



SUBMITTED TO:

Jack Clukey, Town Manager
The Town of Dover-Foxcroft
48 Morton Avenue, Suite A
Dover-Foxcroft, ME 04426

revised September 9, 2022
see page 35 - Project Schedule

SUBMITTED BY:



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June 27, 2022

The Town of Dover-Foxcroft
Jack Clukey, Town Manager
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Re: Proposal for Revitalizing the Mayo Mill Dam and Appurtenant Facilities

Dear Mr. Clukey,

It is our great pleasure to present our proposal to the Town of Dover-Foxcroft in response to the Revitalizing the Mayo Mill Dam and Appurtenant Facilities Request for Proposals. We understand the challenges the Town faces with management of the dam and the need to comply with regulatory requirements. At the same time, we recognize the impressive revitalization of the mill building, and the recent designation of the downtown commercial national historic district, among other successes. In the following pages, we propose an approach to collaboratively solve the infrastructure and regulatory challenges, while also embracing and supplementing the gains made in revitalizing Dover-Foxcroft.

We have an experienced team with extensive qualifications that closely match the technical skills and disciplines required. We are highly motivated and invested to assist the Town to build upon your successes. Interdisciplinary collaboration is the heart of our approach, and we look forward to supporting the Town of Dover-Foxcroft community and stakeholders to collectively craft solutions that are effective and efficient in meeting your goals. The following proposal summarizes our understanding of the context surrounding the Mayo Mill Dam, outlines our proposed approach, and details our scope of work and qualifications to complete the effort.

We propose to accomplish the work described in the following proposal at no cost to the Town. We would also like to highlight the highly favorable federal funding climate to implement solutions that may result from our proposed approach. We are eager to begin working with you on this project, and welcome the opportunity to discuss any of the details of our proposal more fully.

Sincerely,



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Contents

I. Project Understanding	4
II. Approach	7
III. Scope of Work	9
IV. Site Plan	13
V. Project Team Qualifications	14
VI. Past Project Experience	26
VII. Schedule and Budget	35



I. Project Understanding

Introduction

Dover-Foxcroft is a major transportation crossroads and gateway to Maine’s Highlands Region. The town has been a long-standing seat of Piscataquis County and is the civic, cultural, and commercial center of the region. In early European settlement, the power of the Piscataquis River fueled economic growth in the community and well into the twentieth century there were several mills that operated along the river in both Dover and Foxcroft. The towns merged in 1921, establishing Dover-Foxcroft, the largest community in Piscataquis County. In 2007, the last operating mill closed operations, but the dam at Mayo Mill remains. The dam, river, and abutting properties are central components of the Town’s Downtown Revitalization Plan (2003) and Town Comprehensive Plan (2016). As such, decisions about the dam, river, and the surrounding land and buildings are inextricably tied to one another and to attaining long-term stability and prosperity for Dover-Foxcroft citizens, economy and businesses, and the environment. Given the extensive Town ownership and connections into the downtown, the Mayo Mill Dam site and surrounding area can serve as a multi-use amenity for the community and visitors alike.

Mayo Mill Dam

The Mayo Mill Dam is located on the mainstem of the Piscataquis River in the heart of downtown Dover-Foxcroft. Activities at the site have long contributed to the vitality of the Town, including powering a historic mill. The current dam was originally constructed in 1920 and replaced in the 1980s. It provided power to the American Woolen Mill, later Moosehead Manufacturing Company, until 2007 when the mill closed operations. At that point, the dam and adjacent property, including the mill, were given to the Town. After a community visioning process for the mill property was

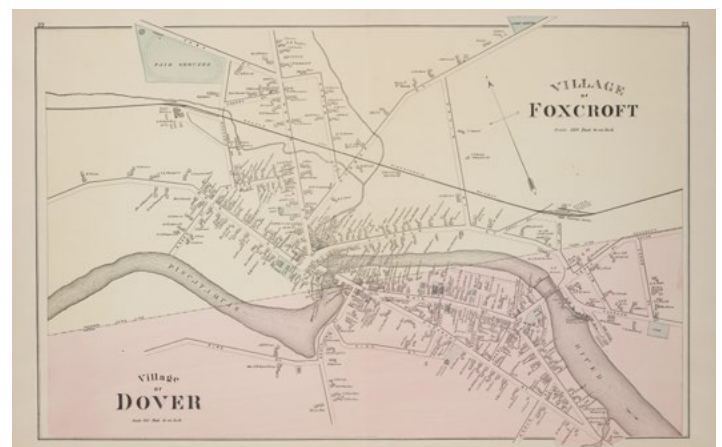
completed in 2010, the Town committed to collaborating with a private developer to preserve and redevelop the mill building with commercial and residential uses. The redevelopment plan also intended to revive hydroelectric production at the dam (dormant since 2007), in compliance with requirements from state and federal agencies, including the Federal Energy Regulatory Commission (FERC) and the Maine Historic Preservation Commission (MHPC).

The Mayo Mill Dam is a 12-foot high, 150-foot-long reinforced concrete structure that creates a 30-acre impoundment. Any proposed activity at the site needs to consider water levels in the impoundment, any infrastructure located within the impoundment, including municipal sewer discharge pipes, long-term maintenance and repair costs, and water quality standards set by the Maine Department of Environmental Protection (DEP). In addition, the Town, as the owner of the dam and holder of the FERC exemption (FERC P-5912), is responsible for meeting all requirements set by FERC, as well as state and federal resource agencies. Consultation with FERC is required to either surrender the exemption or file an amendment. In either case, FERC’s Division of Hydropower Administration and Compliance will seek public comment and agency input to ensure that public safety and environmental concerns are addressed. There will likely be substantial short-term and long-term costs associated with maintaining the structural integrity of the dam and improving fish passage in order to comply with the Endangered Species Act (ESA) for Atlantic salmon and requirements for passage improvements for other species that may be required by state and federal agencies, including Maine DMR, NOAA, U.S. Fish and Wildlife Service, DEP, and the Maine Department of Inland Fisheries and Wildlife (IFW).

The mainstem Piscataquis River is a critical migratory corridor for native ecologically and economically important species of sea-run fish: American shad, American eel, river herring,



A historic image of the dam looking upstream.

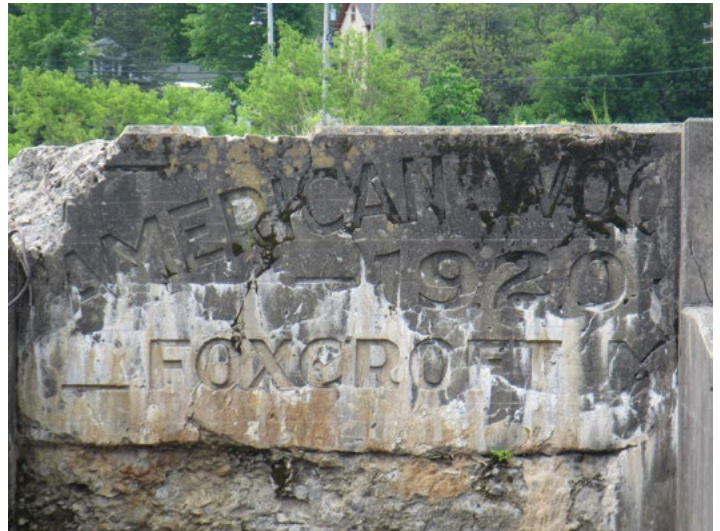


A historic map of Dover and Foxcroft, showing the Piscataquis River.

and Atlantic salmon. The Piscataquis River was designated as critical habitat for Atlantic salmon under the ESA in 2009 because of the abundant, high-quality spawning and rearing habitat. The river drains approximately 523 square miles of largely intact forest landscape that makes a large portion of the upper watershed very climate resilient, which benefits many native fish and wildlife species, particularly Atlantic salmon and Eastern brook trout. The river once supported impressive runs of sea-run fish. Improving habitat connectivity for these species is a critical element of their restoration and thus a very high priority for Tribal, State, and Federal Agencies, and NGOs. Due to the successful efforts of The Penobscot River Restoration Project, including construction of a nature-like fish bypass at the confluence of the Piscataquis River with the mainstem of the Penobscot River at Howland, Atlantic salmon and other native sea-run fish can now traverse a largely unimpeded migration route from the ocean to the headwaters, making this watershed one of the nation's best hopes for the recovery of Atlantic salmon.

Beginning in 2013, the Town initiated meetings with the National Marine Fisheries Service (NMFS), Maine Department of Marine Resources (DMR), and the Penobscot Indian Nation regarding the redevelopment of hydropower at the site and how to protect endangered Atlantic salmon at the dam. In 2021, the private developer that had leased the dam from the Town decided to not continue with redevelopment of hydropower at the dam. Later the same year, the Town requested that FERC pause their analysis under the National Environmental Policy Act to allow the Town to engage a new developer for the project and update their application for an amendment to the FERC exemption.

Despite the presence of a fishway at the Mayo Mill Dam, both upstream and downstream fish passage at the site remains a substantial impediment to Atlantic salmon and other species, significantly reducing the numbers of fish that can effectively use the high-quality spawning habitat found upstream, which



A detail of the inscription on the dam.

is critical to their survival. Addressing fish passage challenges at the dam is a key consideration for the Town in any future actions given the regulatory compliance required of the Town for fish passage under FERC, state and federal laws.

Adjacent Facilities and Assets

The dam structure is tied into an existing powerhouse containing non-operational turbines with a total rated capacity of 300 kW. The powerhouse is within the American Woolen Company Foxcroft Mill Historic District, which was added to the National Register of Historic Places in December 2012. The powerhouse is connected to the Mayo Mill building, which was built in 1844 and operated for 163 years. The Town acquired the property in 2007 and by 2015 through a community supported private-public partnership, established a modified mill complex for mixed use with innovative energy sources, the first of its kind in the region. The Mayo Mill now is an economic hub for several businesses including a boutique hotel and a café and is also home for many community members with 22 residential apartments, and a data center – the routing hub for newly expanded broadband internet access in this part of rural Maine. The redevelopment has led to a resurgence of vitality into the downtown and is a testament to the community's ability to create and execute a vision.

The riparian areas along the riverbanks of the full length of the river through Dover-Foxcroft are listed as 'Areas sensitive for Native American, pre-European, archaeology' by MHPC. These and other historic and archaeological resources signify the rich history and heritage of the Town, and their preservation is a priority for the community. We understand that any future action would require attention to these resources and require consultation with MHPA, Indian tribes, and other consulting parties pursuant to 36 CFR § 800.2(c)(4) implementing section 106 of the National Historic Preservation Act (NHPA).



The dam site in 2022.

The dam and its impoundment serve as a public recreation access point for boaters and anglers, provide a location for water withdrawal for fire protection, and act as an aesthetic focal point of the downtown. On one side of the river, the dam is tied into the mill building complex that was recently renovated and offers opportunity to further the momentum of redevelopment. Along Moosewood Lane is a landscaped riverfront greenway, which provides public access to the riverfront and connects the river into Monument Square and the downtown Main Street. On the other side of the river, the dam is connected into the state bridge on East Main Street and the abutting properties along South Street including several commercial businesses. This densely built end of the downtown was recently added to the National Register of Historic Places including 19 buildings surrounding Union Square. The majority of South Street along the river is undeveloped with the Chamber of Commerce and a public boat ramp located toward the corner of South St and Pine St. This end of the downtown is considered the gateway because the roads from southern and eastern Maine, lead into Town through these properties.

Based on the Flood Rate Insurance Map (FIRM) and Flood Insurance Study (FIS) completed by Federal Emergency Management Agency (FEMA), the current dam influences flooding patterns in the downtown and upstream area of Dover-Foxcroft. The entire footprint of the redeveloped mill

building is within the 100-year flood hazard boundary and a portion of the newly nationally register Commercial Historic along East Main Street is within the 100-year and 500-year flood risk area. As concluded in the Maine Climate Action Plan (2020), storms are expected to increase in frequency and size across the state. Incorporating the FEMA data into future planning with any actions considered in this proposal's project area will be a worthwhile to consideration as community resiliency is a priority for several funding programs.

