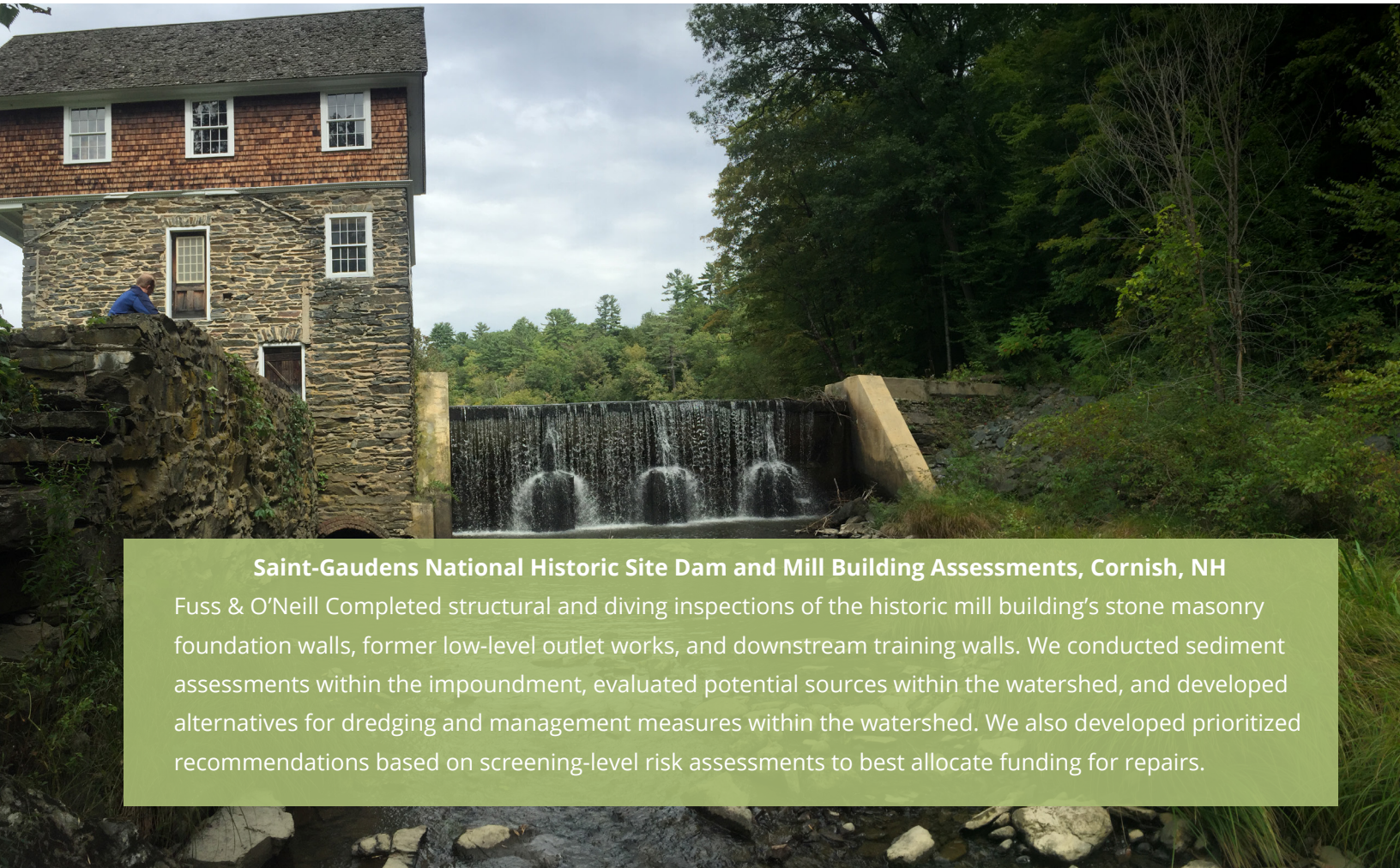
All of the projects at Fuss & O'Neill require client engagement at various levels, and oftentimes community outreach on behalf of our clients. At Fuss & O'Neill, our professionals are skilled facilitators and sensitive to clients' concerns. We focus on clear communication and collaboration and have extensive experience with meetings, charrettes, and workshops. We routinely participate in stakeholder, public information, and planning and zoning meetings for infrastructure planning studies and land use applications for public and private development projects. We excel at collaboration between private business and public agencies, and understand the importance of sharing study objectives with the public, soliciting valuable input on their concerns, and building consensus in order to develop preferred alternatives. We work with public and private project owners and other stakeholders to develop consensus regarding projects that meet the regulatory, financial, cultural, and political objectives of a community.

For ongoing projects, we develop websites and social media accounts for ease of accessibility and availability. These feedback tools facilitate maximum interaction with stakeholders. We ensure equitable engagement by creating materials in multiple languages and holding events at times and locations appropriate for the audience. Additionally, we record session and make them available online for viewing for those who could not attend in person. Regarding public engagement in the era of social distancing, we draw on our robust IT infrastructure and web-based/digital collaboration tools to ensure that everyone's voices can be heard safely.

National Park Service Historic Dam Assessment and Repairs

The U.S. Department of Interior National Park Services (NPS) owns and manages hundreds of historic dam, waterway, and mill building structures and remnants across the United States. Under a subcontract to EYP, Fuss & O'Neill assisted the NPS by conducting targeted assessments of dozens of dam structures in Connecticut, New Hampshire, New Jersey, Pennsylvania, and Virginia to develop prioritized recommendations for remedial measures to protect these structures, the visiting public, as well as downstream properties and resources.

Fuss & O'Neill conducted structural and underwater diving inspections, sediment investigations, wetland and cultural resource assessments, and subsurface boring programs as part of customized field assessment programs for each of the dams to be assessed. These programs were developed and implemented through close consultations with on-site NPS staff to minimize impact to park visitors while ensuring that critical information was obtained. Screening-level risk analyses were performed to more closely evaluate costs and impacts in relation to risk reduction benefits. Through project workshops with park staff, we identified prioritized recommended actions to enable NPS programming of future project construction funding. Fuss & O'Neill provided compliance support with NEPA, Section 106 National Historic Preservation Act and federal regulatory programs, and we developed final designs, drawings, and specifications for construction. All assessments were conducted in accordance with the U.S. Secretary of the Interior's Standards for the Treatment of Historic Properties.



Saint-Gaudens National Historic Site Dam and Mill Building Assessments, Cornish, NH

Fuss & O'Neill Completed structural and diving inspections of the historic mill building's stone masonry foundation walls, former low-level outlet works, and downstream training walls. We conducted sediment assessments within the impoundment, evaluated potential sources within the watershed, and developed alternatives for dredging and management measures within the watershed. We also developed prioritized recommendations based on screening-level risk assessments to best allocate funding for repairs.

