Draft Study Plan

Bar Mills Hydroelectric Project

FERC No. 2194

Prepared for:

Brookfield White Pine Hydro LLC

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1.0 BACKGROUND

The Bar Mills Project, owned and operated by Brookfield White Pine Hydro LLC, (BWPH) is located on the Saco River (Figure 1) and consists of a dam structure, an impoundment, a powerhouse, and appurtenant features. The entire Project, including the impoundment and upstream flowage easements, extends approximately 5.3 miles along the Saco River from river mile 19, approximately 0.3 miles below Bar Mills Dam, to river mile 24.3, the lower extent of the West Buxton Project tailrace.

BWPH holds a license to operate the Bar Mills Project issued by the Federal Energy Regulatory Commission (FERC), on August 26, 2008. The FERC license is set to expire on July 31, 2048. The FERC license requires run-of-river operations and seasonal minimum bypass and downstream flows from the Project, consistent with the 1997 Flow Agreement[1], and the FERC approved Minimum Flow Monitoring Plan (2011)[2]. The Project is also subject to the 2007 Saco River Fisheries Assessment Agreement[3], amended in 2019[4], which sets the operational date for completion of upstream fish passage facilities at the Project (or alternative developed in consultation with fisheries agencies) to be May 1, 2025. On November 30, 2020, in accordance with the fish passage alternative specified in the 2019 Amendment, BWPH filed a letter with FERC indicating its intent to surrender the license for the Bar Mills Project.

[1] The April 30, 1997 Instream Flow Agreement for Hydroelectric Projects on the Saco River was incorporated as appropriate into the individual project licenses for the Hiram, Bonny Eagle, and Skelton projects.
[2] FERC. 2011. Order Amending Flow Monitoring Plan. Issued January 4, 2011. Accession No.: 20110104-3002.
[3] FERC 2007. Order Modifying and Approving Fish Passage Assessment Report and Recommendations for Fish Passage and Fisheries Management. 120 FERC ¶ 62,050
[4] FERC 2019. Order Approving Revised Fish Passage Assessment and Fish Passage Installation Schedule. 168 FERC ¶ 62,035