Summary

Overall, Dover-Foxcroft faces many challenges at the site associated with an aging dam structure, including long-term operations and maintenance costs, regulatory compliance, and public safety. Revisioning the future of the dam and adjacent properties is a complex undertaking with consideration of the current condition and constraints, and it offers tremendous opportunity to capitalize on the momentum ignited with the Mayo Mill redevelopment and establishment of two registered national historic districts. A well-planned, community-based approach can provide a significant boost to Dover-Foxcroft's already successful downtown revitalization efforts and have substantial positive impacts for sea-run fish and the Piscataquis River ecosystem.

II. Approach

With this proposal Atlantic Salmon Federation (ASF) and The Nature Conservancy (TNC) in partnership with Inter-Fluve offer to assist Dover-Foxcroft in navigating next steps for the future of the Mayo Mill Dam and appurtenant facilities. The approach we propose will be delivered at no cost to the Town.

We propose to support a community-based visioning process for the dam and surrounding area to identify mutually beneficial solutions for the Town of Dover-Foxcroft and the ecological resources in the Piscataquis River. Ultimately, we will set a path forward for implementation of the preferred alternative for the future of the Mayo Mill Dam. Since the site is inextricably linked to the revitalization of downtown Dover-Foxcroft, we propose to extend the project area to encompass the dam, connected structures, nearby riverfront areas and the connections to Main Street and downtown. **We will collaborate with the Town to envision and evaluate a series of alternatives for the project area and then develop a plan for implementation of the best options.**

Our proposal is to complete a community-based feasibility and alternatives evaluation for the dam and surrounding properties at no cost to the Town. We are committed to providing the resources and expertise to assist the Town in a community-based visioning process that will engage residents, business owners, local institutions, and other stakeholders to provide meaningful input to guide decision making.

To accomplish this, we will begin by working with the Town to define the project stakeholders and project team expertise, then collectively establish goals and objectives for the project area. Initially, these objectives may include, but are not limited to:

- Managing the dam structure within the Town's responsibility;
- Restoring safe, timely, and effective upstream and downstream fish passage for all native migratory fish species based on regulatory compliance;
- Enhancing recreational opportunities along the Piscataquis River; and
- Align decisions regarding the project area with the long-term vision for downtown economic revitalization.

With a team of experts, we will assess these objectives, based on existing conditions, financial costs, regulatory compliance, infrastructure constraints, recreation, and overall alignment with town and regional planning goals to identify feasible solutions.

Community Visioning Process

Before embarking on the technical feasibility study, we propose first defining and implementing a path to establish the feasibility study within a community-based visioning process. Beginning with convening project stakeholders, we will collectively establish the goals and objectives for the dam, connected downtown structures, and riverfront areas in the vicinity of the dam. We acknowledge that a successful community visioning process can only occur if it is led by and has the full participation from the local community. We will fund the full cost of the scope of services outlined in this proposal including any associated community capacity needs to allow the Town and its residents to fully engage in the process. This may include funding for additional capacity and/or direct support for local leadership of the community visioning process by Town staff. We propose to supplement our core project team with additional experts selected in collaboration with the Town, including consulting with the Town on any additional experts that are needed once goals and objectives have been defined.



Proposed framework for the community-based feasibility and alternatives assessment of the Mayo Mill Dam

Feasibility and Alternatives Assessment

After establishing objectives in the initial planning phase, we will complete a thorough baseline evaluation for the project area to compare to possible alternative scenarios. The feasibility of a range of options will be evaluated with consistent input from the Town and their partners. We will explore technical alternatives for the dam and essential elements within the Town's management and analyze the possibilities to enhance the visual appeal for the gateway of the downtown. The deliverable will be a community-supported, clearly articulated vision for the future of the Mayo Mill Dam and adjacent project area with a path for implementation that compliments the Town's Comprehensive Plan and other downtown revitalization efforts. This will position the community to successfully seek funding to support future downtown economic development (e.g., Community Development Block Grants).

We recognize this approach extends beyond the criteria noted in the RFP. However, based on our understanding and experience in other communities, we believe that any future action at the dam will radiate outward and affect economic

vitality, community revitalization, quality of place, cultural heritage, and the Piscataquis River and the fish and wildlife resources that depend on it. Our goal is to meet the Town's goal of enhancing the quality of life in Dover-Foxcroft while restoring the river's upstream and downstream passage for native migratory fish. We are confident that this approach can result in shared success for the Town and all of the resources.

We understand how important effective communication is to the successful dissemination of key information at a meaningful scale, especially for a complex project. Our project team has extensive experience providing outreach and education, from facilitating stakeholder meetings to creating unique educational materials.

ASF and TNC propose to support the full cost of the scope of services outlined in this proposal. Furthermore, ASF and TNC will commit to procuring all funds needed to implement a solution at the dam that restores safe, timely, and effective upstream and downstream fish passage for all native migratory fish species. We will support the Town in identifying and applying for funds for additional implementation costs.

The next section details our proposed scope for the project.



III. Scope of Work

Project Kickoff & Planning

ASF, TNC, and Inter-Fluve will initiate the project planning phase. We propose to begin the process with an initial step of defining participatory roles of the Town and stakeholder groups. We will work with the Town to identify key project stakeholders within the community (staff, existing committees, current partner organization contacts, etc.) Based on initial research, we have suggested potential stakeholders in the community (see project team organizational chart) and this will be reviewed and finalized as part of the kickoff. The purpose of the stakeholder group members is to be active participants on the project team and serve as ambassadors for the community.

The Project Manager will convene a kickoff meeting with the Town's designated representatives to review the proposed project team and identify outstanding roles or expertise needed. We will collaboratively review the scope of work including the community-based process approach and make any mutually agreed upon adjustments to suit the Town of Dover-Foxcroft. Based on that meeting, we will finalize the project team and stakeholder group. The stakeholder group with the project team will define the project objectives and review and provide feedback on the alternatives.

DELIVERABLES

- Kickoff meeting
- Identify full project team and stakeholder group
- Resources provided to the Town or stakeholders to support any outstanding capacity needs for engagement by the Town in the community visioning process

ASSUMPTIONS

- Meeting venue will be in the vicinity of Dover Foxcroft, to be coordinated by the Project Manager and the Town.

Community Engagement & Outreach

A key component to ensure success is public engagement. We propose to host community meetings and/or present information at existing community meetings which will be open to the public to encourage community dialogue throughout the process.

Once the project team is established, we will meet with project stakeholders to discuss the concerns and desired directions for the project area. The meeting will follow a structured decision-making framework with an emphasis on values-based, transparent collaboration (see graphic in Approach). The goal of the session is to communicate objectives while creating space to ensure stakeholders can express their desires and vision for the future of the project area.

We will also host public community meetings in collaboration

with the stakeholder group to share the objectives of the study and cover relevant topical issues. Topics will include, but are not limited to: native fish species, fish passage, water quality, regulatory compliance, public access to the river, and historic resources. The topical meetings will explore the concerns and objectives and as the process is iterative, if any new concerns arise, the Town stakeholder group and project team will review them.

DELIVERABLES

- Meeting and site visit with project team and stakeholders to review problem and identify objectives
- Meeting notes that define and structure the objectives and measurements of evaluation
- Minimum of 4 topical public community meetings

ASSUMPTIONS

- Meeting venue will be in the vicinity of Dover Foxcroft, to be coordinated by the Project Manager and the Town

Project Coordination & Progress Meetings

Project management includes internal coordination of the project team as well as regular coordination, check-ins, and communication with the Town, and the project stakeholder group. Internal project management tasks include, but are not limited to: progress updates, management of project sequencing, and scheduling of project tasks. ASF, TNC, and Inter-Fluve will create and maintain a password protected file share page to facilitate information and data sharing.

The activities and progress of the design team will be managed by ASF and TNC through a joint Project Manager. Interactions with the Town to provide updates will be coordinated by the Project Manager. In addition to the meetings outlined in the task descriptions below, check-in meetings may be held with the designated Town point of contact for the project.

The project manager will also provide regular updates to the stakeholders and the designated Town point of contact through phone and email communications as well as public communication materials.

DELIVERABLES

- Monthly project meetings that will be coordinated by the Project Manager
- Monthly update communications to the stakeholders by the Project Manager
- File share website
- Regular communication via phone, email and published communication materials

ASSUMPTIONS

- Can be modified to suit Town needs
- Communications will be primarily via email and phone

Feasibility Study Baseline Development

This major task will establish a working baseline for dam and project area, against which alternative scenarios will be compared. This task establishes the existing site conditions of the various features that are important to consider in the evaluation of alternatives. This pertains to the dam, powerhouse, fishway and associated adjacent environment extending from the boat launch around to the fire protection water supply facility.

For each of the elements described below, work under this task will entail a thorough review of existing studies, plans, maps, and associated data for incorporation in the feasibility study. Based on this review, data gaps, if any, will be identified and filled with supplemental data collection, focused studies, or other efforts. Descriptions of this task for each of the important features to consider are described below.

1. Dam, Powerhouse and Fishway – The facility has been the subject of several studies over the past two decades. The reports and data will be reviewed for applicability to the present condition. Any apparent data or analysis gaps will be filled with supplemental study. Examples could include updated facility condition assessment, documentation of recent repairs, and other elements. By review of past documents, it appears that the dam was drawn down in support of the most recent FERC Application of Amendment of Exemption (filed date 11.23.2020). We will review surveys and photography that may be available from this event for application to evaluation of the dam. If the data is not available, we may ask for permission to conduct a supplemental limited drawdown to allow evaluation of the dam structure and forebay area.

2. River Channel and Impoundment – The river channel and impoundment have also been studied, but to less extent than the dam and powerhouse area. The relevant mapping and data will be reviewed for applicability to the present condition. Any apparent data or analysis gaps will be filled with supplemental study. Examples could include bathymetric survey, sediment thickness and quality assessment, and other elements such as photo surveys to locate existing riverside infrastructure. In addition, we anticipate development of a one-dimensional hydraulic model to simulate the flow of the river past the site under existing conditions. This model will be used to understand flood levels, erosion forces, and water levels in the impoundment area.

3. Infrastructure Resources and Associated Structural Conditions – Several pieces of critical infrastructure border or interface with the immediate project area. These include the

Main Street bridge, the fire protection water supply, potential storm sewer outfalls, and other features. The Main Street bridge was constructed in 1912 and was last reconstructed in 1988. The bridge is not presently found in the Maine DOT 3-year work plan (2022-24). Since the right dam abutment is integral with the bridge structure, we will gather all relevant structure condition assessment and as-built information, and coordinate with Maine DOT to understand potential future plans (if any). We will also query the Dover & Foxcroft Water District, Dover-Foxcroft Public Works, Dover-Foxcroft Fire Department, and other entities coordinated with the Town to identify additional infrastructure and utilities located adjacent to the project area. All identified features will be added to the project basemap and considered in evaluation of alternatives.

4. Property Ownership – The most current property parcel data will be obtained from available sources, with current ownership confirmed with the Town. The property ownership pattern for the project will be reviewed with the Town and others as appropriate to understand potential constraints such as shoreland and other land use ordinance zoning, easements, and rights-of-way that may affect project alternatives.

5. Ecological Resources – Ecological resources of the area have also been studied in detail, in particular native fish and invasive fish species present in the Piscataquis River. This includes 2015 and 2020 biological assessments associated with hydroelectric redevelopment proposals, and additional evaluations and mapping conducted by State of Maine and Federal resource agencies including DMR, IFW, DEP, and Maine Natural Areas Program. Additional resources are identified in the Town comprehensive plan. All of these sources of data, mapping and analysis will be synthesized for context for evaluation of project alternatives. It is anticipated that these past studies and data will be fully adequate to meet study needs.

6. Historic Resources – The area of the mill, dam and surrounding area are steeped in history. In addition to the Dover-Foxcroft land use ordinance Historic district, at least two registered national historic districts overlay and surround the area. In addition, a memorandum of agreement was struck between FERC and the Maine state historic preservation office for management of these historic assets should the hydroelectric facility be redeveloped. In contract, the dam itself was deemed not eligible for listing as a historical resource due to major reconstruction in the 1980s. All of this documentation will be reviewed, to establish context and opportunities for the evaluation of project alternatives. With the plethora of historical documentation, the need to collect additional historical documentation is not anticipated.