Veterans Memorial Park Lagoon and South River Improvement Project

Marshfield, MA

Fuss & O'Neill is assisting the Massachusetts DER and the Town to complete the Veterans Memorial Park Lagoon and South River Improvement Project. This work was initiated with the Phase I feasibility and alternatives assessment study that evaluated approaches to remove a dam and under-performing fish ladder at the Park. The dam impounds a heart-shaped lagoon that forms a focal point for visitors to the park, which is cared for by a dedicated group of local veterans.

The study was performed within a compressed schedule in which conceptual alternatives identified a preferred approach for further evaluation through field investigations and modeling. Through these efforts, we were able to generate consensus among project stakeholders and to initiate successful discussions with an abutting property owner who owns a bank of the river channel, dam, and the fish ladder. Phase II efforts began in 2019 to complete field investigations and data assessment resulting in 40% design drawings. Phase III work is ongoing and will complete final design, permitting and compliance activities with local, state, and federal agencies, and preparation of bid/contract documents.

Site Renderings - Photorealistic renderings of alternative approaches were created to facilitate stakeholders' understanding of the proposed configuration of site modifications and compatibility of the design with the park's aesthetics.

Public Accessibility - Approaches to improve public accessibility to the park through natural footpaths to the riverbank and pedestrian bridges over channels were evaluated. A bridge-crossing alternative was provided over the main river channel to provide public access and views of migrating river herring.

FUSS & O'NEILL

Creating Works of Life

Main Street and Slater Mill Dam Fish Passage

Rhode Island Department of Environmental Management – Pawtucket, RI

Fuss & O'Neill is working with the Rhode Island Association of Conservation Districts and Rhode Island Department of Environmental Management (RIDEM) to design and construct fish passage improvements at the Main Street and Slater Mill Dams to restore the migratory fish populations to the upper Blackstone River.

Fuss & O'Neill is developing an innovative design that will successfully pass target fish species at these two dams while being sensitive to the adjacent Slater Mill National Historic Landmark and avoiding impacts to an adjacent hydroelectric plant. This design is being developed to maximize fish passage efficiency, address stakeholder concerns, satisfy regulatory requirements, and be able to be constructed within funding allocations. As these are the first two downstream dams on the Blackstone River, the success of this project to pass target fish species (alewife, salmon, shad, and American eel) will be critical to the success of every future upstream fish passage project.

Stakeholder Engagement - Stakeholder engagement has been critical to the success of this project given the sensitive nature of this project. The fish passage is proposed adjacent to a hydroelectric facility and Slater Mill National Historic Landmark, and the dams have multiple owners for a single dam that are not controlled by the project partners. Engaging all stakeholders is critical to secure buy-in for the selected alternative.

Hydroelectric Plant Operations - A critical element to the design is to not reduce or restrict the power generation capacity of the hydroelectric facility at the Main Street Dam.

FUSS & O'NEILL

Creating Works of Life

Dam Removal and River Restoration

MA Department of Fish and Game – Boston, MA

Fuss & O'Neill has been retained by the Massachusetts Department of Fish & Game Riverways Program under several Ecological Restoration master services agreements to provide dam removal, fish passage and river restoration consulting services.

This is a unique government program that seeks to restore river ecology and function by removal of derelict or abandoned dams. The program creates strategic partnerships between dam owners, federal natural resource agencies and non-profit natural resource protection groups to fund and execute restoration projects.

Fuss & O'Neill has performed technical feasibility studies and final design for several dam removal projects.

- Millbury Dam - Blackstone River - Millbury, MA
- Briggsville Dam - N. Branch Hoosic River - Clarksburgh, MA
- Green River Dams - Green River - Greenfield, MA
- Thousand Acre Pond Dam - Thousand Acre Brook - Athol, MA

Developed detailed hydrologic and hydraulic analyses to understand river fluvial geomorphology and resulting impacts to channel and bed stability from dam removal, including options for sediment management and stabilization.

Dam removal feasibility study of the Millbury Dam on Blackstone River in Millbury, Massachusetts. Impoundment contained fine mobile sediments with high levels of contaminants creating financial challenges for dam removal.

Kenyon Mill Dam Nature-like Fish Passage

Wood-Pawcatuck Watershed Association – Kenyon, RI

The Kenyon Mill Dam, located on the Pawcatuck River in Kenyon, RI, was historically constructed to support mill operations at the adjacent textile mill. In conjunction with two other fish passage projects immediately downstream, the Wood-Pawcatuck Watershed Association, in cooperation with NOAA and RIDEM, secured funding to modify the structure to provide fish passage at the site for Blueback Herring, Atlantic Salmon, American Shad, and American Eel.

The mill site relied on the dam's impoundment as a water source for its fire suppression system. Fuss & O'Neill worked closely with the mill owner to evaluate alternatives allowing removal of the dam by providing replacement water storage facilities. Following an assessment of upstream impacts (to bridges and natural resources in the state's largest freshwater wetland system resulting from dam removal), an approach was selected to construct a nature-like rock ramp fishway that maintains the impoundment.

Field Investigation - Performed hydrologic/hydraulic analyses of flood flows and prepared FEMA floodplain map revision submittals; conducted field investigation of impounded sediments; and developed design to minimize mobility and impacts to upstream bridge.

Fish Passage Construction - Developed construction phasing to ensure that headpond elevations were maintained for the mill's fire suppression system.

Pawtuxet River - Riverbank Stabilization

Town of Coventry, RI

Flooding in the Pawtuxet River during the March 2010 floods caused the failure of the Laurel Avenue bridge in Coventry as well as the failure of the river walls between the historic Anthony and Concordia Mills, located downstream of the bridge.

APWA AMERICAN PUBLIC WORKS ASSOCIATION AWARD WINNER

The failure of these walls also compromised portions of the mill buildings, resulting in the collapse of a corner of the Concordia Mill and undermining the foundation of a tower at Anthony Mill. The purpose of this project was to reconstruct the failed riverwall system and stabilize at-risk structures, including stabilizing the Anthony Mill tower, reconstructing damaged river walls using modular/ pre-fabricated walls to minimize construction costs, constructing new wingwalls on the downstream side of the Laurel Ave. bridge, and constructing a stabilized "natural" river bottom that is protective of scour and incorporates elements such as rock weirs and stream barbs.

Installation of drilled tie-back anchors - To minimize the risk of further damage during construction, the Anthony Mill Tower was stabilized with an innovative system of concrete collar walls with micro-piles and drilled tie-back anchors.

Pre-Construction Condition - Failure of river walls due to the 2010 flood.

FUSS & O'NEILL

Creating Works of Life

Environment

Infrastructure

Construction

Springborn Dam Removal

Connecticut Department of Energy and Environmental Protection - Enfield, CT

Fuss & O'Neill designed the removal of the Springborn Dam for the CTDEEP under a USFWS Hurricane Sandy Resiliency Grant Program. With the cooperation of the adjacent mill building owner and the CTDOT, we designed and permitted removal of the dam and performed construction inspection and administration.