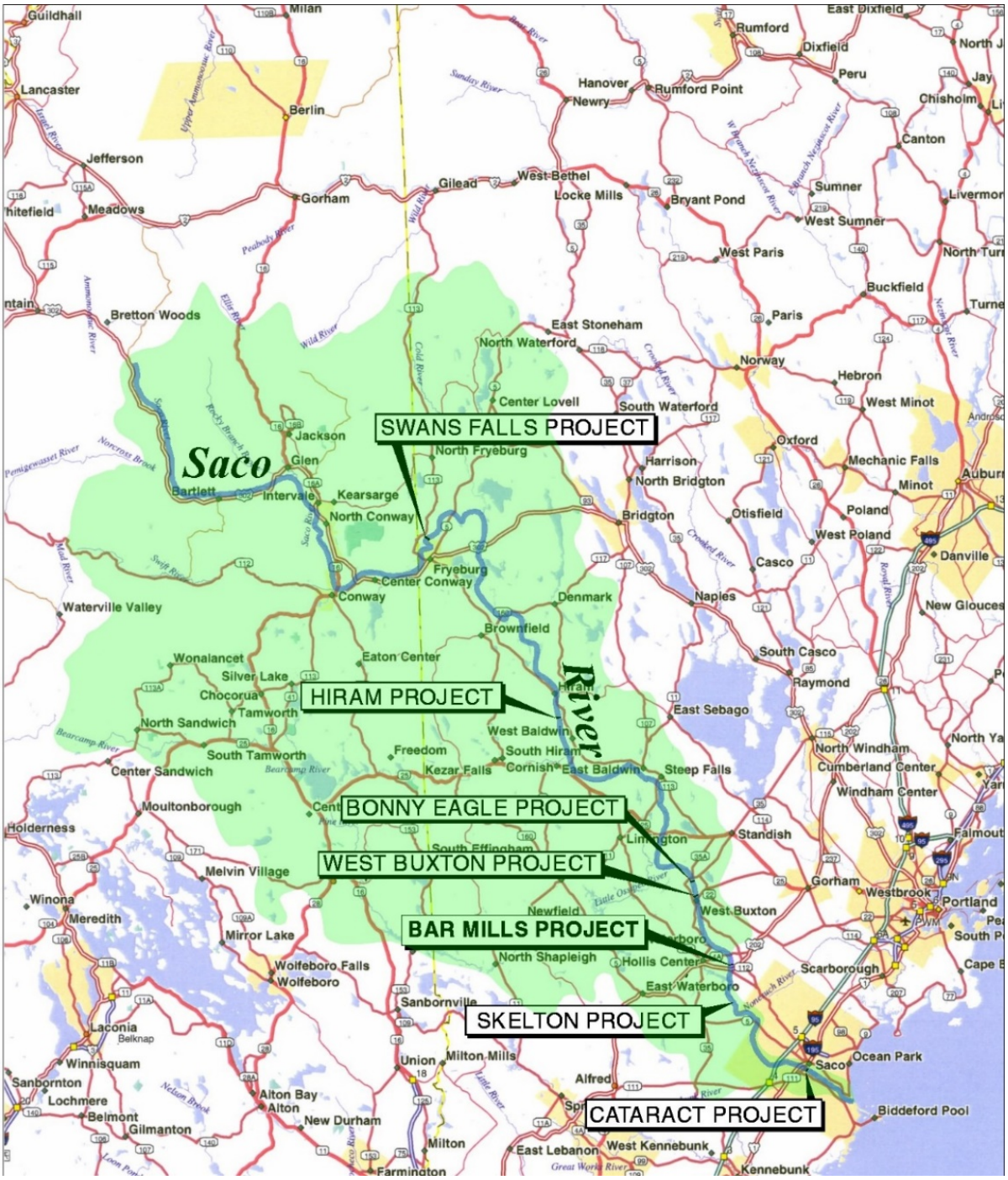

Figure 1 Saco River Watershed

2.0 COMMENTS ON THE DRAFT STUDY PLAN

The purpose of this Draft Study Plan is to provide the federal and state agencies, stakeholders and the general public with a description of studies and methodologies that BWPH intends to conduct in support of the Application for License Surrender and Decommissioning Plan for BWPH's proposed partial breach of the Bar Mills Dam that will be filed with FERC. Studies will inform analysis of potential project effects and mitigation measures and provide information necessary for state and federal permit applications [e.g., Maine Department of Environmental Projection's (MDEP) Maine Waterway Development and Conservation Act (MWDCA) and US Army Corps of Engineers (USACE) Section 401 permit applications].

Following consultation with the resource agencies on dam breach and removal options[5], BWPH issued a Preliminary Scoping Document (PSD) on August 1, 2022, describing the Project, and the proposed action for decommissioning of the project structures and surrender of the project license, including partial dam removal. Comments were requested to be submitted by September 1, 2022.

BWPH held a public informational meeting for the license surrender and decommissioning process, including presentation of plans for partial dam removal, for the Project at the Town of Buxton municipal office on August 2, 2022.

BWPH compiled a list of resource issues and studies to be conducted in 2022 and 2023, partially informed through public outreach, which was posted to the project website and distributed to stakeholders on December 5, 2023. BWPH requested that comments and additional study requests be submitted by January 6, 2023. See Section 5.0 for discussion of study requests received, which informed development of the Proposed Study Plan.

BWPH is issuing this Draft Study plan for 30-day agency and public comment and therefore requests any comments be submitted in writing by June 30, 2023 to barmills@kleinschmidtgroup.com.

[5] Meetings were held with the US Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), Maine Department of Marine Resources (MDMR), and Maine Department of Inland Fisheries and Wildlife (MDIFW) on December 17, 2021 and May 19, 2022 to discuss fish passage outcomes for various breach alternatives.