7. Recreational Resources – Recreational amenities also surround the project area, supporting activities such as paddling, fishing, small craft boating, and pedestrian walking and sight-seeing. Key access points to the river include the IFW public boat ramp adjacent to the Chamber of Commerce, and the parking area behind the Mayo Mill which offers

hand-carry boating access. Pedestrian circulation and access are afforded all along the downtown corridor. In addition, the ITS Snowmobile and Four Seasons Adventure Trails cross the river over a converted bridge near the upstream end of the impoundment. Documentation of these amenities will be reviewed, inventoried, and added to the project basemap for consideration in planning of project alternatives.

8. Community Planning Documents and Other Community Interest Inventories – Notable past and current effective community planning documents include the 2003 Downtown Revitalization Plan and the 2016 Town Comprehensive Plans. These community-motivated documents will be reviewed, and associated inventories updated for integration in the project basemap and considerations. Other inventories or sources of community feedback regarding the project area will be solicited and reviewed. The intent is to provide a current, community-motivated backdrop for project planning that allows proposed alternatives to mesh with and accentuate and foster realization of community goals for the area, such as those documented in the comprehensive plan. These will provide key input into to evaluation of project alternatives.

DELIVERABLES

- Meetings/Interviews to identify source of inventory with stakeholder group
- Meeting to review findings with stakeholder group
- 11"x17" Plan sheet of the existing conditions of the project area
- Survey points will be provided in .csv format and the existing conditions surface will be provided as a GeoTIFF
- Draft and final existing conditions report (PDF and MS Word)

ASSUMPTIONS

- Parcel data, and utility information, including information about the utilization of the existing dry hydrant, will be available from the town or other public sources.
- One round of review, comment, and revision between draft and final versions of the existing conditions report.
- All data will be provided upon request.

Feasibility & Alternatives Analysis

This major task will integrate the assessment of existing project area conditions with the guiding goals and objectives established for the study to develop project alternatives, which will be evaluated and discussed with the project stakeholder group.

We anticipate that each alternative will consist of combinations of primary 'building blocks' that include the objectives as determined through community outreach. Initially, the objectives and measurements of evaluation will include management of the existing dam and powerhouse; restoration and improvement of safe, timely and effective

fish passage as required for regulatory compliance; and enhancement of public amenity in the historic Dover-Foxcroft Downtown and Mill District Corridor and Gateway. The primary 'building blocks' are detailed below. See also the Site Plan that follows this section for a general orientation to the project area, and initial selected ideas that might contribute to project solutions.

1. Management of the Dam and Powerhouse - The options anticipated for the dam and powerhouse range from a) redevelopment and re-energization of the hydroelectric facility to b) retirement of the FERC exemption and decommissioning of the facility. For the redevelopment evaluation, the prior proposals developed since generation ceased in 2007 will be reviewed for current consistency and updated as required to reflect current market and facility conditions. Associated with retirement of the FERC exemption, considerations for management of the dam and powerhouse are tied to the restoration and optimization of safe, timely and effective fish passage, discussed below. Other strategies developed through collaborative discussions would also be considered.

2. Fish Passage - Restoration of sustained and resilient safe, timely, and effective fish passage is a fundamental element of any proposal for this site. The range of options to be evaluated may stem from: a) major improvements of the existing fishway facilities, b) installation of new technical fishway facilities, c) full dam removal, d) dam modification and associated development of a nature-like fishway, and e) partial or full dam breaching combined with nature-like fishway construction that still yields acceptable upstream water levels in the former impoundment area. Other strategies developed through collaborative discussions would also be considered.

3. Enhancement of Public Amenities - Public amenity enhancement of the historic Dover-Foxcroft Downtown and Mill District Corridor and Gateway could include a range of actions, with the intention to be consistent with and accentuate already established community objectives. Actions could include: a) enhancement of pedestrian access and flow in the corridor between the chamber of commerce, the historic downtown district, and the Mayo Mill district, b) accentuation of the gateway effect of the primary southern and eastern access pathways to the Town center, c) strategic acquisition strategy to consolidate the ownership of the properties bordering the river along South Street, d) integration of the historic downtown business district with the nexus of the mill to South Street corridor through improved pedestrian flow and safety, e) accentuated educational and historical acknowledgement facilities, f) support for redevelopment of storefront and walkable downtown businesses by leveraging the recent national historic district designations and associated business redevelopment resources, and g) selected other amenities such as targeted public art like historical or cultural murals and other assets. Other strategies developed through collaborative community discussions will also be considered.

4. Any further objectives as determined in the community outreach planning phase.

Preliminary Rapid Screening of Project Alternatives-

Various combinations of these project 'building blocks' will undergo a preliminary rapid screening process. In this preliminary screening they will be compared against each other in an alternative evaluation matrix which will qualitatively score the ability of each combination to achieve the goal and objectives established for the study. These measurements are expected to include factors such as:

- Feasibility and reliability of implementation
- Initial project cost
- Project life span costs
- Likely long-term operation and maintenance obligation
- Consistency with established downtown planning goals
- Water level impacts
- Estimated fish passage efficiency
- Regulatory compliance
- Likely availability of external funding
- Historical acknowledgement
- Public/recreational access and amenity
- Educational Value
- Aesthetics
- Economic development potential

Detailed Screening of Project Alternatives - The purpose of the rapid screening process is to reduce the overall number of potential alternatives to a manageable number of realistically achievable alternatives, estimated at three to five advanced project alternatives. In the detailed screening, these advanced alternatives will be evaluated in more detail, including selected quantitative analyses, detailed evaluations of project constraints and feasibility, analysis of project performance and effect of river conditions, and development of basic concept plans or artistic renderings to facilitate stakeholder outreach and review of the options. The advanced project alternatives will be detailed in a draft project study report, prepared for review by the Town, stakeholders, and other public. Included in the report will be a refined project comparison matrix which adds quantitative detail to the evaluation of the ability of each alternative to attain the established goals and objectives.

Selection of the Locally Preferred Project Alternative – Following review of the advanced project alternatives with the Town, stakeholders and the public, selection of a locally-preferred project alternative will be facilitated. The selection of the preferred alternative will be documented in the final study report. The selected alternative will then be developed to a refined conceptual design level of completion that will be adequate to serve as the basis for initiation of project permitting. The selected preferred alternative will also be

developed into artistic renderings to assist in communications of the design concepts and future conditions. This design and associated documentation will also serve as the basis for advanced project fundraising to identify resources for the detailed design and construction of the project.

DELIVERABLES

- Meeting with stakeholder group to review Preliminary Rapid Screening criteria
- Meeting with stakeholder group to review Detailed Screening of Project Alternatives draft report
- Public meeting(s) to review Detailed Screening of Project Alternatives draft report and facilitate Selection of the Locally Preferred Project Alternative
- Detailed Screening of Project Alternatives draft report
- Final Study Report including Plan sheet (refined conceptual design) and renderings

ASSUMPTIONS

- Meeting venues will be in the vicinity of Dover Foxcroft, to be coordinated by the Project Manager and the Town.

Implementation

This task is based on the success of the previous tasks but is a placeholder to note future coordination because the real goal is to implement a preferred alternative action. When we complete the feasibility study and identify a mutually beneficial solution for the Town of Dover-Foxcroft and the ecological resources in the Piscataquis River, we are committed to the next phase.

Upon selecting a preferred alternative and the completion of the refined conceptual design, we would proceed towards final design and engineering plans and specifications for construction. This phase would also include obtaining all local, state, and federal permits and meeting compliance standards with FERC. Once permits are in hand, we will secure a qualified contractor to construct the project.

At a minimum, ASF and TNC can commit to procuring all funds needed to implement a solution that restores safe, timely, and effective upstream and downstream fish passage for all native migratory fish species. Once the project is constructed, we would establish a post-construction plan and monitoring.

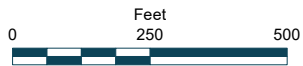
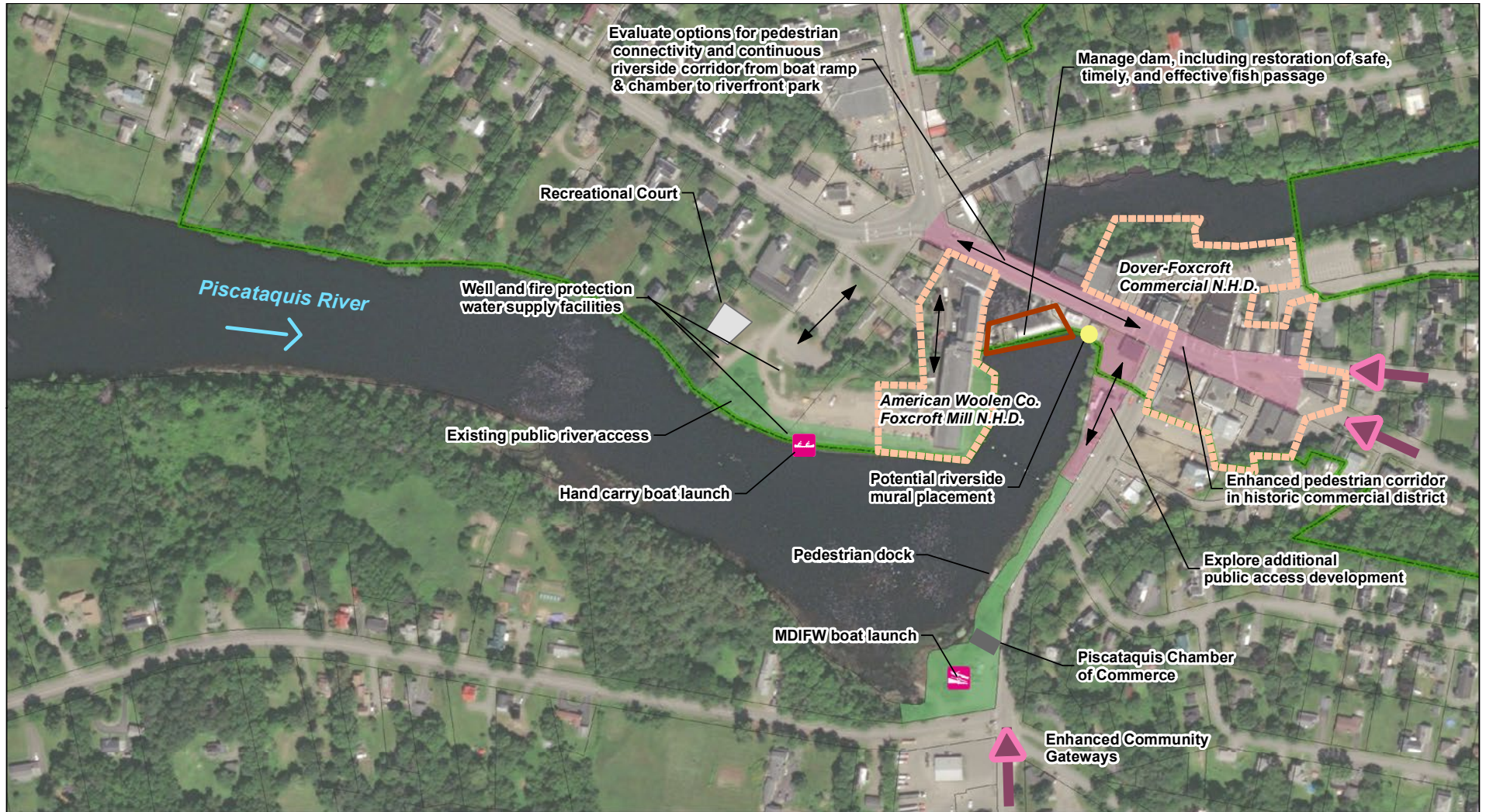
DELIVERABLES

- Final Design Package
- Successful Construction



ASSUMPTIONS

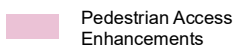

- The previous tasks are completed.
- A solution is defined by the Town that restores safe, timely, and effective upstream and downstream fish passage for all native migratory fish species.