Our multidisciplinary team helped overcome many significant challenges during the project. Extensive sub-surface investigations, including mechanized drilling into the river channel from a floating platform and underwater inspections to sample sediments was provided. We designed a critical temporary access road into the impoundment to allow removal of dam materials and significant contaminated sediment volumes. We designed a scour wall to protect the mill building, river bank protection and reconstruction of the river bottom with change of grade structures. We provided the replacement of a concrete pier for a CTDOT railroad bridge that supports an active petroleum fuel pipeline. The most significant construction issue was a concrete pier supporting an overhead CTDOT railroad bridge was found to be in need of replacement during the project. Fuss & O'Neill's structural engineering staff expedited the demolition of the old pier and design of a new pier. During this effort we collaborated closely with CTDOT Rails and the CTDEEP.

Creative Solutions - During design and permitting, the Scantic River was dewatered and test pits were excavated alongside a CTDOT railroad pier in the Scantic River, just upstream of the dam. The pier was found to be in poor condition, and CTDOT directed CTDEEP to design and replace the pier as part of the project.

Creative Solutions - Our structural team designed a new railroad bridge pier and developed a method to support the bridge during demolition and construction. We designed and permitted the new pier on an expedited basis within the original design and construction services budget.

Filley Park

Town of Bloomfield, CT

The Fuss & O'Neill team redesigned this 17-acre park in Bloomfield's Town Center. The park features a natural playground, educational nature trails, ice skating, and fishing. We created an all-natural arboretum and event space on a newly restored island.

Our assessment of Filley Park informed the design of a new 3,000 ft² warming shed and community building. Proposed water quality and low-impact development measures included pond dredging, proposed sediment forebay, rain gardens, pervious paving, and riparian buffer plantings, and a new urban streetscape plaza.

The pond and Wash Brook are in the FEMA floodway. As such, we performed extensive hydraulic modeling to design stream crossings, a spillway for the new dam, and a new fishway. Furthermore, we developed a plan for water control during construction.

Our team assessed and rehabilitated the park's pond, dam, pathways, bridges, and trails.

Promenade Access - The promenade is accessible by ramp and the Main Stairway, overlooking the existing pond.

Master Plan - A rendering of the Master Plan for Filley Park is shown here.

On-Call Dam Safety Support Services

National Park Service – VA, DE, PA, NH, and NJ

Fuss & O'Neill provides on-call dam safety engineering services to the National Park Service at historically significant sites along the eastern United States. We have provided a variety of services involving investigations, alternatives assessments, design and permitting for dam repair and removal projects.

Since initiating these services, we have completed a number of investigation and alternatives assessment studies for dam repairs and removals in historically significant sites.

- Repairs to Jones Mill Pond Dam in Colonial National Historical Park, Williamsburg, Virginia.
- Repairs and Removal Assessments for Several Dams in Delaware Water Gap National Recreation Area, Pennsylvania and New Jersey.

Mill Pond Dam - Fuss & O'Neill conducted subsurface investigations, diving inspections and evaluated remedial alternatives to address identified deficiencies. A screening level risk assessment was performed to evaluate prioritization of remedial measures and alternatives being considered.

Assessments - Conducted site assessments of 21 dams, generating concise summaries of dam conditions, functions, and important natural and cultural resources. Assessments were conducted to evaluate repair/maintenance and removal alternatives to develop a prioritized list of dams for removal or repair.

References

Nick Wildman
Priority Projects Coordinator
Massachusetts Division of Ecological Restoration
Nick.Wildman@state.ma.us
617-626-1527

James Turek
Restoration Ecologist
National Oceanic and Atmospheric Administration
James.G.Turek@noaa.gov
401-782-3338

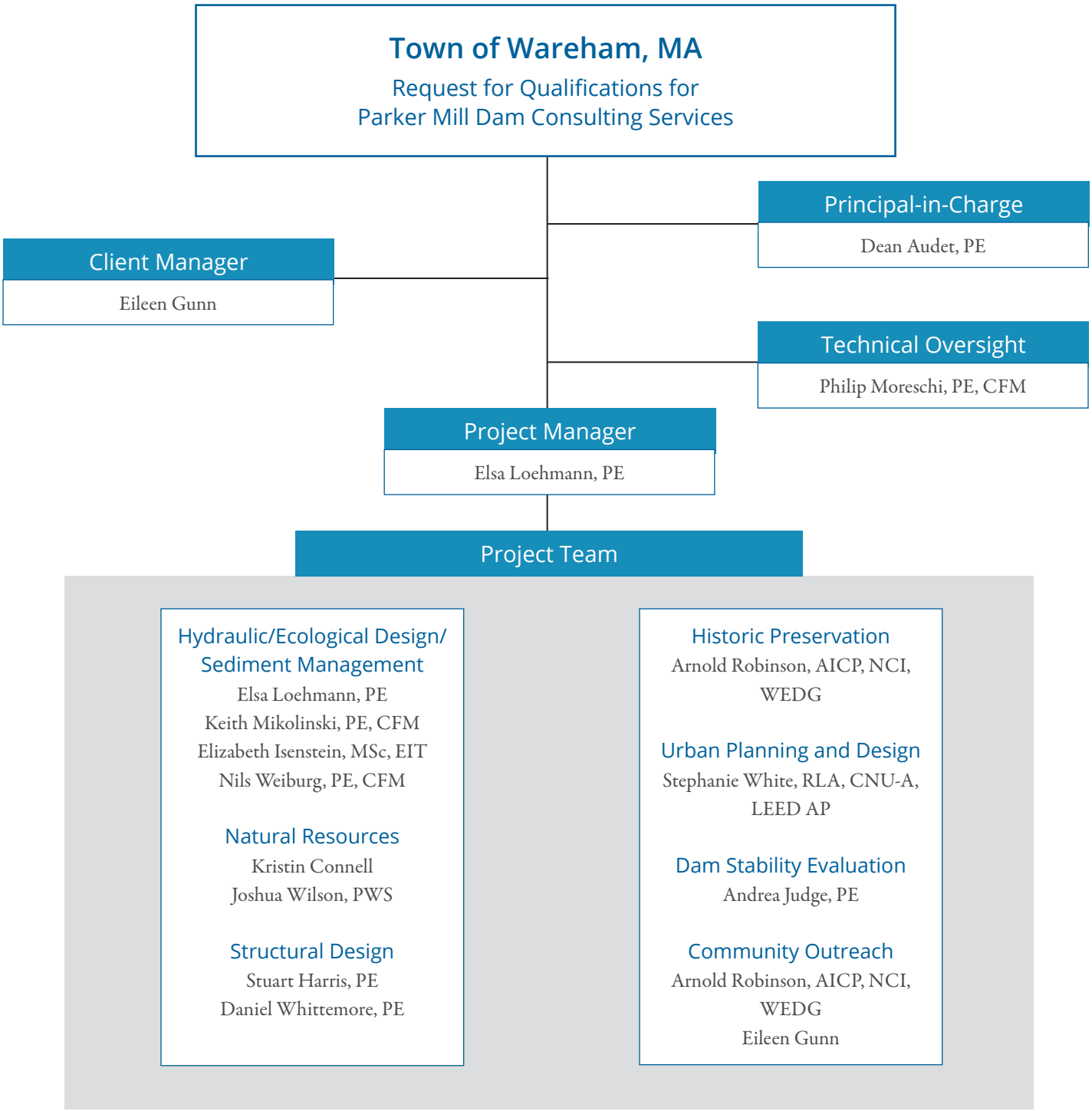
John O'Brien
Policy/Partner Specialist
The Nature Conservancy - Rhode Island
jobrien@tnc.org
401-331-7110 x 26

SECTION 3

Team Qualifications

Shannock Falls Dam Removal - Shannock Village, RI

Organizational Chart



Dean Audet, PE

Principal-in-Charge

"Solving complex engineering challenges is what primarily drives me. I like working with our clients to develop holistic solutions that best meet their long-term needs, not only from a design standpoint, but from a financial one as well. This includes thinking outside of the box to find the most suitable funding sources and creative engineering options."