BWPH will file a Surrender Application and Decommissioning Plan with the FERC, likely in late 2024. This schedule may be subject to change as ongoing agency and public consultation continues and BWPH will keep FERC and the public apprised of any changes to the schedule. The current target schedule is provided on the Bar Mills Decommissioning website at: https://barmills.brookfieldusprojects.com/process-schedules/.

Additional opportunity for agency and public comment will occur as part of the development of the final Study Plan, issuance of the Draft and Final Study Reports and, upon issuance of the Draft Surrender Application and Decommissioning Plan, as part of the scoping process following the submittal of the Surrender Application and Decommissioning Plan to the FERC, as well as pursuant to the local, state and federal permitting processes. Additional information regarding the surrender process is available at https://barmills.brookfieldusprojects.com/.

3.0 PROJECT DESCRIPTION AND OPERATIONS

3.1 Existing Project Description

The Project structures include a concrete dam that spans the river to the former mill intake structure[6], a granite headwork structure located at the entrance to the intake canal, a canal that conveys flow to the powerhouse and the powerhouse itself, which is currently inoperable (Figure 2). A detailed description of the Project is contained in the Preliminary Scoping Document (BWPH 2022).

[6] Because the concrete foundation of the demolished Roger Fiber Mill Building built adjacent to the east end of Bar Mills dam is a water retaining structure, FERC required that this structure be included within the project boundary and project drawings pursuant to Article 205 and 304, respectively, of the August 26, 2008 Order Issuing License. The adjacent property is owned by the Town of Buxton.

Figure 2 Bar Mills Project Features

3.2 Existing Project Operations Description

The Project is authorized by the FERC license for run of river operations. Generally, the Bar Mills impoundment levels will fluctuate once or twice daily up to 2-feet below normal full pond elevation of 148.5 ft NGVD 29 to accommodate flow releases from the Bonny Eagle Project, located upstream of the Bar Mills Project. According to the Project license and Minimum Flow Monitoring Plan[7], the flow requirements at Bar Mills, which are determined by flow releases made at the upstream Bonny Eagle Project are:

- from April 1 through June 30, the impoundment will be maintained within 1 foot of the full pond elevation (run of river); outflow approximately equal to inflow (run-of-river operations) and a minimum bypass reach flow of 100 cfs, or inflow, whichever is less, will be maintained;
- from July 1 through September 30, the impoundment will be maintained within 2 feet of the full pond elevation; a Project minimum flow of 400 cfs or inflow, whichever is less and a minimum bypass reach flow of 100 cfs, or inflow, whichever is less, will be maintained;
- from October 1 through October 31, the impoundment will be maintained within 2 feet of the full pond elevation and a Project minimum flow of 600 cfs or inflow, whichever is less and a minimum bypass reach flow of 100 cfs, or inflow, whichever is less, will be maintained;
- from November 1 to November 15, the impoundment will be maintained within 2 feet of the full pond elevation; and a Project minimum flow of 600 cfs or inflow, whichever is less and a minimum bypass reach flow of 50 cfs, or inflow, whichever is less, will be maintained; and
- from November 16 through March 31, the impoundment will be maintained within 2 feet of the full pond elevation; and a Project minimum flow of 250 cfs or inflow, whichever is less and a minimum bypass reach flow of 50 cfs or inflow, whichever is less.

Minimum flows, other than those specifically required for the bypass reach are generally conveyed through the powerhouse via generation. During time of unit outage, or during times of inflows in excess of station capacity, flows are conveyed to the bypass reach via the spillway.

[7] Approved by FERC on January 4, 2011.

Due to alkali-aggregate reaction (AAR) conditions observed in the powerhouse caused by construction materials utilized in the 1950s, prior to current ownership, Units 1 and 2 are considered out-of-service indefinitely as of May and December 2017, respectively. Since this time, all flows at the Bar Mills Project have passed via the spillway and bypass reach and the headpond has been maintained at 148.5’ ft except for brief periods when flashboards are lowered in anticipation of high flow events.