IV. Site Plan



Legend

-  National Historic District
-  Dover-Foxcroft Historic District Boundary

-  Pedestrian Access Enhancements
-  Parcel Boundaries

-  Ped. Circulation Enhancement
-  Public Access

**Revitalizing Mayo Mill Dam
Dover-Foxcroft, Maine
Site Plan**

V. Project Team Qualifications

To provide effective and comprehensive assistance to the Town, we have an experienced team with extensive history working with Maine communities to achieve balanced solutions to resource management challenges. Atlantic Salmon Federation and the Nature Conservancy in Maine co-lead the

Atlantic Salmon Federation



The Atlantic Salmon Federation (ASF) is an international non-governmental organization dedicated to conserving and restoring wild Atlantic salmon and their ecosystems. Founded in 1948, ASF utilizes science and advocacy to address the most significant issues that threaten wild Atlantic salmon. ASF conducts

ground-breaking research on wild salmon throughout the North Atlantic, performs complex river restoration projects, and advocates for good environmental decisions. Based in Brunswick, Maine, ASF's U.S. staff have more than 50 years of experience in project management, ecosystem restoration, conservation and restoration planning, outreach and community engagement, and fundraising. Through the Maine Headwaters Project, ASF has worked with local communities, private landowners, Tribal governments, state and federal agencies, and other conservation organizations to complete more than 40 small dam removal, fishway construction, and culvert replacement projects across Maine since 2000. ASF successfully secured and managed more than \$12 million in federal, state, and private funding for these projects. ASF was also an integral partner in the Penobscot River Restoration Project which re-opened the lower river to sea-run fish migration, elevating the Piscataquis River watershed to one of the nation's best hopes for the rebound of Atlantic salmon and river herring populations.

Project Team / Key Staff

MARANDA NEMETH, MAINE HEADWATERS PROJECT MANAGER

Maranda has a decade of technical and project management experience in fish passage and watershed restoration. Maranda has expertise in project design and engineering, contractor and consultant management, construction oversight, permitting and compliance, communications, and community engagement. Maranda will be the project manager for the project.

JOHN BURROWS, EXECUTIVE DIRECTOR FOR U.S. OPERATIONS

John has worked on species and ecosystem management, conservation, and restoration since 1998. John has expertise

in fisheries biology and river ecology, project management, hydropower licensing, grant writing and fundraising, and communications and engagement. John will support the project through project management oversight, providing guidance related to the FERC surrender process, coordination of State and Federal agency relations, partnership development, and fundraising support.

team. Inter-Fluve will provide the primary technical support for the effort and will coordinate and oversee integration of additional subject matter experts as needed. Additional expertise will be added based on Town input.

CAT BIRMINGHAM, GRANTS AND OFFICE ADMINISTRATOR

Cat brings seventeen years of experience in administration, research, writing and design, marketing, and project management support for small businesses, non-profits, and private clients. Cat will provide administrative, communications, and fundraising support to the project team.

Advisory Staff

ANDREW GOODE, VICE PRESIDENT FOR U.S. OPERATIONS

Andy oversaw ASF's conservation and advocacy work in the U.S. for 20 years and is now focused on development and fundraising for ASF in the U.S. and Canada. Andy developed ASF's Maine Headwaters Project and successfully managed numerous restoration projects, including more than a dozen projects in the Penobscot River watershed. Andy will provide guidance and support on fundraising for the project.

The Nature Conservancy



The Nature Conservancy (TNC) is a global environmental nonprofit working to create a world where people and nature can thrive. Founded in the U.S. through grassroots

action in 1951, The Nature Conservancy has grown to become one of the most effective and wide-reaching environmental organizations in the world. The Maine chapter of TNC has been working to conserve the lands and waters on which all life depends since 1956. In Maine, our six-person freshwater team is focused on restoring river and stream health by reconnecting networks of streams, lakes, and rivers with the Gulf of Maine in critical places for fish and wildlife, while also addressing priorities for Maine's human communities. TNC Maine was an integral partner in the Penobscot River Restoration Project which re-opened the lower river to sea-run fish migration, elevating the Piscataquis River watershed to one of the nation's best hopes for the rebound of Atlantic salmon and river herring populations. TNC's staff includes a team with more than 30 years of experience in conservation and restoration planning, project management, site assessment, design review, alternative energy approaches, land acquisition, outreach and community engagement, and fundraising. TNC specializes in bringing together the public and private sectors to achieve conservation success. This team attracts and manages millions of dollars for dam, culvert, and monitoring projects. Furthermore, we can directly access and leverage the expertise and lessons learned of hundreds of freshwater scientists and project managers on staff throughout the U.S. alone.

Project Team/Key Staff

EILEEN BADER HALL, FRESHWATER RESTORATION MANAGER

Eileen has thirteen years of experience planning and managing stream and watershed restoration projects. She also has expertise in grant writing and fundraising, in addition to community and private landowner outreach. Eileen will provide project management, partnership development, and fundraising support for this project.

MOLLY PAYNE WYNNE, FRESHWATER PROGRAM DIRECTOR

Molly has participated in and has led multi-disciplinary fisheries and river restoration projects since 2010. She brings experience working directly on large- and small-scale projects, and has a particular focus on ecological monitoring and the ways in which river restoration can directly benefit human communities. Molly will provide ecological and technical expertise, coordination of State and Federal agency relations, partnership development, and will co-lead funding strategy and fundraising for this project.

Advisory Staff

TAMARA LEE PINARD, COMMUNITY INITIATIVES MANAGER

Tamara is an environmental professional with over twenty-five years of experience in fostering partnerships, designing for systems change, and working collaboratively with the end goal of building healthy communities. Tamara is responsible for designing and leading projects that blend the needs of local communities with natural resource conservation. Tamara's work is focused on systems change at local, regional, and statewide levels through her engagement with the Katahdin region, Sebago Clean Waters, Nature Based Education Consortium, and leading TNC Maine in development of a long-range plan to shift how we connect and engage people with our preserves. Her professional experience includes developing and serving as the Executive Director of the Long Creek Watershed Management District, a unique collaboration of public and private entities including small and large businesses, government agencies, and environmental non-profits; developing watershed management plans for lakes and urban impaired streams; and serving as a facilitator for 14 municipalities that work cooperatively to meet stormwater permitting requirements.

JEREMY BELL, CLIMATE ADAPTATION PROGRAM DIRECTOR

Jeremy has over 20 years of conservation experience. He works on issues primarily related to water – whether supporting on the ground project, improving policy, or finding innovative funding streams to meet the scale of the problem. He has worked on energy related to dams and solar projects. He has overseen dozens of projects in his career related to rivers, wetlands and infrastructure. His current work focuses on projects that make both human communities and natural habitats more resilient to our changing climate.

Inter-Fluve



Since our founding in 1984, Inter-Fluve has been on the forefront of river and stream engineering, management, and restoration practice. Inter-Fluve's interdisciplinary team of over 50

scientists, engineers, and staff integrates engineering and landscape design with biological and physical sciences to develop management and restoration solutions in complex aquatic systems involving fish, wildlife, and humans. Inter-Fluve works in a range of systems and settings, often at the interface between critical infrastructure and rivers, from rural to urban, and alpine to coastal. Inter-Fluve's projects primarily focus on the management and restoration of river ecosystems, involving fish passage and management of dams, habitat enhancement, infrastructure risk assessment and stabilization, and community-interfacing urban projects that balance the needs of people and society with ecological objectives. We have decades of experience in all phases of project development, from community and stakeholder engagement through design, construction oversight, and post-construction monitoring.

Inter-Fluve's Maine office is located in Damariscotta. Our work in the Piscataquis River to date has included a feasibility study for the management of the Guilford Dam and the associated mill buildings that it impacts, design and implementation of the naturelike Howland fish bypass channel, and a large-scale analysis of the watershed to identify priority fish passage barrier restoration projects at road crossings.

Inter-Fluve is an employee-owned Self-Certified Small Business, and we annually allocate 7% of our profit to promote aquatic restoration practice and education.

Project Team/Key Staff

MIKE BURKE, PE, PRINCIPAL WATER RESOURCES ENGINEER

Mike Burke is a professional engineer with 27 years of experience in every step in the project process: data acquisition, hydrologic, hydraulic and fluvial process analyses, applied restoration, fish passage planning and design, and construction oversight. Mike has extensive experience with detailed hydraulic and hydrodynamic modeling of regulated rivers across the country. His interests include addressing the ecologic impacts of water resources development and habitat restoration based on understanding of large scale physical influences and ecologic response. He has worked with diverse project partners throughout his career, including remote village councils in Nepal, individual landowners, Native American tribes, local, state and federal agencies, water and power utilities, and regional transportation authorities.

JONATHON KUSA, PE, LEED AP, PRINCIPAL WATER RESOURCES ENGINEER

Jonathon is a professional engineer with over 22 years of experience. He provides leadership to 50 engineers, scientists and technicians across the country. His diverse experience in water resources engineering translates into unique solutions to surface water management challenges. Jonathon has a well-rounded technical background in erosion control, transportation, wastewater, site development, river restoration, and hydrologic and hydraulic modeling. Jonathon enjoys facilitating public involvement meetings for complex water resources and transportation projects, lectures at Harvard University, and regularly presents at conferences and workshops throughout the country.

NICK NELSON, CERP, SR. FLUVIAL GEOMORPHOLOGIST

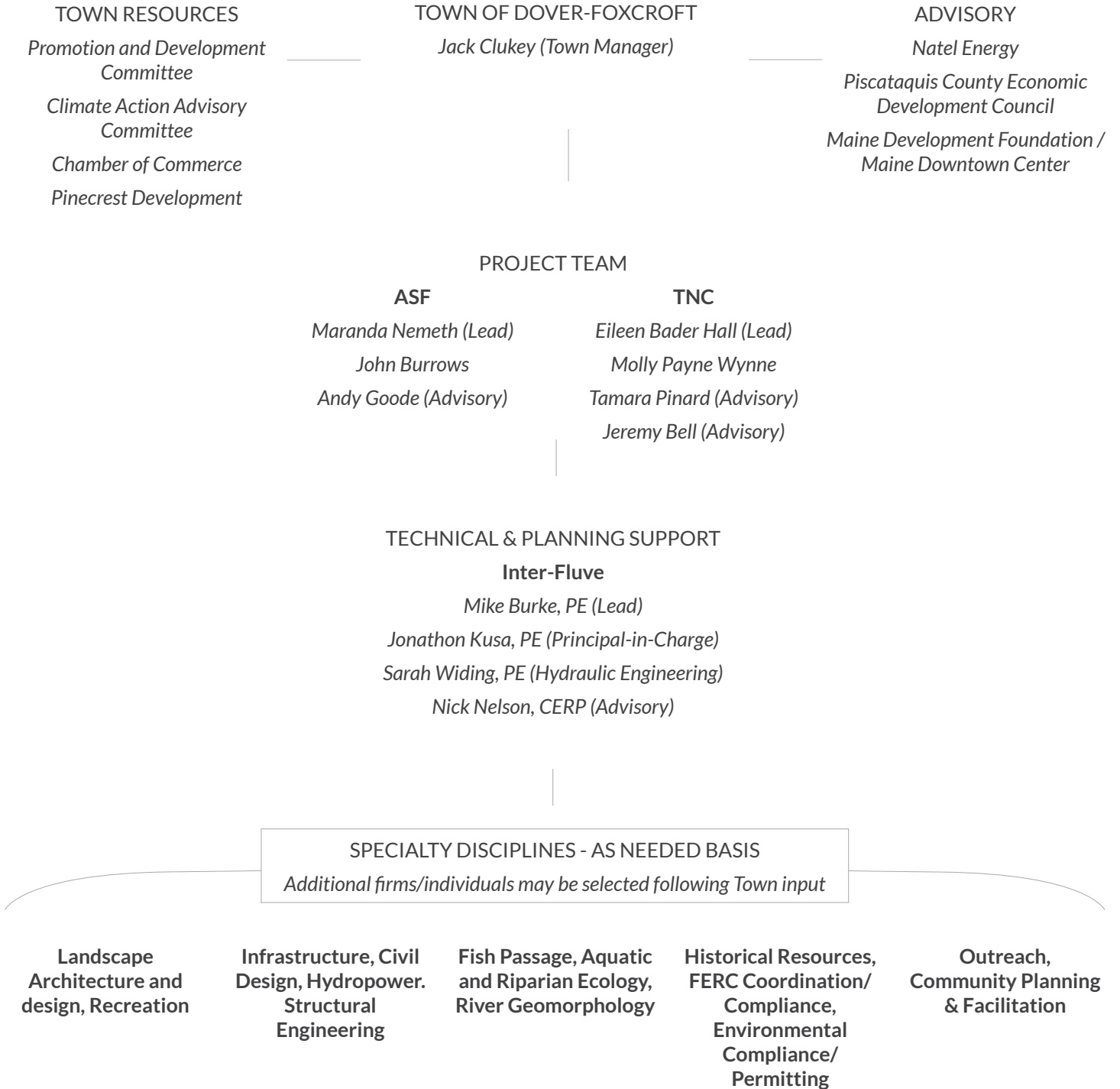
Nick has 15 years of experience as a fluvial geomorphologist and manages Inter-Fluve's office in Cambridge, MA. He is currently working on all phases of dam removal and river restoration projects around the country, leading project management, construction oversight, topographic surveying, and restoration design. His work with Inter-Fluve has focused on dam removal and urban channel restoration/rehabilitation planning and design, cranberry bog restoration design, geomorphic and habitat assessments, and GIS analyses. Nick has taught at Northeastern University, the University of Minnesota, Harvard University Graduate School of Design and was an invited instructor at Tongji University in Shanghai, China in 2017. Nick was a recent technical advisor for the Fluvial Geomorphology Task Force with the UMass RiverSmart Communities program.