DAudet@fando.com 800.286.2469 x4560

EDUCATION
BS, Civil Engineering - 1986
University of Connecticut
ME, Environmental Engineering - 1998
University of Hartford

LICENSES & REGISTRATIONS
Professional Engineer MA, RI, SC, CT, NH

PROFESSIONAL AFFILIATIONS
American Public Works Assoc
New England Water Env Assoc
Water Environment Federation
American Soc of Civil Engineers
American Public Works Assoc

EXPERIENCE
37 years Professional Experience

Dean leads our Water and Natural Resources Business Line. Throughout his career, he has completed a wide range of civil and environmental engineering projects, working with multiple technical disciplines. These projects have included fish passage, ecological restoration, stormwater management, watershed management, wastewater, solid waste, site remediation, environmental compliance, and land development.

Dean's principal strength has been managing large and complex multidisciplinary projects, where his range of technical experience is very valuable. He also has significant experience successfully completing NRCS projects and thoroughly understands NRCS requirements and standards.

REPRESENTATIVE PROJECTS:

Pawtuxet River Channel Stabilization, Coventry, RI

Blackstone River Slater Mill Wall Repairs, Pawtucket, RI

Hydraulic Improvement Study, Aguntaug Swamp, Westerly, RI

Culvert Widening Study and Salt Marsh Restoration, Muddy Creek, MA

Pawtuxet River Wetland and Floodplain Restoration, RI

Fish Ladder Improvements, Bradford, RI

Salt Marsh and Tidal Restoration, Herring River, Wellfleet, MA

Salt Marsh Restoration, Farm Pond, Martha's Vineyard, MA

Narrow River Salt Marsh Elevation Enhancement, Narragansett, RI

Philip Moreschi, PE, CFM

Technical Oversight

"My fascination with water and the outdoors as a child developed into a passion for protecting the environment. I have always loved to fix things, and that led me to the field of civil engineering. I am rewarded every day with opportunities to help my clients restore environmentally stressed natural systems and opportunities to restore the function of important infrastructure."

pmoreschi@fando.com 800.286.2469 x5223

EDUCATION
BS, Civil Engineering - 1978
University of Connecticut

LICENSES & REGISTRATIONS
Professional Engineer NY
Professional Engineer CT
Professional Engineer RI
Professional Engineer MA

PROFESSIONAL AFFILIATIONS
Assoc of State Floodplain Mgrs
American Soc of Civil Engineers
Assoc of State Dam Safety Offcls
Natl Soc Prof Engineers

EXPERIENCE
44 years Professional Experience

Phil is a Vice President in our Water and Natural Resources Business Line. Throughout his career he has been responsible for a wide range of engineering projects, including dam restoration, lake dredging, watershed management, stormwater quality and quantity management, flood control, river restoration, environmental impact evaluations, petroleum services, and site design. He has been responsible for the inspection, investigation, design of repairs, permitting, and construction administration of projects involving scores of dams, impoundment dredging, land development, flood control, shore erosion control, petroleum storage, and dispensing facilities. He is relied upon by his clients to successfully identify and manage the solutions to their challenging technical problems.

REPRESENTATIVE PROJECTS:

On-call Contract, Massachusetts Department of Conservation and Recreation Office of Dam Safety, Statewide, MA

Saccarappa (Slaters) Pond Dam Investigation and Repairs, Oxford, MA

Shawville Bridge and Dam Rehabilitation, Wales, MA

Massachusetts Riverways Program Ecological Restoration Master Services Agreement, Statewide, MA

Blackstone Heritage Park Canal Gates Restoration, Massachusetts Department of Conservation and Recreation, Uxbridge, MA

Southbridge Reservoir Dam No. 5 Repairs, Southbridge, MA

Wayside Pond Dam and Wrights Reservoir Dam Evaluations and Repairs Alternatives, Gardner, MA

Palmer Brook Dam Evaluation, Becket, MA

Willett Pond Dam High Hazard Investigations, Norwood, MA

Elsa Loehmann, PE

Project Manager | Hydraulic/Ecological Design/ Sediment Management

"I am driven to provide sustainable solutions to create a resilient future. My passion is developing strong relationships to bring my clients' visions to life."

eloehmann@fando.com 800.286.2469 x5339

EDUCATION
BS, Civil Engineering - 1999
Montana State University-Billings
MS, Civil Engineering - 2002
Montana State University-Billings

LICENSES & REGISTRATIONS
Professional Engineer CT

PROFESSIONAL AFFILIATIONS

EXPERIENCE
19 years Professional Experience

Elsa leads Fuss & O'Neill's South Region Water Resources Practice, furthering and promoting climate resilience through stormwater management, dam safety, stream restoration, fish passage, and floodplain management services. The Water Resources Practice protects New England's waterways, watercourses, and the land, species, and habitats of the surrounding areas.

Elsa is an engineer and fluvial geomorphologist with experience throughout New England. She has a passion for climate adaptation and resiliency, as evidenced by her work on living shoreline, aquatic habitat restoration, flood control, and green infrastructure projects.

REPRESENTATIVE PROJECTS:

The following work was performed prior to joining Fuss &

O'Neill:
Ballou Dam Removal and Yokum Brook Design, Becket, MA

Town Brook Dam Removal and Bridge Installation, Plymouth, MA

T&H and Baker Dam Removal Evaluation, Boston and Milton, MA

Plymco and Off-Billington Street Bridges, Plymouth, MA

Millbrook Meadow and Mill Pond Restoration, Rockport, MA

Rattlesnake Brook Dam Removal and Fish Passage Restoration, Freetown, MA

Wapping Road Dam, Kingston, MA

iNatural Hazard Mitigation Plan, Nantucket, MA

Kristin Connell

Environmental Permitting

"Working as a biologist and permitting specialist allows me to assist with complex projects that bring engineers and biologists together to create a solution that supports a need and helps the environment."

kconnell@fando.com 800.286.2469 x5201

EDUCATION
BS, Animal Science - 2003
University of Vermont
BS, Biology - 2003
University of Vermont
MA, Ecology & Env Science - 2016
Central Connecticut State Univ

EXPERIENCE
15 years Professional Experience

Kristin Connell is an Environmental Analyst with Fuss & O'Neill. She is an experienced field scientist in the disciplines of wildlife biology and hydrogeology. Ms. Connell is an in-house wetland scientist and certified soil scientist. She is responsible for performing wetland and watercourse delineations, vegetation surveys, and ecological surveys in accordance with state and federal regulations and guidelines. Kristin prepares documentation in accordance with requirements for local, state, and federal permit applications for projects with potential wetland resource impacts. Additionally, she conducts ecological risk assessment services in support of various projects.