4.0 STAKEHOLDER COMMENTS AND STUDY REQUESTS

18 CFR § 5.9(b) summarizes the study plan criteria that a requested study must meet. These criteria have been developed by FERC and include:

1. Describe the goals and objectives of each study proposal and the information to be obtained;
2. If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied;
3. If the requestor is not a resource agency, explain any relevant public interest considerations in regard to the proposed study;
4. Describe existing information concerning the subject of the study proposal, and the need for additional information;
5. Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements;
6. Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge; and
7. Describe the considerations of level of effort and cost, as applicable, and why proposed alternative studies would not be sufficient to meet the stated information needs.

Nexus with project operations and effects is a particularly important criterion that is frequently overlooked. FERC's 2012 *Guide to Understanding and Applying the Integrated Licensing Process Study Criteria* provides additional explanation:

This section of a study request should clearly explain the connection between the project and its potential effect on the applicable resource. A reasonable connection between project construction or operation and potential effects on the resource in question is a threshold requirement that must be demonstrated for the Commission to require that an applicant gather the requested information. Just as important, this section should also explain how the information would be used to develop license requirements (4).

Timely Comments and study requests were received from the towns of Buxton and Hollis and from individual stakeholders that have been considered in development of the Draft Study Plan. Late requests were also provided by the Town of Buxton on January 27, 2023, in a format consistent with 18 CFR § 5.9(b) that have also been considered. Responses to comments are contained in Appendix A. Study requests were considered in development of the Draft Study Plan[8].

Requested studies include:

1. Erosion effects/corrections and identification of areas of the riverbank at risk of collapse.
2. Soils testing in the area surrounding the former Rogers Fibre Mill and river sediments.
3. Water quality specifically around the old mill site and canal
4. Fisheries and habitats in the canal area
5. Assessment and clearance of shoreline invasive species
6. Assessment of the Water Retaining Structures on the Buxton Side of the Bar Mills Project for Full Removal
7. Risk Assessment of Brookfield Properties and Remaining Structures (flood risk, Phase 1A, damage assessment, and maintenance costs)
8. Impact of Lower Water Level on Dry Hydrants in Buxton and Hollis

In addition, the following requests for information or recommendations on methodologies were provided:

1. Responsibility for Recreational Facilities
2. Conduct Studies with the Flashboards Down

[8] While BWPH requested that all study requests conform to the requirements of 18 CFR § 5.9(b), BWPH has considered all study requests received in the development of this Draft Study Plan.

5.0 REQUESTED STUDIES NOT ADOPTED

As required by 18 CFR § 5.11(b)(4), if the Licensee does not adopt a requested study, an explanation of why the request was not adopted, with reference to the criteria set forth in 18 CFR § 5.9(b), must be included in the PSP. BWPH has incorporated aspects of requested studies but disagrees with certain components of the requests, or believes that components of the requests do not warrant formal study plans because the objectives will be addressed as part of the requirements for the Surrender Application and Decommissioning Plan. Therefore BWPH has not fully adopted the following study requests, as explained in this section:

1. Assessment of the Water Retaining Structures on the Buxton Side of the Bar Mills Project for Full Removal
2. Risk Assessment of Brookfield Properties and Remaining Structures (damage assessment, flood risk and future maintenance costs)
3. Soils testing in the area surrounding the former Rogers Fibre Mill.