SARAH WIDING, PE, SR. WATER RESOURCES ENGINEER

Sarah is a professional engineer with 17 years of experience serving public and private clients. Sarah's technical and project management experience include hydrologic, hydraulic, and floodplain modeling; stormwater management system permitting and design; dam safety applications including Phase I studies, breach analyses, and inflow design flood determinations; and culvert and bridge crossing design for structural stability and habitat continuity. Sarah has worked on numerous dam removal planning and dam safety projects throughout New England including the award-winning Exeter Great Dam Removal project.

Organizational Chart of Proposed Team

The following pages contain resumes for our key staff.





MAINE HEADWATERS PROJECT MANAGER

Maranda Nemeth

Maranda’s role is to lead a team of stakeholders and provide coordination to progress and implement fish passage projects across Maine. Maranda has also completed technical trainings in stream restoration, wetland delineation, construction site management, project compliance, and water quality monitoring. Maranda most recently oversaw the implementation of two river restoration projects on Maine’s Sheepscot River and was recognized for this work by National Marine Fisheries Service as the recipient of the 2021 Partner in the Spotlight Award for Atlantic Salmon recovery. In addition to her technical expertise, Maranda is also effective at communicating with a diversity of partners including government agencies, non-profit organizations, businesses, and the general public.

EXPERTISE

- Applied Aquatic Restoration Planning
- Community Engagement
- Project Management
- Construction Oversight
- Fundraising
- Grant Management
- Permitting

EDUCATION

BS, Environmental Science, Allegheny College, 2012

REGISTRATIONS & AFFILIATIONS

- Atlantic Salmon Federation
- Society for Ecological Restoration

SELECTED PROJECT EXPERIENCE

Sheepscot River Initiative

WHITEFIELD & ALNA, ME (2015-2020)

The Atlantic Salmon Federation and their partners contracted with Inter-Fluve to assist on a collaborative visioning and site design for two historical dam sites on the Sheepscot River. The interdisciplinary team developed solutions to safeguard public safety, support native fish populations, memorialize village history, promote public use and river access for recreation, and provide educational components. Maranda oversaw and managed technical development with project consultants; managed contracts; secured regulatory permits; provided construction oversight; led outreach meetings; applied for grants; and managed the project budget.

Walton’s Mill Dam Removal and Park Project

FARMINGTON, ME (2016-PRESENT)

The removal of the Walton’s Mill Dam in summer 2022 will restore access to more than 50 miles of stream habitat for Atlantic salmon, brook trout, river herring, and American eel. The project also involves substantial improvements to the adjacent town park, including a new pavilion, washroom, scenic overlook, parking and walkways, and interpretive signage. Maranda is overseeing the permitting, fundraising, community outreach, construction oversight, partner coordination, and grant management.

Crooked Brook Flowage and Baskahegan Lake Dam Fishway

DANFORTH, ME (2017-PRESENT)

The goal of this project is to install a fishway to allow river herring and other species to pass the Crooked Brook Dam and to align the

project within the town’s revitalization efforts. The dam currently blocks access into Crooked Brook Flowage and Baskahegan Lake and Baskahegan Stream and its tributaries that were historically used by endangered Atlantic salmon, alewives, blueback herring, and American eel. Construction is slated for 2023. Maranda is the community liaison and is overseeing the permitting, fundraising, construction oversight, partner coordination, and grant management.

Chesterville Wildlife Management Area Dam Feasibility Study

CHESTERVILLE, ME (2020-PRESENT)

A collaborative project with Maine Inland Fisheries and Wildlife and partners to evaluate current conditions at the dam and evaluate options to restore fish passage while maintaining waterfowl habitat and the existing public use amenities. Maranda is managing the contract for technical services to execute the study and is overseeing the partner coordination, and grant management.

Nine Mile Run Fish Passage Restoration

PITTSBURGH, PA (2015-2017)

As the only daylighted stream in the City of Pittsburgh and nestled within a public park, restoration was a priority. The original restoration was completed years prior but after several large storms, many of the features became barriers to fish passage. Maranda oversaw the design development and permitting which including state endangered species consultation. Maranda also ensured all community stakeholders and partners were collaboratively involved at every step.



FRESHWATER RESTORATION MANAGER, TNC

Eileen Bader Hall

Eileen works with a myriad of private, municipal, federal, state, NGO, and tribal partners to restore the connectivity of Maine’s streams, brooks, and rivers for aquatic organisms. Eileen is a member of TNC’s freshwater team and partners to implement high-leverage strategies to accelerate the momentum of river restoration in Maine, and is supporting several connectivity projects, with a particular focus in the Piscataquis and St. Croix (or Skutik) River watersheds. She has 13 years of project manager experience specific to aquatic/watershed restoration projects, including in-stream survey and data collection, private landowner and community outreach, and grant writing. Recently, Eileen led the Maine Aquatic Connectivity Restoration Project to complete nearly 70 stream restoration projects, restoring connectivity of over 100 stream miles. Approximately half of these projects are located in the headwaters of the Piscataquis River watershed.

EXPERTISE

River Restoration
Aquatic Organism Passage
Project Management
Grant Writing

EDUCATION

BS, Biology, Illinois State University, 2007
MS, Environmental Science, Miami University, 2009

REGISTRATIONS & AFFILIATIONS

The Nature Conservancy

SELECTED PROJECT EXPERIENCE

Maine Aquatic Connectivity Restoration RCPP Project

STATEWIDE (2018-2021)

The Maine Aquatic Connectivity Restoration Project is a partnership with the Natural Resources Conservation Service, and made possible through the Regional Conservation Partnership Program (RCPP), focused on working with private landowners to implement aquatic organism passage projects. The project was supported by a collaboration of 18 tribal, state, federal, nonprofit, and private landowners, and covers 25,255 square miles of project area, including the last endangered Atlantic salmon-listed watersheds in the U.S. and critical Eastern brook trout habitat. In total, 66 projects, restoring over 100 stream miles were completed. Eileen was Project Manager.

Crooked Brook Flowage and Baskahegan Lake Dam Fishway

DANFORTH, ME (2017-PRESENT)

The goal of this project is to install a fishway to allow river herring and other species to pass the Crooked Brook Dam and to support and align the project within the town’s revitalization efforts. The dam currently blocks access into Crooked Brook Flowage and Baskahegan Lake (8,960 total surface acres) and Baskahegan Stream and its tributaries (137 stream miles) that were historically utilized by endangered Atlantic salmon, alewives, blueback herring, and American eel. Eileen assisted with fundraising and managed the engineering design contracts.

Watershed Approach to Restoring Stream Systems RCPP Project

STATEWIDE (2021-PRESENT)

The WATRSS RCPP Project is a continuation of the Maine Aquatic Connectivity Restoration RCPP Project – to build upon the momentum and interest generated within the first TNC-led Aquatic Organism Passage focused RCPP Project in Maine. The project also includes the ability to assist a subset of municipalities with engineering design for road-stream crossings on town-owned roads. Eileen contributed to grant writing and project oversight.

Guilford Dam Feasibility Study

GUILFORD, ME (2019-PRESENT)

The project builds on important work done in the Penobscot watershed over the last decade, most notably the Penobscot River Restoration Project’s two mainstem dam removals, construction of a nature-like fishway around the Howland Dam at the confluence of the Piscataquis and Penobscot Rivers, and numerous barrier removals in both upper and lower river tributaries. The goal of the project work is to make a significant contribution to critical next steps for the removal of the Guilford Dam and adjacent floodplain restoration by completing the final engineering design. The dam removal project alone will ultimately reconnect more than 9,738 suitable habitat units in the Piscataquis watershed above the dam. Eileen is a project manager, which includes coordination with contractors, contract management, landowner outreach and coordination, and fundraising.



EXECUTIVE DIRECTOR, US OPERATIONS, ASF

John R.J. Burrows

John brings a quarter-century of fisheries and ecosystem conservation and restoration experience to the project. John oversees ASF’s conservation, communications, and advocacy activities in the United States. John was appointed to the ESA Recovery Team for endangered Atlantic salmon in 2005. In 2014, John received The Conservation Award from the Laudholm Trust and Wells National Estuarine Research Reserve for outstanding work and dedication to restoring Maine’s rivers. In 2018, John was appointed to serve on the U.S. Delegation to the North Atlantic Salmon Conservation Organization. John has also served for more than 20 years on the Board of Directors of Project SHARE, a non-profit organization that works with commercial landowners on conservation and restoration projects on the salmon rivers of Downeast Maine.

EXPERTISE

- Community Outreach
- Project Management
- Grant Writing
- Fundraising
- Strategic Planning
- Fisheries Biology
- Aquatic Ecology

EDUCATION

- BA, Political Science and Environmental Studies, Gettysburg College, 1996
- MES, Environmental Law and Policy, Yale University, School of the Environment, 1998

REGISTRATIONS & AFFILIATIONS

- Atlantic Salmon Federation

SELECTED PROJECT EXPERIENCE

Penobscot River Restoration

LOWER PENOBSCOT RIVER, ME (2001-2016)

The Penobscot River Restoration Project was a collaborative effort to balance fisheries restoration and hydropower production in Maine’s largest watershed, resulting in the removal of two mainstem dams, construction of a nature-like fish bypass at a third, and improved fish passage at several other facilities. John was responsible for community outreach and engagement, communications, fundraising, and government relations.

Crooked Brook Flowage and Baskahegan Lake Dam Fishway

DANFORTH, ME (2017-PRESENT)

The goal of this project is to install a fishway to allow river herring and other species to pass the Crooked Brook Dam and to support and align the project within the town’s revitalization efforts. The dam currently blocks access into Crooked Brook Flowage and Baskahegan Lake (8,960 total surface acres) and Baskahegan Stream and its tributaries (137 stream miles) that were historically utilized by endangered Atlantic salmon, alewives, blueback herring, and American eel. John worked on the project feasibility assessment and led community outreach and engagement, fundraising, grant writing, and reporting.

Walton’s Mill Dam Removal and Park Project

FARMINGTON, ME (2016-PRESENT)

The removal of the Walton’s Mill Dam in summer 2022 will restore access to more than 50 miles of stream habitat for Atlantic salmon, brook trout, river herring, and American eel. The project also involves

substantial improvements to the adjacent town park, including a new pavilion, washroom, scenic overlook, parking and walkways, and interpretive signage. John’s role has included project feasibility and assessment, project management, community outreach and engagement, fundraising, and grant writing and reporting.

Blackstone Brook Bridge

BLANCHARD, ME (2014-2016)

This project replaced an 8-foot concrete box culvert with a 51-foot steel bridge, reconnecting nine miles of cold-water stream habitat with the mainstem of the Piscataquis River. John’s role included project management, community outreach and engagement, fundraising, and grant writing and reporting.