REPRESENTATIVE PROJECTS:

Windsor State Forest Dam Repairs, MassDCR, Windsor, MA

Hatchet Pond Dam Repair Designs, Southbridge, MA

Reservoir Number 5 Design of Repairs, Southbridge, MA

Eames Pond Dam Phase II Inspection, Oxford, MA

Watson Road Dam Analysis and Permitting, Hinsdale, MA

Southbridge Wetland Mitigation and Permitting, Southbridge, MA

Upper Pond Dam Restoration and Fishway Installation Permitting, Darien, CT

Permitting, GLN Dam Removal, Bloomfield, CT: Glasgo Pond Dam Permitting and Modeling, Voluntown, CT

Springborn Dam Removal Permitting, CTDEEP, Enfield, CT

Eileen Gunn

Client Manager | Community Outreach

"To me, climate resiliency is the single most important issue of our time and I can't think of anything that it doesn't impact. It is an all-hands-on-deck situation and I want to utilize my skills and experience to develop and implement innovative solutions to rapidly address this challenge."

egunn@fando.com 800.286.2469 x4720

EDUCATION
BA, Geology - 1985
University of Connecticut
MA, Environmental Policy - 1998
Tufts University

EXPERIENCE
31 years Professional Experience

Eileen is a Transportation Business Line Manager in our Boston office. With her broad range of skills and knowledge, she assists municipalities throughout Massachusetts to identify and meet their transportation and community-wide climate resiliency needs.

Prior to joining Fuss & O'Neill, she served as the Municipal Grants Program Administrator for the Massachusetts Department of Transportation's (MassDOT) Highway Division and she was responsible for assisting municipalities in all aspects of program and project implementation. She co-developed and managed the Complete Streets Funding Program and administered the Small Bridge Funding Program. In addition, she worked on the environmental review of transportation projects, asset climate vulnerability assessment, toxic use reduction, hazard communication, and sustainable transportation efforts.

REPRESENTATIVE PROJECTS:

Mattapoisett Neck Road Resiliency Project, Town of Mattapoisett, MA

New Britain's Complete Streets Roadmap, City Of New Britain CT

The following is experience prior to joining Fuss & O'Neill:

Municipal Grants Program Administrator, Highway Administrator's Office, Massachusetts Department of Transportation

Sustainable Transportation Manager, Planning Division, Massachusetts Department of Transportation

Program Manager, Asthma Regional Council of New England, Program of Health Resources in Action, MA

National Pesticide-free Lawns Coalition and Alliance for Informed Mosquito Management National Campaign Manager, Beyond Pesticides, Washington, DC

Stuart Harris, PE

Structural Design

"I get a great deal of satisfaction from designing a project that solves a problem for someone – utilizing my experience to identify the need, develop and select the most appropriate solution, and prepare design documents so it can be built."

sharris@fando.com 800.286.2469 x5232

EDUCATION
BS, Civil Engineering - 1981
University of Connecticut

BA, Liberal Studies - 1981
Fairfield University

LICENSES & REGISTRATIONS
Professional Engineer RI
Professional Engineer MA
Professional Engineer CT
Professional Engineer NY
Professional Engineer NJ

PROFESSIONAL AFFILIATIONS
American Concrete Institute
American Soc of Civil Engineers
Assoc of State Dam Safety Officials
Structural Engineers Coalition

EXPERIENCE
40 years Professional Experience

Stu is our Chief Structural Engineer. His responsibilities include project management, staff coordination, quality assurance/quality control, business development and client satisfaction. He has served as a project manager and structural engineer for a broad spectrum of structural design projects.

Stu's experience includes field investigations of existing structures, preparation of inspection reports, rating calculations, structure type studies, preliminary design plans, final design plans, specifications, quantity calculations and cost estimates for a wide variety of structural rehabilitation, alteration, replacement, demolition, temporary construction and new construction projects.

REPRESENTATIVE PROJECTS:

Bridge Design and Replacement, Shawville Pond Bridge and Dam, Wales, MA

Bradford Dam Removal and Rock Ramp Fishway, The Nature Conservancy, Westerly and Hopkinton, RI

Dam Removal, Springborn Dam, Enfield, CT

Spillway Design, Slaters Pond Dam, Oxford, MA

Repairs Design, Blackstone River Canal Restoration, Uxbridge, MA

Reconstruction, Niskayuna Lake Dam, Becket, MA

Structure Rehabilitation, Hovey Pond Dam, Grafton, MA

Spillway Design, Lulu Brook Dam, Pittsfield, MA

Spillway Design, Echo Lake Dam, Princeton, MA

Repairs Design, Blackstone River Canal Restoration, Uxbridge, MA

Leesville Pond Dam, Town of Auburn, MA

Horseshoe Falls Dam Fish Ladder, Shannock Village, RI

Elizabeth Isenstein, MSc, EIT

Hydraulic/Ecological Design/Sediment Management

"There was no doubt growing up that I was going to be an engineer, but it wasn't until college that I discovered my passion for water resources. These challenging and diverse projects have a direct impact on making the world a better and safer place which I find extremely rewarding."

lisenstein@fando.com 800.286.2469 x3098

EDUCATION
BE, Engineering - 2011
Smith College

MS, Water Resources Engineering
2013, UMass Amherst

LICENSES & REGISTRATIONS
Engineer In Training

EXPERIENCE
7 year Professional Experience

Liz is a water resources engineer in the Water and Natural Resources Business Line. Before joining Fuss & O'Neill she specialized in dams, working on projects including dam inspections, spillway design, emergency action plans, and hazard class assessments.

Liz earned her MS in Civil Engineering from the University of Massachusetts Amherst with a specialization in hydrologic and hydraulic modeling. Her modeling experience includes, HEC-HMS, HEC-RAS, ArcGIS, AuctoCAD, and DSS-WISE software. Her research was focused on impacts to water supply under climate change scenarios.