5.1 Assessment of the Water Retaining Structures on the Buxton Side of the Bar Mills Project for Full Removal

The Town of Buxton's study request states a goal of "Prepare to remove the east side portion of the spillway dam, upstream submerged timber crib dam, and concrete foundation of the Rogers Fiber Mill." BWPH's proposal for surrender and decommissioning of the Bar Mills Project does not include full dam removal for reasons up to and including the intent to avoid any disturbance of the property of the former Rogers Fibre Mill, an EPA Superfund site. BWPH is not proposing removal of any portion of the eastern half of the Bar Mills dam or any remnant structures on the property adjacent to the terminus of the spillway. That property is delineated on tax maps and survey mapping as owned by the Town of Buxton (York County Registry of Deeds, Book 7480, Page 346). Because the eastern portion of the Bar Mills dam and eastern portion of the former timber crib dam are not proposed for removal, BWPH is not proposing to conduct a study of structures on the Buxton side of the dam.

5.2 Risk Assessment of Brookfield Properties and Remaining Structures

The Town of Buxton's requested study identifies the following objectives:

- Determine the current extent of damage to the powerhouse and water retaining structures caused by alkali aggregate reactions, efflorescence, water seeps, or other causes.
- Determine if the remnant structures will be strong enough to withstand a 100-year flood event.
- List the future maintenance requirements, schedules, and cost estimates to keep the powerhouse, canal, and water retaining structures in safe condition.

The removal of water retaining structures from the channel will increase the total hydraulic capacity, resulting in lower water surface elevations during normal and flood conditions. The normal high water line in the vicinity of the spillway will be reduced by approximately 7.5 feet. The FEMA Flood Insurance Study reports the 100-year flood flow to be 45,000 cfs at an elevation of 150.25 feet at the dam. After removal, the calculated 100-year flood elevation will be approximately 148.25 feet, a reduction of two feet. The water retaining structures have been determined, through inspections and analysis, to be stable during the 100-year flood event for the current conditions; therefore, the structures are expected to remain stable during a 100-year flood event post-removal. Although FERC will no longer have jurisdiction over remaining facilities, BWPH is required to commit to maintaining the safety of all remaining structures as part of any FERC-approved decommissioning plan. As such, future maintenance and safety of remaining structures (east half of the spillway, canal structures, and powerhouse) will be addressed in the decommissioning plan including a list of future maintenance and safety requirements.

5.3 Soils Testing in the Areas Surrounding the Former Rogers Fibre Mill

The Town of Buxton requested an analysis of what contaminants are present "including those in the sediments in the canal", the powerhouse property, and the spillway portion of the property. BWPH is proposing to assess volume and extent of sediment upstream of structures proposed for removal (western portion of Bar Mills dam and submerged timber crib dam, upstream of the canal headgate structure) and within the canal to inform the extent of sediment sampling for testing, including development of removal, treatment, and disposal plans and final construction design sediment testing of areas that will be disturbed. BWPH is not proposing soil testing within the former footprint of the Rogers Fibre Mill because full dam removal is not being proposed. BWPH is not proposing soil testing at or around the powerhouse because it will not be demolished but rather left in place and maintained by BWPH.

6.0 STUDY AND INFORMATION REQUESTS ADOPTED OR ADDRESSED

The Towns of Buxton and Hollis, as well as several stakeholders, provided several study requests for which components have been incorporated into the proposed study plan. Other aspects of study requests or recommendations for study methodologies are likewise incorporated, in whole or in part, into the proposed study plan as discussed below.

6.1 Erosion Effects/Corrections and Identification of Areas of the Riverbank at Risk of Collapse

The Town of Buxton expressed recommendations for funding to be available for landscaping to preserve property in the event that bank erosion occurs as a result of the decommissioning and partial removal of the Bar Mills dam. BWPH has incorporated an assessment of erosion potential resulting from reduced impoundment levels as part of this study plan.

6.2 Sediment and Soil Testing

The Town of Hollis and stakeholders requested sediment and soil testing in the area surrounding the former Rogers Fibre Mill, as well as an assessment of volume and potential for transport. The Town states that BWPH's proposed evaluation of the quantity of sediments behind the dam is insufficient and "qualitative" studies are necessary to analyze what contaminants are present including those in the sediments within the canal. BWPH is proposing sediment testing for areas that will be directly disturbed as part of the decommissioning and partial removal - land immediately adjacent to the powerhouse (access road and parking area), lands immediately adjacent to, within, and upstream of the canal and headworks (including the existing trailered boat launch) and Usher Island.