Coleman Pond Fishway Project

LINCOLNVILLE, ME (2011-2013)

Construction of a stone pool-and-weir fishway at the outlet of Coleman Pond in the Ducktrap River Watershed. The project restored access to Coleman Pond for alewives, brook trout, and American eel and provided access to cold-water refugia and over-wintering habitat for Atlantic salmon. John’s role included project management, community outreach and engagement, communications, fundraising, and grant writing and reporting.



FRESHWATER PROGRAM DIRECTOR, TNC

Molly L. Payne Wynne

Molly brings 10 years of experience working restoration of connectivity between the Gulf of Maine and priority rivers, lakes, ponds, and headwater streams. Molly manages TNC Maine’s Freshwater Program with a focus on project monitoring and data collection, conservation planning and prioritization, policy, and partnering with local communities and restoration practitioners. She manages staff work and organizational investments in removal of obsolete dams, installation of fish passage at dams that cannot be removed, and stream-crossing upgrades to “stream smart” culverts. Molly focuses on advancing conservation and restoration actions that have lasting benefits for local people, especially indigenous communities, drawing in particular from the intersections of scientific information, local knowledge, and community values.

EXPERTISE

- River Restoration
- Fisheries Biology
- Aquatic Ecology
- Project Management
- Community Outreach
- Fundraising
- Grant Writing

EDUCATION

- BS, Environmental Biology, SUNY College of Environmental Science and Forestry, 2010
- MS, Biology, University of Southern Maine, 2013

REGISTRATIONS & AFFILIATIONS

- The Nature Conservancy
- American Fisheries Society

SELECTED PROJECT EXPERIENCE

Penobscot River Restoration

LOWER PENOBSCOT RIVER, ME (2001-2016)

The Penobscot River Restoration Project was a collaborative effort to balance fisheries restoration and hydropower production in Maine’s largest watershed, resulting in the removal of two mainstem dams, construction of a nature-like fish bypass at a third, and improved fish passage at several other facilities. Molly was responsible for community outreach and engagement, communications, fundraising, and government relations.

Penobscot River Habitat Focus Area

PENOBSCOT WATERSHED (2018-2021)

Leveraged former investments in restoration in Maine’s Penobscot River watershed by focusing on addressing in-river barriers by advancing two mainstem dam removal efforts, construction at two fishways, and replacement of five impassable culverts in the watershed. Molly’s role included grant writing and reporting; federal award management; project budgeting, outreach and communications; partner coordination

Maine Aquatic Barrier Survey

STATEWIDE (2009-2020)

Comprehensive inventory of road-stream crossings in the State of Maine with over 26,000 data records and nearly 98% coverage of the state; Data from this survey effort informs the Maine Statewide Barrier Prioritization Tool which, along with other fisheries and habitat data, identifies which crossings act as barriers to aquatic organism passage, and helps users understand the physical and ecological context of each

barrier– which can be used in concert with other relevant data (such as economic factors or municipal support) to help decision makers identify the most ecologically beneficial projects. Molly’s role included project management, field logistics and safety, data management, and data QA/QC.

Telling Our Story: Communications and Sea-run Fish in Maine

STATEWIDE (2020-PRESENT)

Comprehensive inventory of road-stream crossings in the State of Maine with over 26,000 data records and nearly 98% coverage of the state; Data from this survey effort informs the Maine Statewide Barrier Prioritization Tool which, along with other fisheries and habitat data, identifies which crossings act as barriers to aquatic organism passage, and helps users understand the context of each barrier– which can be used in concert with other relevant data (such as economic factors or municipal support) to help decision makers identify the most ecologically beneficial projects. Molly’s role involved project management, outreach, and participant engagement.

Sea-Run Citizen Science

STATEWIDE (2018-PRESENT)

A long-term, scientifically rigorous, coastwide survey to identify smelt spawning presence and absence in Maine which connects people to the sea-run smelt in Maine’s tidal streams, the science of monitoring smelt spawning, and to each other as essential partners in habitat stewardship. Molly’s role involved program coordination; fundraising; education and outreach; and partnership management.



PRINCIPAL WATER RESOURCES ENGINEER, INTER-FLUVE

Michael P. Burke, PE, P. Eng

Mike Burke is a professional engineer with 27 years of experience in every step in the project process: data acquisition, hydrologic, hydraulic and fluvial process analyses, applied restoration, fish passage planning and design, and construction oversight. Mike has extensive experience with detailed hydraulic and hydrodynamic modeling of regulated rivers across the country leading to sustainable river management strategies at the interface with critical infrastructure. His interests include addressing the ecologic impacts of water resources development and habitat restoration based on understanding of large scale physical influences and ecologic response. He has worked with diverse project partners throughout his career, including remote village councils in Nepal, individual landowners, Native American tribes, local, state and federal agencies, water and power utilities, and regional transportation authorities. Mike leads our Damariscotta office.

EXPERTISE

- Water Resources Data Acquisition
Hydrologic, Hydraulic and Fluvial Process Analyses
Dam Removal Planning
Applied Aquatic Restoration Planning
Stream Channel Design
Fish Passage Design
Project Management
Construction Oversight

EDUCATION

- MS, Civil Engineering
Center for Ecohydraulics Research
University of Idaho, 2006
BS, Civil Engineering
University of Wisconsin, 1993

PROFESSIONAL AFFILIATIONS & REGISTRATIONS

- Professional Engineer: CA, ID, MA, WI, ME, RI, NH, MI, VT, NB (Canada)
American Society of Civil Engineers (ASCE)
American Council of Engineering Companies of Maine

SELECTED PROJECT EXPERIENCE

Megunticook River Feasibility Studies

CAMDEN, ME (2018-PRESENT)

Six dams on the Megunticook River, and are in various states of vulnerability block fish passage and pose a variety of challenges to nearby communities. Inter-Fluve was contracted by the Town of Camden to conduct a feasibility study to evaluate options. Inter-Fluve also developed a comprehensive plan to address fish passage, flooding hazards, vulnerable infrastructure, and degraded stream and wetland habitat for the entire watershed. This involves site assessment, alternatives analysis, and preliminary design for all six dams. Mike is the project manager and lead engineer.

Sheepscot River Dams

ALNA, ME (2015-2019)

The Atlantic Salmon Federation and their partners contracted with Inter-Fluve to assist on a collaborative visioning and site design for two historical dam sites on the Sheepscot River. Coopers Mills dam was removed in 2018, and nature-like fish passage was completed at Head Tide dam in 2019. Mike was project manager, technical lead, and engineer of record.

Guilford Dam Feasibility Study

GUILFORD, ME (2019-PRESENT)

The Guilford dam threatens the integrity of structures, influences flooding patterns, and is a fish barrier to Atlantic salmon and other native sea-run fish. TNC contracted Inter-Fluve to lead a dam feasibility study and develop a plan that results in a free-flowing river through the town while addressing the stability of the historical mill buildings and

risk to the aging boiler system that the facility depends upon for continued operation. Mike is project manager.

Milltown Dam Decommissioning and Naturelike Fish Passage

ST. STEPHEN, NB / CALAIS, ME (2019-PRESENT)

Contracted by NBPower, Inter-Fluve is part of a team for the decommissioning of the oldest operating hydroelectric generating station in Canada. The project is expected to restore the Salmon Falls and open spawning habitat to a variety of species. It includes decommissioning station structures, large-scale fish passage construction, and ecological restoration. Mike is project manager and lead engineer.

Howland Fish Bypass Channel

HOWLAND, ME (2014-2019)

As the last of the four key pieces of the \$60M Penobscot River restoration effort to be implemented, this project resulted in construction of a \$5M major bypass channel around the Howland Dam. Mike led the design of the bypass channel and assisted the Penobscot Trust through construction and three years of post construction monitoring.

Sabattus River Fish Passage

LISBON, ME (2020-PRESENT)

Maine DMR contracted Inter-Fluve to lead design for fish passage at two legacy mill dams at a redeveloped mill site on the Sabattus River. When implemented, the projects (one fishway, one breach) will open 75 miles of stream habitat and 2,429 acres of pond habitat for anadromous fish. Mike is project manager and lead engineer.



PRINCIPAL WATER RESOURCES ENGINEER, CEO & PRESIDENT, INTER-FLUVE

Jonathon J. Kusa, PE, LEED AP

Jonathon is a professional engineer with over 22 years of experience. He provides leadership to 50 engineers, scientists and technicians across the country. His diverse experience in water resources engineering translates into unique solutions to surface water management challenges. Jonathon has a well-rounded technical background in erosion control, transportation, wastewater, site development, river restoration, and hydrologic and hydraulic modeling. Jonathon enjoys facilitating public involvement meetings for complex water resources and transportation projects, lectures at Harvard University, and regularly presents at conferences and workshops throughout the country.

EXPERTISE

- Stormwater Management
- Erosion Control
- Hydrologic & Hydraulic Modeling
- Bioengineered Stream Stabilization
- Project Management
- Public Outreach
- Construction Oversight

EDUCATION

- MS, Civil Engineering - Water Resources & Environmental Systems
North Carolina State University, 1999
- BA, Public Policy Analysis - Environmental Science & Geology
University of North Carolina, 1996

PROFESSIONAL AFFILIATIONS & REGISTRATIONS

- Professional Engineer: MI, MN, NY, IA, SD, OR, WA, WI, CA
- LEED Accredited Professional
- American Society of Civil Engineers (ASCE)

SELECTED PROJECT EXPERIENCE

Milltown Dam Decommissioning and Naturelike Fish Passage

ST. STEPHEN, NB / CALAIS, ME (2019-PRESENT)

Contracted by NBPower, Inter-Fluve is part of a team for the decommissioning of the oldest operating hydroelectric generating station in Canada. The project is expected to restore the Salmon Falls and open spawning habitat to a variety of species. It includes decommissioning station structures, large-scale fish passage construction, and ecological restoration. Jonathon is principal-in-charge.

CoastWise Initiative Crossing Guidelines

WELLS, ME (2019-2021)
Inter-Fluve led a team for the development of design guidance and best practices for restoration of tidal hydrology at road crossings in Maine to empower restoration practitioners, municipalities and resource agencies. Jonathon was principal-in-charge.

Arden Park Restoration

EDINA, MN (2016-2020)
Contracted by Minnehaha Creek Watershed District, Inter-Fluve led an 18-acre restoration of Arden Park, which included a dam removal, creek re-alignment, habitat and vegetative restoration, new recreational amenities (trails, bridges, boardwalks, park shelter building, playground, water access points, etc.) and stormwater treatment wetlands. Jonathon was project manager for early phases and led community outreach, engineering design, and QA/QC.

Minnehaha Creek Parkway Regional Trail Master Plan

MINNEAPOLIS, MN (2018-2020)

Inter-Fluve was contracted as part of a team by the Minneapolis Park and Recreation Board to provide hydrologic and geomorphologic engineering services to aid the Minnehaha Creek Parkway Regional Trail Master Plan. The Trail Master Plan is part of a larger restoration effort Inter-Fluve has been involved with since 2003. Jonathon provided QA/QC and assisted with design coordination.

Don River Mouth Naturalization & Port Lands Flood Protection

TORONTO, ON (2015-PRESENT)

Inter-Fluve is part of a multi-disciplinary team contracted by MVVA and Waterfront Toronto to assist with the \$1B revitalization project re-routing the mouth of the river and restoring it as a major feature of Toronto's waterfront. It will be the centerpiece of new mixed-use neighborhoods, parks and greenspaces and also provide the flood protection necessary to develop the larger Port Lands. Jonathon is project manager and engineer of record for the habitat components of the project. He has participated and facilitated site visits, stakeholder and client meetings, and contributed to the concept and final design.



SR. WATER RESOURCES ENGINEER, INTER-FLUVE

Sarah Widing, PE

Sarah is a professional engineer with 17 years of experience serving public and private clients. Sarah’s technical and project management experience include hydrologic, hydraulic, and floodplain modeling; stormwater management system permitting and design; dam safety applications including Phase I studies, breach analyses, and inflow design flood determinations; and culvert and bridge crossing design for structural stability and habitat continuity. Sarah has worked on numerous dam removal planning and dam safety projects throughout New England including the award-winning Exeter Great Dam Removal project.