REPRESENTATIVE PROJECTS:

Brockton Reservoir Dam Emergency Action Plan, Brockton, MA

Significant Hazard Dams Emergency Action Plans, Mansfield, MA

Damon Pond Phase I inspection, Lake Damon Corporation, Chesterfield, MA

Upper Leyden Glen Reservoir Permitting and Maintenance, Greenfield, MA

Cedar Street Dam Emergency Action Plan, Ashland, MA

2020/21 Dam Engineering Services, MassDCR, Various Locations in MA

Andrea Judge, PE

Dam Stability Evaluation

"The best part of my work at Fuss & O'Neill is seeing our designs in construction after the trials of design. I strive to work collaboratively with Contractors and Owners to develop practical solutions to challenges that invariably arrive during construction."

ajudge@fando.com 800.286.2469 x4581

EDUCATION
BS, Civil Engineering Technologies
2004, Dawson College

BE, Civil Engineering - 2008
Concordia Univeristy - Quebec

LICENSES & REGISTRATIONS
Professional Engineer MA

PROFESSIONAL AFFILIATIONS
American Society of Cert Engr Techs
Assoc State Dam Safety Offcls

EXPERIENCE
13 years Professional Experience

Throughout her career, Andrea has completed a wide range of geotechnical engineering, dam engineering improvement and removal projects of varying scale and complexity. Andrea brings a strong practical background to the team, providing expertise in construction engineering, constructability reviews, and preparation of technical specifications. Typical projects have included dam removal and improvement design, dam construction administration services, design of building foundations for vertical construction, waterfront, and bridge structures.

*The work was performed prior to joining Fuss & O'Neill

REPRESENTATIVE PROJECTS:

Phase I Inspection and Preliminary Design of Repairs, Parker Mills Pond Dam, Wareham, MA*

Bradford Dam Removal and Rock Ramp Fishway, The Nature Conservancy, Westerly and Hopkinton, RI

Filley Park Pond Dam and Fish Passage, Town of Bloomfield, CT

Waite Pond Dam Repairs, Town of Leicester, Leicester, MA

Wrights Reservoir Dam Rehabilitation, City of Gardner, Gardner, MA

Paradise Pond Dam Improvement Project, Smith College, Northampton, MA

Easton Pond Dam Maintenance and Repairs, Newport, RI

Geotechnical Investigations and Stability Assessments of Water Supply Dams, Providence Water Supply Board, Kent County, RI

Hanover Pond Hydroelectric Dam, New England Hydropower Company, Meriden, CT

Keith Mikolinski, PE, CFM

Hydraulic/Ecological Design/Sediment Management

"Engineers have the power to shape the world around them – this is what first drew me to this field. Since then I have realized that this power can be used to not just to shape, but to improve, this is the desire that continues to drive me."

kmikolinski@fando.com 800.286.2469 x5374

EDUCATION
BS, Civil Engineering - 2003
University of Connecticut

LICENSES & REGISTRATIONS
Professional Engineer CT
Certified FloodPlain Manager CT

PROFESSIONAL AFFILIATIONS
Assoc of State Floodplain Mgrs
Association of State Dam Safety Officials
CT Association of Flood Managers

EXPERIENCE
17 years Professional Experience

Keith has served as a project engineer and project manager for a broad spectrum of water resources related civil engineering projects. Related services include dam removal, stream restoration, design of fish passages, dam inspections, dam rehabilitation, hydrologic and hydraulic analyses, regulatory floodplain management, and stormwater management, as well as permitting for residential, commercial, and municipal projects. Typical services include the design of dam removal and improvements, hydraulic design of spillways and bridges, revision of regulatory floodplains and floodways, stormwater design and construction administration services.

REPRESENTATIVE PROJECTS:

Watson Pond Dam Removal, Holden, MA

Millbury Dam Assessment, Millbury, MA

Phase I Dam Safety Inspections, Multiple Locations, MA

Waite Pond Dam Repair, Leicester, MA

Phillipston Reservoir Dam Removal Feasibility Study, Athol, MA

Hamilton Reservoir Dam Inundation Mapping, Holland, MA

Smith Pond Dam Phase I Inspection, Monson, MA

Blackstone River and Canal Heritage State Park Gate Structure Inspection and Rehabilitation, Uxbridge, MA

Springborn Dam Removal, Enfield, CT

Norton Papermill Dam Removal, Colchester, CT

Trout Pond Dam Repairs & Fish Passage, Granby, CT

Rutan Pond Dam Removal, North Stonington, CT

Arnold Robinson, AICP

Historic Preservation | Community Outreach

"I'm so proud that the people I work with, the planners, engineers, preservationists, architects and citizen activists, can look at the world and see all the possible futures. They can see past the abandoned building, the polluted site, the flooded river and envision a future condition that is so much better. Even more impressive, after they have a vision, they have the skills and drive to make it happen!"

arobinson@fando.com 800.286.2469 x4597

EDUCATION
BA, American Studies - 1987
Bates College

MA, Preservation Studies - 1994
Boston Conservatory

LICENSES & REGISTRATIONS
AICP

EXPERIENCE
21 years Professional Experience

Arnold has been practicing in the fields of community planning, historic preservation and rehabilitation, education, and urban design for more than 30 years. His expertise includes work in the public, private and not-for-profit sectors as project manager, executive director, and designer. His diverse career has included master planning, feasibility analysis, multidisciplinary project collaboration, site design, public process facilitation, regulatory permitting, historic rehabilitation project design, bidding and construction administration.

Arnold's diverse role at Fuss & O'Neill includes community planner, public process designer and facilitator, and historic buildings and communities consultant. He is passionate about effectively and efficiently engaging community residents, public officials and diverse stakeholders in the planning and review process in order to maximize consensus and minimize project delays.

REPRESENTATIVE PROJECTS:

Integrated Economic Redevelopment and Flood Resilience Plan, Brockton, MA

Resilience Plan Community Engagement Facilitator, Town of Foxborough, MA

Expert Witness Testimony Regarding Historic Preservation and Planning and Zoning, Various Locations, RI, CT, and MA*

Fort Adams Historic Rehabilitation, Newport, RI*

Plum Beach Lighthouse Restoration, North Kingston, RI*

Inn at Castle Hill Rehabilitation and Historic Tax Credit Certification, Newport, RI*

Aquidneck Mill/International Yacht Restoration School Rehabilitation and Historic Tax Credit Certification, Newport, RI*

Belvedere Hotel Rehabilitation and Historic Tax Credit Certification, Bristol, RI*

**Projects completed prior to joining Fuss & O'Neill*

Stephanie White, RLA, CNU-A, LEED AP

Urban Planning and Design

"What is most rewarding about my job is being able to create memorable and enjoyable places that have positive impacts in the way we live, work and play."

swhite@fando.com 800.286.2469 x3005

EDUCATION
BS, Landscape Architecture - 2001
University of Massachusetts at Amherst

LICENSES & REGISTRATIONS
LEED-AP
Reg Landscape Architect MA, RI, CT, NH
Congress of New Urbanism

PROFESSIONAL AFFILIATIONS
American Society of Landscape Architects
Council of Landscape Arch. Registration Board
US Green Building Council

EXPERIENCE
20 years Professional Experience

Stephanie is a Project Manager with Fuss & O'Neill's design studio. With more than 20 years of experience, she has been involved in all facets of the site design and implementation process. Her expertise ranges from sophisticated planting designs, park master planning, housing, education facilities, and, most recently, new urbanism techniques. She is a licensed landscape architect and an accredited professional with the Congress of New Urbanism and U.S. Green Building Council. Stephanie holds a Bachelor of Science in Landscape Architecture from the University of Massachusetts Amherst.