6.3 Water Quality

A stakeholder requested a study of water quality specifically around the old mill site and canal. BWPH is proposing to compile and summarize existing baseline water quality data at the Project. The Town of Hollis also expressed a concern with the effects of lowered impoundment water levels on individual private wells. BWPH is proposing to conduct a study of post-removal water quantity conditions as addressed in Section 7.2.

6.4 Fisheries and Habitats

A stakeholder requested fisheries information in the "tributary created in the canal area", but did not provide any specifics about what information was sought. BWPH notes that the intent is to regrade and seed the canal because it will be drained, and therefore will not provide fisheries habitat. However, BWPH is proposing to compile and summarize existing baseline fisheries habitat data at the Project. Further, the Saco River Salmon Alliance requested additional information regarding the assessment of passage conditions for the partial breach proposal. This has been previously investigated in consultation with the agencies and is discussed further in Section 7.3.

6.5 Assessment and Clearance of Shoreline Invasive Species

A stakeholder requested an assessment of shoreline invasive species and potential for spreading and removal. As part of wetlands and botanical reconnaissance studies, BWPH will observe and document invasive botanical species as a baseline assessment of existing conditions. Any reseeding that would be done as part of site rehabilitation and restoration would follow best management practices to prevent the spread of invasive species at restored areas.

6.6 Risk Assessment of Brookfield Properties and Remaining Structures

The Towns of Buxton and Hollis requested as part of the Risk Assessment that BWPH complete a Phase I Environmental Site Assessment of Brookfield properties within the Bar Mills Project area to determine environmental conditions that pose a risk to the public. The Saco River Salmon Alliance expressed similar concerns associated with the Rogers Fibre Mill Superfund (former) site. BWPH does propose to conduct a due diligence evaluation based upon standard Phase I Environmental Site Assessment standards, limited to any areas surrounding project structures that will experience ground disturbance during construction, including areas immediately upstream and downstream of the west half of the Bar Mills spillway and the submerged timber crib dam, canal headworks structure, canal, and boat launch. BWPH will retain ownership of the remaining structures which will not be removed and there will be no associated ground disturbing activities, therefore BWPH does not propose a Phase I assessment of these structures or surrounding areas. This effort is discussed further in Section 7.1.

6.7 Impact of Lower Water Level on Dry Hydrants in Buxton and Hollis

The Towns of Buxton and Hollis request a study to determine whether dry hydrants on Depot Street in Buxton and Canal Road in Hollis will remain operational and whether the proposed diversion weir at the upstream end of the canal will not allow sufficient water to keep the hydrant operational. The request also includes submittal of a plan to the Towns for approval, to mitigate negative effects of water levels on the dry hydrants. BWPH's proposal includes a diversion weir at the upstream end of the canal to prevent flow into the canal under normal river flow conditions. Therefore, the proposed decommissioning will affect the dry hydrant on Canal Road and BWPH proposes to consult with the Town of Hollis to develop plans to mitigate those effects, which may include modification to or relocation of the dry hydrant. BWPH will assess the effects of lower normal water level on the Depot Street dry hydrant as part of the Water Quantity Study and will likewise consult with the Town of Buxton on the need for mitigative measures, as appropriate. This effort is discussed further in Section 7.2.

6.8 Recreational Facilities

The Town of Buxton requests a study with objectives to provide a scope of work to modify the existing boat launch to provide hand-carry canoe and kayak access and to list future maintenance, schedules and costs for "upkeep" of boat access, Usher Island parking and access trails, and the downstream canoe access. BWPH proposes to assess recreational use and needs to inform future operation and maintenance of existing recreational facilities associated with the Project, including modification to convert existing trailered boat access to hand carry/car-top access. This effort is discussed further in Section 7.5.