EXPERTISE

- Hydrologic & Hydraulic Modeling
- Floodplain Modeling
- Stormwater Management System Permitting & Design
- Dam Safety: Phase I Studies
- Culvert and Bridge Crossing Design
- Permitting
- Project Management
- Construction Oversight

SOFTWARE AND SKILLS

ESRI ArcGIS Suite, AutoDesk Suite, HEC-RAS, HEC-HMS, HEC-DSS, Hydrocad, ICPR, SWMM, HY-8, TR-20, TR-55, RUSLE2, SITES, TR-60, ECOMSED, MOSES, CHAMP, WHAFIS, Runup2.0, Visual Basic, Matlab

EDUCATION

- MS, Water Resources Engineering
Tufts University, 2004
- BS, Civil Engineering, *magna cum laude*
Tufts University, 2001

REGISTRATIONS & PROFESSIONAL AFFILIATIONS

Professional Engineer: MA, ME

SELECTED PROJECT EXPERIENCE

Milltown Dam Decommissioning and Naturelike Fish Passage

ST. STEPHEN, NB / CALAIS, ME (2019-PRESENT)

Contracted by NBPower, Inter-Fluve is part of a team for the decommissioning of the oldest operating hydroelectric generating station in Canada. The project is expected to restore the Salmon Falls and open spawning habitat to a variety of species. It includes decommissioning station structures, large-scale fish passage construction, and ecological restoration. Sarah developed a 2-D unsteady-flow HEC-RAS model of the St. Croix River to evaluate the impacts of changes to the dam and river bed to seasonal fish passage conditions and to scour conditions at infrastructure along the river and performed statistical analyses of river gage data to estimate the likelihood of successful passage for target species during the migration season.

Saco River Erosion Study

NORTH CONWAY, NH (2021-PRESENT)

The North Conway Water Precinct wastewater treatment plant (WWTP) is located near the east bank of the Saco River. Given the proximity of the river to the WWTP, channel migration trends, and the potential for increased frequency of significant storm events, the Precinct contracted Inter-Fluve to conduct a preliminary risk analysis of the erosion conditions and evaluate potential alternatives to protect the WWTP from continued erosion hazards. Sarah developed a 2-D unsteady-flow HEC-RAS model of the Saco River to evaluate the hydraulic conditions in a very dynamic floodplain and scour conditions at banks in close proximity to infrastructure and performed statistical

analyses of river gage data to estimate peak flood flows and develop a hydrograph of extreme storm events.

Don River Mouth Naturalization & Port Lands Flood Protection

TORONTO, ON (2015-PRESENT)

Inter-Fluve is part of a multi-disciplinary team contracted by MVVA and Waterfront Toronto to assist with the \$1B revitalization project re-routing the mouth of the river and restoring it as a major feature of Toronto’s waterfront. It will be the centerpiece of new mixed-use neighborhoods, parks and greenspaces and also provide the flood protection necessary to develop the larger Port Lands. Sarah provided project management services; detailed design phase support for bed substrate, large wood, and habitat elements; and construction administration services including oversight.

Guilford Dam Feasibility Study

GUILFORD, ME (2019-PRESENT)

The Guilford dam threatens the integrity of structures, influences flooding patterns, and is a fish barrier to Atlantic salmon and other native sea-run fish. TNC contracted Inter-Fluve to lead a dam feasibility study and develop a plan that results in a free-flowing river through the town while addressing the stability of the historical mill buildings and risk to the aging boiler system that the facility depends upon for continued operation. Sarah completed FEMA mapping research.



SR. GEOMORPHOLOGIST, REGIONAL DIRECTOR, INTER-FLUVE

Nick Nelson, CERP

Nick has 15 years of experience as a fluvial geomorphologist and manages Inter-Fluve's office in Cambridge, MA. He is currently working on all phases of dam removal and river restoration projects around the country, leading project management, construction oversight, topographic surveying, and restoration design. His work with Inter-Fluve has focused on dam removal and urban channel restoration/rehabilitation planning and design, cranberry bog restoration design, geomorphic and habitat assessments, and GIS analyses. Nick has taught at Northeastern University, the University of Minnesota, Harvard University Graduate School of Design and was an invited instructor at Tongji University in Shanghai, China in 2017. Nick was a recent technical advisor for the Fluvial Geomorphology Task Force with the UMass RiverSmart Communities program.

EXPERTISE

Urban Erosion and Hazard Assessment
Urban River Restoration and Revitalization Design
Effects of Dams on River Systems
Dam Removal Assessment and Design
Retired Cranberry Bog Restoration Design
Topographic and Bathymetric Surveying
Sediment Sampling
Project Management
Construction Oversight

EDUCATION

MS, Watershed Science
Utah State University, 2007
Teton Science Schools' Graduate Program in Enviro. & Experiential Education
Jackson, 2004
BA, Geosciences
Williams College, 2003

PROFESSIONAL AFFILIATIONS & REGISTRATIONS

Society for Ecological Restoration
Certified Ecological Restoration Practitioner (CERP)

SELECTED PROJECT EXPERIENCE

Sheepscot River Dams

ALNA, ME (2015-2019)

The Atlantic Salmon Federation and their partners contracted with Inter-Fluve to assist on a collaborative visioning and site design for two historical dam sites on the Sheepscot River. Coopers Mills dam was removed in 2018, and nature-like fish passage was completed at Head Tide dam in 2019. Nick was the fluvial geomorphologist.

Milltown Dam Decommissioning and Naturelike Fish Passage

ST. STEPHEN, NB / CALAIS, ME (2019-PRESENT)

Contracted by NBPower, Inter-Fluve is part of a team for the decommissioning of the oldest operating hydroelectric generating station in Canada. The project is expected to restore the Salmon Falls and open spawning habitat to a variety of species. It includes decommissioning station structures, large-scale fish passage construction, and ecological restoration. Nick is the fluvial geomorphologist.

Coonamessett River Restoration

FALMOUTH, MA (2013-2020)

Inter-Fluve was contracted by multiple organizations to develop alternatives that improve fish passage and retain cranberry farming and recreational opportunities. Inter-Fluve performed a geomorphic assessment, developed concept and final designs, and later construction observation for the removal of two dams, replacement of an undersized culvert with a free span bridge, and the channel reconstruction and wetland restoration of three cranberry bogs totaling approximately 30 acres. The project

was completed in 2020. It was awarded the 2022 Nicholas Humber Award for Outstanding Collaboration presented by the Environmental Business Council of New England. Nick was the project manager for the restoration of Lower, Middle, and Upper Bogs.

Tidmarsh Farms Dam Removal & Brook Restoration

PLYMOUTH, MA (2011-2017)

Inter-Fluve was contracted by MA DER to develop designs for the over \$3M restoration of Tidmarsh Farms, a 250-acre cranberry bog complex converted into a conservation easement. Designs included 20,000-ft of meandering channel restoration; 250 acres of fen and Atlantic white cedar bog restoration; fish passage design; and the removal of a 20-foot-high dam in the headwaters. Since completion, the project has seen the return of large numbers of migratory herring that are spawning in the project wetlands. Nick was project manager and fluvial geomorphologist.

Cold Brook-Bank Street Bog Restoration

HARWICH, MA (2017-PRESENT)

The Bank Street Bogs Nature Preserve is a 66-acre former cranberry bog complex. Inter-Fluve was contracted by MA DER and partners to restore the tidal riverine system and wetlands within the preserve. Nick is project manager. Nick is project manager.

VI. Past Project Experience

Sheepscoot River Dams

MULTIPLE LOCATIONS (2015-PRESENT)

Over the last seven years, ASF, TNC, and the Midcoast Conservancy (MC), along with Inter-Fluve, have worked with local communities and stakeholders in the Sheepscoot River watershed to identify ways to resolve fish passage issues at three dams. Each of these dams had unique considerations and decades-long histories of controversy and contention around a variety of issues, including water levels, public safety, historic resources, and aesthetics. The solutions that were agreed to at each dam was different, but all were the result of several years of dialogue and discussion between the various stakeholders.

In Alna, the Head Tide Dam impeded the passage of all twelve species of sea-run fish native to the Gulf of Maine, including American shad, striped bass, rainbow smelt, blueback herring, and the southernmost genetically distinct population of Atlantic salmon remaining in the U.S. The community held a strong attachment to the dam due to its role in the local history and a beloved swimming hole downstream. There was more than just sentiment keeping the Head Tide in place: when the owners of the dam gifted it to the town in the 1960s after the mill and impoundment was removed, they placed a covenant on the deed stating that the dam could still never be destroyed. With few options, Interfluve was tasked with finding a creative solution that would provide full passage for all fish species while also maintaining the deed covenant.

Interfluve and ASF worked with local advisory committees for two years and a solution was developed that entailed widening an existing breach in the dam for fish passage, preserving historic resources, and improving public access to the river. Voters overwhelmingly approved the project in 2017 and, in 2019, the project was completed at no cost to the Town of Alna. A viewing platform over the new opening was installed along with interpretive signage describing the ecology of the river and its rich mill history. Other improvements included a new path to the river, and a concrete wall to prevent erosion and protect historic mill remnants present on the site.

In Whitefield, the community ultimately supported the full removal of the Coopers Mills Dam from the mainstem of the Sheepscoot. While some in the community were concerned about the change in aesthetics if the impoundment created by the dam was to become a free-flowing river, the bigger concern was whether or not the town would be able to still use the river as a source of water for fire protection following dam removal. ASF brought in national fire protection experts to assess the situation and it was determined that new dry hydrants could be installed at the site and in another nearby location. The town created a committee to work with ASF and MC to develop options for the site. Interfluve was brought in to assess fish passage options at the dam and to develop



designs for a riverfront park at the site based on input from the community.

After a year and a half of monthly meetings, the committee voted unanimously in favor of dam removal with as the best option. The Whitefield Board of Selectmen voted unanimously to support the committee's recommendation and then Whitefield voters gave final approval to the project at the annual town meeting in March 2016. As part of the project, three dry hydrants were installed and the new park with improved public access, and preservation of the site's mill history was built at the site, all paid for with federal and private funding.

At the Branch Pond Dam at the top of the West Branch of the Sheepscot, the fish passage solution is to build an Alaska steeppass fishway. The dam will also be repaired to meet safety standards as a high-hazard dam and have gates installed so that it can maintain water levels and release water during high flow events. Before ASF got involved at the dam in 2016, there had been a protracted battle between the dam owner, regulatory agencies, and camp owners on the pond over the management of the dam and water levels. In 2017, ASF negotiated a solution that involved the owner of the dam removing the dilapidated mill from the site and then selling the

dam and surrounding land to ASF's Maine Council. Following construction of the fishway and other site improvements in 2023, the Branch Pond Campowners Association (BPA) will take ownership of the dam and fishway and be responsible for maintenance and operations.

Relevance to the Dover-Foxcroft project

- A technically feasible, cost effective, environmentally beneficial, and socially acceptable approach tailored to the needs of the community
- Collaboration with three different communities and development of three different design approaches
- A project that achieves multiple goals and is embraced by the local community



Walton's Mill Dam Removal and Park Project

FARMINGTON, ME (2017-PRESENT)



The Walton's Mill Dam Removal and Park Project began in the winter of 2017 when ASF proposed to work with the Town of Farmington to assess options for addressing the impacts of the dam on Atlantic salmon. The dam had no fish passage and as the dam owner, the Town was liable for providing passage under the Endangered Species Act (ESA). ASF also proposed to work with the local community to gather ideas for improving the town park adjacent to the dam and to assess options for the replacement of two road-stream crossings

The Town Selectboard accepted the offer and over the course of 8 months, ASF and the project team (several engineers and a landscape architect) held a series of public meetings and site visits, including several charettes focused on community visioning for the park. The assessment work related to the dam produced cost estimates related to fish passage alternatives, including dam removal, as well as dam repairs and hydropower development. Following the completion of this process, ASF offered to fund the dam removal, park improvements, and culvert replacements. The proposal was put on the ballot and approved by town voters in November 2018.

Following voter approval, ASF and the project team worked closely with Town staff and a citizen advisory committee to finalize plans for the park, finish engineering and design work related to the dam removal, complete environmental assessments and permitting, and fundraising. Construction for the dam removal and park improvements will begin at the end of June 2022. Both of the road-stream crossings were replaced in 2022 and 2021.