Stephanie has been a team member on two award-winning design projects recognized by the American Society of Landscape Architects. With a keen sense of design and attention to detail, she seeks to deliver creative and sustainable solutions to every design challenge.

REPRESENTATIVE PROJECTS:

Green Infrastructure Design, Morrill Science Courtyard, University of Massachusetts, Amherst, MA

North Street Streetscape Improvements, Pittsfield, MA

WaterFire Arts Center Redevelopment, Providence, RI

Langworthy Field Master Planning, Hopkinton, RI

Olneyville Green Infrastructure Retrofit, Providence, RI

78 Fountain Street Landscape Architecture and Green Roof Design, Providence, RI

Cass Park Pond Upgrades, Woonsocket, RI\

Discovery Drive Master Planning and Landscape Architectural Services, University of Connecticut, Storrs, CT

Master Plan, Eastern Connecticut State University, Windham, CT

Campus Site Design and Site Program Development, American School for the Deaf, West Hartford, CT

Daniel Whittemore, PE

Structural Design

"Out of all structures, I find bridges to be one of the most elegant expressions of human development. Ubiquitous but often invisible, we all rely on bridges every day to carry out the routine of our lives. Keeping them safe and operating is a joy to me!"

dwhittemore@fando.com 800.286.2469 x5383

EDUCATION
BS, Civil Engineering - 1998
University of Massachusetts at Amherst

LICENSES & REGISTRATIONS
Professional Engineer CT

PROFESSIONAL AFFILIATIONS
Structural Engineers Coalition

EXPERIENCE
21 years Professional Experience

Dan has many years of diversified bridge design experience. He has worked with both private and public bridge owners spanning the gamut from bridge design to inspection, replacement, protection and rehabilitation. Dan's experience touches the design, documentation, analysis, and management of bridge projects from the local to the signature scale.

Dan is an internationally published author and scholarly cited leader in sustainable bridge design whose work has been incorporated into design standards by many agencies and municipalities, most notably the 2015 Iowa Department of Transportation's Bridge Design Manual.

REPRESENTATIVE PROJECTS:

Chequessett Neck Road over Herring River, Friends of Herring River, Wellfleet, MA

Town-wide Bridge Management Program, Blackstone MA

Saint Paul Street Bridge over Blackstone River, Blackstone MA

Tamarack Road Over Wetland, Evergreen Walk Master Association, Inc., South Windsor, CT

Pedestrian Walkways, Filley Park, Bloomfield, CT

I-84 EB/WB over Market Street, Connecticut Department of Transportation, Hartford, CT

Airport Road Bridge over Route 15, CTDOT, Harford, CT

Modification of Existing Structure, Main Street over Route 72, City of New Britain, CT

Hanover Pond Dam Hydroelectric, New England Hydropower, Meriden, CT

Bridge Replacement, Route 150 Bridge over Wharton Brook, Wallingford, CT

Nils Wiberg, PE, CFM

Hydraulic/Ecological Design/Sediment Management

"I'm passionate about the challenges and opportunities to develop creative solutions through water and natural resource projects in river, floodplain, and coastal environments. I thrive in understanding these dynamic environments and teaming with scientists and engineers to develop holistic solutions that enhance ecosystems while protecting public infrastructure."

NWiberg@fando.com 800.286.2469 x4559

EDUCATION
BA, Physics - 1992
Ohio Wesleyan University
BS, Civil Engineering - 1994
Rensselaer Polytechnic Institute
MS, Ocean Engineering - 1997
Massachusetts Institute of Tech

LICENSES & REGISTRATIONS
Professional Engineer RI

PROFESSIONAL AFFILIATIONS
Assoc of State Floodplain Mgrs
New England Water Env Assoc
American Society of Civil Engineers
Association of State Dam Safety Officials

EXPERIENCE
25 years Professional Experience

Nils is an Associate in our Water and Natural Resources Business Line, leading a number of inter-disciplinary environmental and municipal projects. Throughout his career at Fuss & O'Neill, and before working for an earthwork contractor on heavy civil projects, Nils has led and completed numerous infrastructure and restoration projects for public and private clients addressing dam safety, storm water quality, wetland and habitat restoration, solid waste, site remediation, environmental compliance. His strength is demonstrated by successfully leading teams of scientists and engineers to partner with clients in understanding, conceptualizing, designing and constructing complex multi-disciplinary projects requiring attention to detail and valuable hands-on technical experience.

REPRESENTATIVE PROJECTS:

Veterans Memorial Park Lagoon and South River Improvement Project, Massachusetts Division of Ecological Restoration, Marshfield, MA

Main Street and Slater Mill Dam Fish Passages, Rhode Island Association of Conservation Districts, Pawtucket, RI

Horseshoe Falls Dam Fish Ladder, Wood-Pawctuck Watershed Association, Shannock, RI

White Rock Dam Removal and Riverbank Stabilization, Westerly, RI

Bradford Dam Removal and Rock Ramp Fishway, The Nature Conservancy, Westerly and Hopkinton, RI

Lower Shannock Falls Dam Removal Fish Passage, Wood-Pawcatuck Watershed Association Shannock, RI

Delaware Water Gap Dam Removal Feasibility Assessments, PA and NJ

Pawtuxet River Floodplain Restoration, Cranston, RI

Kenyon Mill Dam Removal and River Restoration, Wood-Pawcatuck Watershed Association, Kenyon, R

Joshua Wilson, PWS

Natural Resources

"I love that I have the opportunity to work on a wide range of projects across the varied ecosystems in New England. One day I can be studying salt marshes in Rhode Island and the next I can be delineating wetlands in the Berkshires. All with the goal of complementing society's needs with environmental responsibility."

jwilson@fando.com 800.286.2469 x5303

EDUCATION
BA, Biology - 1997
Connecticut College

MS, Environmental Science - 2001
Yale University

LICENSES & REGISTRATIONS
Prof Wetland Scientist

PROFESSIONAL AFFILIATIONS
Society of Soil Scientists of Southern New England

EXPERIENCE
20 years Professional Experience

Josh is an Ecologist and Risk Assessor with Fuss & O'Neill. He is an experienced field scientist in the disciplines of soil science, botany, wildlife biology, and wetland ecology. Josh serves as Fuss & O'Neill's principal in-house wetland scientist and certified soil scientist. He is responsible for performing and overseeing wetland and watercourse delineations, vegetation surveys, and ecological surveys in accordance with state and federal regulations and guidelines. Josh is responsible for coordinating and conducting ecological risk assessments at Fuss & O'Neill. He has led ecological risk assessment services in support of various projects such as site investigations and remediation, brownfields investigations, and landfill compliance.