In addition, the Saco River Salmon Alliance requested information regarding recreational effects from retained structures in the waterway, such as the spillway and submerged timber crib dam. To clarify, the timber crib dam upstream of the spillway breach will be removed. BWPH proposes to include an evaluation of velocity and depth effects from remaining structures in the recreation study.

6.9 Conduct Studies with the Flashboards Down

The Town of Buxton requests that BWPH conduct any proposed field studies under approximate partial or full breach river conditions. BWPH does not consider this to be a specific study request, and it is operationally impossible to lower water levels to the extent necessary to emulate partial removal water level conditions. However as discussed under

individual study proposals below, BWPH does intend to conduct field investigations, to the extent feasible and acceptable to agencies, under drawdown conditions (i.e., flashboard fully lowered and impoundment water levels at spillway crest).

6.10 Property Ownership

The Town of Hollis expressed the need for information on current and future, post-breach ownership of riparian lands. This is discussed in Section 7.6.

6.11 Aesthetics

The Town of Hollis and a stakeholder identified concerns regarding the aesthetics of the partial removal of projects structures and retaining the powerhouse structure. An assessment of pre-and post-breach aesthetic conditions in the viewshed is proposed in Section 7.7.

6.12 Cultural Resources

The Town of Hollis indicated a request for additional information and participation in active management of the three pre-European archaeological sites eligible for listing in the National Register of Historic Places within the Project's area of potential effect (APE). While BWPH is not proposing a specific study regarding Cultural and Historic Resources, the information requested by the Town of Hollis is provided in Section 7.8

7.0 PROPOSED STUDY PLANS AND METHODS

As noted in Section 2.0, BWPH compiled a list of resource issues and related studies including desktop and field investigations for various resources. Comments and study requests were received from the towns of Buxton and Hollis and an abutting landowner and have been considered in development of the Draft Study Plan. Responses to comments are contained in Appendix A.

7.1 Geology and Soils

BWPH will evaluate three primary aspects of ground disturbance and potential erosion and sediment issues:

- Risk assessment of Brookfield properties and remaining structures
- Quantification and composition of sediment behind the Bar Mills Dam and the submerged timber crib dam immediately upstream and
- Identification of potential areas of shoreline bank erosion

BWPH will also conduct an evaluation of past land uses relative to the footprint of any construction activities involving ground disturbance that will be conducted to inform planning of any site-specific decommissioning activities relative to soil contamination including the constituents outlined in Maine Solid Waste Management Rules Chapter 418, Section 7.A as part of the Environmental Site Assessment (Section 7.1.1) to inform efforts relative to the Sediment Volume Assessment and Sampling study (Section 7.1.2).

7.1.1 Environmental Site Assessment

The Towns of Hollis and Buxton requested a Phase I Environmental Site Assessment (ESA) in general conformance with American Society for Testing and Materials E 1527-13 *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (ASTM E 1527-13 (compliant with ASTM E 1527-21)) to be conducted for all lands and structures within the project boundary and including the former Rogers Fibre Mill site, located on land owned by the Town of Buxton.

Because BWPH is not proposing full dam removal or removal of the powerhouse, BWPH proposes to conduct an environmental due diligence assessment in general conformance

with the ASTM E 152—21 Standard in the areas where ground disturbing activities will occur to facilitate construction.

7.1.1.1 Goals and Objectives

The goal of the Phase I ESA based environmental due diligence assessment is to evaluate past land uses in areas of proposed ground disturbance during construction. The objective of the study is to assess the potential for contaminated soils and sediments in the areas of construction disturbance to inform the scope of soil and sediment testing and removal and/or potential use of material for regrading the canal. The assessment will identify potential environmental concerns associated with partial dam removal activities and identify protection and/or mitigation measures to be included in the surrender application and decommissioning plan.