Benefits of the project include:

- Restored access to more than 50 miles of Atlantic salmon spawning and rearing habitat
- Restoration of diverse wetland habitats and improved water quality
- Substantial improvements to Walton's Mill Park as envisioned by the local community
- Elimination of regulatory liability under the Endangered Species Act
- Improved infrastructure resilience and reduction of costs for culvert repairs
- Elimination of costs for dam maintenance

Relevance to the Dover-Foxcroft project

- The Piscataquis River, like the Sandy River, has an abundance of high-quality Atlantic salmon habitat and plays a significant role in the recovery of endangered Atlantic salmon.
- Providing safe, timely, and effective fish passage while developing a vision for sustainable community and economic development



Penobscot River Restoration Project

PENOBSCOT COUNTY, ME (1999-2016)

The Penobscot River Restoration Project is widely acclaimed as one of the nation's most innovative restoration projects and an unprecedented collaborative effort to rebalance fisheries restoration with hydropower production in the largest watershed within Maine. The Penobscot River – New England's second largest river system – drains an area 8,570 square miles with its tributaries flowing from near Mount Katahdin in the North Woods through the heart of Maine to Penobscot Bay, near the town of Bucksport.

The project originated when a hydropower company, PPL Corporation, purchased three dams on the Penobscot in 1999. PPL, along with the U.S. Department of Interior, the Penobscot Indian Nation, the State of Maine, and several conservation groups, decided to explore the development of a comprehensive solution to a large number of issues involving hydropower relicensing, migratory fish passage and ecological restoration on the Penobscot River. This commitment formed the basis for the Penobscot River Restoration Project, which was implemented in large part by the Penobscot River Restoration Trust, a nonprofit organization consisting of the Penobscot Indian Nation, American Rivers, Atlantic Salmon Federation, Maine Audubon, Natural Resources Council of Maine, The Nature Conservancy, and Trout Unlimited.

In June 2004, after five years of negotiations, the Trust signed an agreement for a public-private effort to maintain hydropower and restore sea-run fisheries on the Penobscot. The project included the removal of the Great Works Dam in 2012 and the Veazie Dam in 2013, a new fish lift at Milford Dam, and fish passage improvements to existing infrastructure elsewhere in the lower river. The project also included construction of a nature-like bypass channel around the Howland Dam (see additional information below) in 2016. By updating and therefore increasing hydropower production at six other sites, hydropower production was in fact slightly increased as compared to system generation before the dam removals.

Inter-Fluve led the design of the nature-like fish bypass channel, which represents a landmark design nationally. Key aspects of the bypass channel design included development of an approach to result in safe, timely and effective fish passage while maintaining impoundment water levels, a critical project objective that required careful balancing of the hydraulics of the fishway and the 570 ft-long spillway. The design addressed

extensive bedrock removal that would be required for channel construction, and tailoring the construction documents to reduce construction risk due to unknowable subsurface and rockmass conditions. Flow into the bypass channel was optimized for fish passage, which also required careful design consideration to provide system stability during flood conditions. The design included consideration of landscape and public access components. The \$6 million construction of the project was completed in 2014-16 and included three additional years of monitoring.

With completion of the bypass at Howland in 2016, access for Atlantic salmon and other sea-run fish to nearly 2,000 miles of their historic river and stream habitat was vastly improved. Populations of striped bass, American eel, rainbow smelt, tomcod, and endangered shortnose sturgeon are rebounding with the most telling results coming from river herring counts which have increased 10,000-fold from before the dams were removed.

Relevance to the Dover-Foxcroft project

- The Piscataquis River, a major tributary to the Penobscot River, joins the Penobscot at Howland.
- Improved fish passage already has resulted in tremendous increases in fish runs in the Penobscot. Indirect results of on-the-ground barrier removal projects, within the Piscataquis, that have been realized include benefits to water quality, localized flood resilience, and increased watershed-based recreation.
- As high-quality habitat is prioritized and restored, the Penobscot River watershed and communities are seeing increased tourism and recreation, including fishing and boating, and the revitalization of formerly industrialized waterfront areas.
- There is significant opportunity for additional connectivity work to realize the full potential for Atlantic salmon recovery in the watershed – achieving safe, timely, and effective fish passage at Mayo Mill Dam would significantly contribute to watershed restoration gains.



The Howland Bypass Channel.

Katahdin Visioning Process

KATAHDIN REGION, ME (2017-2019)



The Nature Conservancy (a conservation landowner in the Katahdin region for over 15 years) and partners sought to develop and rally the communities of the Katahdin region around a shared vision for the future—one that includes conservation, engaged local communities, and sustainable resource management as significant elements of a diverse new resource-based economy. This visioning process (professionally facilitated but conducted collaboratively by seven communities and surrounding unorganized territories) would unify the region around shared values, get people involved and working together, and serve as a guiding compass for needed strategic business, public, and philanthropic investments in the region.

Significant milestones/deliverables of the project included

1. Work with the University of Maine’s Senator George J. Mitchell Center for Sustainability Solutions to complete a baseline community assessment, including a set of quantitative indicators for economic and community resilience and a qualitative survey to assess people’s attitudes regarding the region.
2. Design, execute, and complete the community-led visioning process (working with the partner-led Design Committee and supported with external facilitation from Portland, Maine-based Adam Burk+Co.), including all community meetings, planning, training, outreach, engagements, and report drafting.
3. Executed 15 engagements (12 events and 3 community surveys/mailings) as part of the visioning process with over 1,100 community participants.
4. Attracted new philanthropic investment from funders for the community vision process

5. Attracted new public investment from funders (including a recent five-year commitment by the Piscataquis County Commissioners to fund a Regional Economic Development Coordinator, based in and focused on the region. This is a direct result of a recommendation made through the vision process in September 2018 and coordinated action taken by the community) and
6. Hosted regional tour of regional community-led projects and Katahdin Gazetteer process for 15 members of Maine’s Environmental Funders Network and representative of Sens. King and Collins’ offices

Relevance to the Dover-Foxcroft project

- By locally contracting as much work and resources as possible we maximized buy-in, legitimacy, and sustainable application of a complex planning effort.
- It proved vital to emphasize the local presence with outside experts and work to design the planning process to leverage and build skills at the local level throughout.

Megunticook River Feasibility Study

CAMDEN, ME (2018-PRESENT)

Seven dams exist at six sites on the Megunticook River, each with a variety of management objectives, ownership and conditions. The dams create fish passage barriers and are in various states of vulnerability. Inter-Fluve was contracted by the Town of Camden to conduct two related feasibility studies. The first study focused on options for Montgomery Dam, the furthest downstream barrier. The subsequent study expanded the scope of evaluation to the remainder of the dam sites between the harbor and Megunticook Lake. Evaluations at the sites included technical and nature-like fishways along with dam removal, and considered fish passage effectiveness, flood risk reduction, resiliency, ecological restoration benefits, infrastructure constraints, public access and interpretive opportunities and other amenities. At two of the sites, maintenance of critical lake level requirements was an additional constraint that influenced the range of options considered. The ultimate solution for these sites will achieve the ecological, infrastructure, public access and use, and other management objectives, while also honoring the historical significance of river within the Town of Camden. Project activities included extensive field survey, geomorphic, habitat and sediment assessments, hydrologic analysis and development of a one-dimensional hydraulic model over the

full project reach, dam break analysis, assessment of flood level reduction, fish passage assessment and conceptual design, alternatives analysis including development of project cost opinions, and development of 50% complete designs for two of the selected priority sites. Activities also included extensive support for stakeholder outreach, including development of conceptual renderings and selected development of content for and participation in public outreach activities.

Relevance to the Dover-Foxcroft project

- Community-based feasibility studies for dam sites
- Fish passage and climate resilience as primary goals
- Additional Town-defined primary objectives included public use and access, cultural, historical, infrastructure resilience, flood management and educational considerations and infrastructure constraints



Technical and naturlike fishway alternatives to restore fish passage while maintaining upstream lake levels were developed for Scabright dam, a recently retired FERC-exempted hydroelectric facility.

Bagaduce River - Walker Pond Mill Dam Fish Passage

BROOKSVILLE AND SEDGWICK, ME (2018-2020)

At the headwaters of the Bagaduce River, the Walker Pond mill pond has been the site of various dams to power mills for over 200 years. A fish bypass channel was constructed in the mid-1800s at the site to sustain the native alewife population but had fallen into disrepair after the last mill at the site burned in the 1960s. The native fish population was impaired by the limitations of the upstream bypass channel, and also harmed during downstream outmigration with many fish passing over the dam onto a foundation of strewn boulders and rocks below, or being trapped by debris in low flow conditions. Inter-Fluve was contracted by Maine Coast Heritage Trust, TNC, Maine Center for Coastal Fisheries and the Two-Town Alewife Committee to provide feasibility alternatives for the site to address these limitations. The project was advanced through final design and construction resulting in a renovated nature-like bypass channel, modern downstream bypass facilities, access and interpretive enhancements for public use as a

future historical park, and improved safety and efficiency with a new fire protection hydrant used extensively by the towns of Brooksville and Sedgewick. The project was completed in Fall 2020. Key objectives also included addressing the structural deficiencies and leakage through the historical masonry dam, and maintaining pond water levels for the upstream Walker Pond, a feature pond of the Blue Hill Peninsula, with many residences and camps.

Relevance to the Dover-Foxcroft project

- Fish passage, upstream lake level, and dam stability as primary goals and objectives
- Access and enhancements for public use and fire protection water supply
- Stabilized historic mill dam site



VII. Schedule and Budget

revised September 9, 2022

Schedule

Task	2022					2023												
	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	
Interview with Town Promotions and Development Committee	█																	
Town Select Board Approval and Agreements Executed		█																
Kickoff Meeting			█															
Community Engagement and Outreach			█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Project Coordination and Progress Meetings			█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Review of Existing Studies and Data provided by the Town		█		█	█													
Feasibility Study Baseline Development			█	█	█	█	█	█	█	█	█	█	█					
Feasibility and Alternatives Analysis						█	█	█	█	█	█	█	█	█				
Detailed Screening of Project Alternatives draft report														█				
Selection of the Locally Preferred Project Alternative														█	█	█		
Final Study Report																		█

Budget

We are proposing an investment in a community-based feasibility and alternatives assessment to revitalize the Mayo Mill Dam. The budget below is an estimate of our investment for completion of the scope of work prior to implementation.

This is at no cost to the Town of Dover-Foxcroft.

Funding support for implementation phases is contingent on identifying a beneficial solution for the Town and ecological resources of the Piscataquis River. ASF and TNC are committed to procuring all funds needed to implement a solution that restores safe, timely, and effective upstream and downstream fish passage for all native migratory fish species. Based on initial conversations with our federal

agency partners, we are confident that if the fish passage goals are met federal dollars are likely to cover the cost of implementation. ASF and TNC also commit to support the Town in securing funds for any additional implementation costs.

The table below summarizes the proposed budget to complete the tasks outlined in this proposal and is an estimate of the total for contracted technical and planning support. This budget does not include ASF or TNC staff time on this project, capacity funding for Town engagement, or additional costs incurred through the proposed planning and outreach phases.

Budget Financed by ASF and TNC

BASE TASKS	COST ESTIMATE (\$)
Task 1. Project Kickoff and Planning	
ASF & TNC Staff Time	in-kind
Capacity Funding Provided to Town	TBD
Contracted Services	7,017
Task 2. Community Engagement and Outreach	
ASF & TNC Staff Time	in-kind
Capacity Funding Provided to Town	TBD
Contracted Services	26,480
Task 3. Project Coordination and Progress Meetings	
ASF & TNC Staff Time	in-kind
Capacity Funding Provided to Town	TBD
Contracted Services	41,076
Task 4. Feasibility Study Baseline Development	
ASF & TNC Staff Time	in-kind
Capacity Funding Provided to Town	TBD
Contracted Services	154,310
Task 5. Feasibility and Alternatives Analysis	
ASF & TNC Staff Time	in-kind
Capacity Funding Provided to Town	TBD
Contracted Services	99,499
Project Budget to be financed by ASF & TNC	328,332
Cost to Town of Dover-Foxcroft	0