REPRESENTATIVE PROJECTS:

Ninigret Pond Breachway Dredging and Salt Marsh Restoration, Charlestown, RI

Muddy Creek Wetland Restoration, Chatham and Harwich, MA

Thousand Acre and Phillipston Reservoirs Dam Removal, Athol and Phillipston, MA

Hanscom Airfield Stormwater Management Plan, Bedford, MA

Resource Area Assessments, Transmission Rights-of-Way, Eversource Energy, MA & CT

Gorham's Pond/Goodwives River Restoration, Darien, CT

Annual Habitat and Wildlife Surveys, Connecticut Resources Recovery Authority, Shelton, CT

Hartford Flood Control System, Hartford, CT

Sheffield Brook Stream and Floodplain Restoration, Old Lyme, CT

SECTION 4
Forms

Historic Veterans Memorial Park and South River Improvements - Marshfield, MA

DESCRIPTION OF APPLICANT BUSINESS/ORGANIZATION

Check appropriate box(es):

The named organizational entity submitting this proposal is:

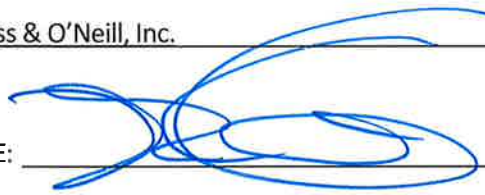
☒ Corporation ☐ Partnership ☐ Proprietorship

☐ Minority Owned ☐ Woman Owned

SIGNATURES:

This page must be signed by a(n) individual(s) with authority to commit the proposing entity to a binding agreement. Corporations must attach required certification:

COMPANY NAME: Fuss & O'Neill, Inc.

AUTHORIZED SIGNATURE: 

PRINT NAME OF AUTHORIZED OFFICIAL: Dean Audet, PE

ADDRESS: 146 Hartford Road, Manchester, CT 06040

TELEPHONE #: 800.286.2469 x4560 FAX NUMBER: 860.643.6313 EMAIL: daudet@fando.com

DATE: 8/6/21

FEDERAL TAX ID #: 06-0845648

DUNS #: 04-510-9659

If a corporation, a notarized attestation of the signature(s) is required, or in the case of corporate seal affixed, that the signature is the signature of an officer authorized to bind the corporation to a contractual agreement.

Please refer to the Certification of Corporate Resolution attached.

STATE TAXES CERTIFICATION CLAUSE

I certify under the penalties of perjury that I, to my best knowledge and belief, have filed all state tax returns and paid all state taxes under law.

By: Dean Audet, PE

* Signature of individual or Corporate Officer

Corporate Name (Mandatory) (Mandatory, if applicable)

06-0845648

Federal Identification Tax ID

* Approval of a contract or other agreement will not be granted unless the applicant signs this certification clause.

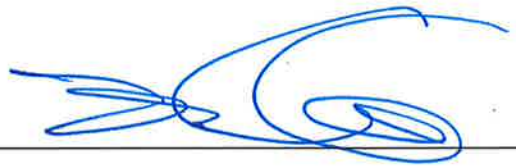
** This request is made under the authority of Mass. G.L. 62C s. 49.A.

HOLD HARMLESS AND INDEMNITY CLAUSE

Fuss & O'Neill, Inc , its officers and members all,
Legal Name of Proposer's Business Entity

through the signing of this document by an authorized party or agent, indemnify, hold harmless and defend the Town of Wareham and its agents and employees from all suits and actions, including attorneys' fees and all costs of litigations and judgment of every name and description brought against the Town as a result of loss, damage or injury to person or property by reason of any act by Fuss & O'Neill, Inc , its agents, servants or employees.

Legal Name of Proposer's Business Entity



Authorized Signature

Dean Audet, PE, Senior Vice President
Name and Title (Print or Type)

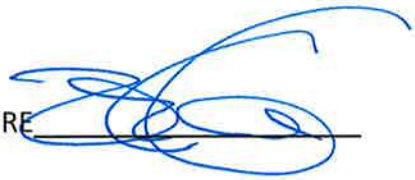
8/6/21
Date

FUSS & O'NEILL, INC. CORPORATE SEAL CONNECTICUT
Corporate Seal

CERTIFICATE OF NON-COLLUSION

The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club or other organization, entity, or group of individuals.

FIRM Fuss & O'Neill, Inc

SIGNATURE 

ADDRESS 146 Hartford Road

NAME (print) Dean Audet, PE

Manchester, CT 06040

TITLE Senior Vice President

TELEPHONE 800.286.2469 x4560

DATE 8/6/21

Corporate Seal

FUSS & O'NEILL

Certification of Corporate Resolution

I, Amy C. Jagodowski, the undersigned, do hereby certify that I am the Corporate Secretary of Fuss & O'Neill, Inc., a Connecticut Corporation, and that the following resolution was duly adopted by the Board of Directors of Fuss & O'Neill, Inc. on July 27, 2021.

"It is hereby resolved that the officers of the Corporation listed below be authorized and directed to execute any and all contracts, documents and any other pertinent instruments in connection with the Corporation subject to Fuss & O'Neill's internal policies regarding delegation of authority.

Officers of the Corporation:

Kevin J. Grigg: CEO, President
Amy C. Jagodowski: Secretary
John A. Chambers: Executive Vice President
Kevin W. Johnson: Executive Vice President
Dean E. Audet: Senior Vice President
Ted J. DeSantos: Senior Vice President
Gregory M. Dorosh: Senior Vice President
JoAnn Fryer: Senior Vice President
Craig M. Lapinski: Senior Vice President
Virgil J. Lloyd: Senior Vice President
Robert L. May, Jr.: Senior Vice President
Timothy J. St. Germain: Senior Vice President
Charles Ahles: Vice President
Sudip D. Bafna: Vice President
Adam M. Barbash: Vice President
Eric M. Bernardin: Vice President
Robert M. Danielson: Vice President
Daniel F. DeLany: Vice President
Christopher J. Ferrero: Vice President
Phillip E. Forzley: Vice President
Jenna Krzesicki: Vice President
Elizabeth Landry: Vice President
Kurt A. Mailman: Vice President
Shawn M. Martin: Vice President
Diane Mas: Vice President
Erik Mas: Vice President
Katherine Nanowski: Vice President
Margaret K. Snape: Vice President
Kristen E. Solloway: Vice President
Kevin M. Sullivan: Vice President
Mark Vertucci: Vice President"

I do further certify that the above Resolution has not been amended and is now in full force and effect.

ROBIN ZUCCHERO COLEMAN
Notary Public-State of Rhode Island
My Commission Expires
July 23, 2022

Notary: ROBIN ZUCCHERO COLEMAN

A TRUE AND ATTESTED COPY

ATTEST:

Amy C. Jagodowski

Amy C. Jagodowski
Corporate Secretary
Date: 8-6-21

FUSS & O'NEILL, INC. CORPORATE SEAL CONNECTICUT

FUSS & O'NEILL

Heritage Point
108 Myrtle Street, Suite 502
Quincy, MA 02171
800.286.2469
www.fando.com