7.1.1.2 Known Resource Management Goals

The purpose of a due diligence review is to identify Recognized Environmental Conditions (RECs) at the Site, as defined by the ASTM E 1527-21 standard: "*(1) the presence of hazardous substances or petroleum products in, on or at the subject property due to a release to the environment; (2) the likely presence of hazardous substances or petroleum products in, on or at the subject property due to a release or likely release to the environment; or (3) the presence of hazardous substances or petroleum products in, on or at the subject property under conditions that pose a material threat of a future release to the environment.*"

A Phase I ESA typically is performed in anticipation of a potential purchase or lease involving a property, for which the completion of a Phase I ESA is intended to satisfy one of the requirements for the "User" to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), thereby constituting all appropriate inquiries into the previous ownership and uses of the property consistent with good commercial or customary practice as defined by 42 U.S.C. §9601(35)(B) of CERCLA.

7.1.1.3 Study Area

The Phase 1A assessment is intended to review what ground disturbing construction activities will be conducted and identify what impacts activities will have on the potential

for the release of contaminants. BWPH is not proposing removal of any portion of the eastern side of the Bar Mills dam or any remnant structures on the property adjacent to the terminus of the spillway. Ground disturbing activities are anticipated to be limited to:

- west half of the spillway
- west half of the formal timber crib dam
- canal headworks
- canal, boat launch
- west shoreline access areas

The property that is delineated on tax maps and survey mapping as owned by the Town of Buxton containing the former Rogers Fibre Mill site will also be reviewed for existing, publicly available information regarding the potential for release of contaminants under the proposed partial breach removal scenario (based on evaluation of hydraulic modelling and erosion potential).

7.1.1.4 Background and Existing Information

Cumberland County Power and Light originally constructed the Bar Mills Project in 1919. The Project was completely rebuilt in the 1950's (the dam was rebuilt in 1949-50 and the powerhouse in 1955-56). The Project, as rebuilt, consists of the same primary structures that exist today: a concrete powerhouse, concrete and masonry canal walls, masonry headworks, and concrete dam with hinged steel flashboards. Downstream fish passage facilities were constructed in 1999-2000 and became operational in 2001. Due to alkali-aggregate reaction (AAR) issues which caused misalignment of the operating components of the generating units, among other issues, BWPH ceased operation of the units in 2017. Lands within the project boundary owned by BWPH include the land immediately adjacent to the powerhouse (access road and parking area), lands immediately adjacent to, within, and upstream of the canal and headworks (including the existing trailered boat launch) and Usher Island.

The Rogers Fibre Mill is a United States Environmental Protection Agency (EPA) Superfund Site located on lands owned by the Town of Buxton which are adjacent to and downstream of the Bar Mills Dam. The EPA undertook remediation measures in the late 1990s, including an inventory, sampling and analysis of tanks, vats and/or drums stored onsite; overpacking and staging of any identified hazardous substances; demolition of the

structurally unsafe contaminated building; removal of asbestos-contaminated materials; and disposal of any identified hazardous substances and contaminated materials at EPA-approved disposal facilities.

7.1.1.5 Project Nexus

BWPH is not proposing removal of any portion of the eastern portion of the Bar Mills dam or any remnant structures on the property adjacent to the terminus of the spillway. BWPH is not proposing to modify or remove the powerhouse structures, aside from interior modifications to remove equipment (e.g., oil, batteries, controls, etc.).

Ground disturbing activities will be limited to the study area identified in Section 7.1.1.3. Because the sediment immediately upstream of the section of the spillway and canal headworks proposed for removal within the confines of the cofferdam will be removed as part of decommissioning activities, a Phase I ESA based due diligence evaluation will help inform best practices, which may include off-site sediment treatment and disposal, during construction to minimized potential adverse effects on surrounding resources.

7.1.1.6 Methodology

The following are standard Phase I ESA tasks which will be conducted as part of the Phase I based due diligence evaluation:

- Perform a site and vicinity reconnaissance, primarily limited to proposed locations for ground/building disturbing construction activities;
- Provide a description of current site operations;
- Conduct a historical source review, including review of current, readily available government regulatory databases provided by Environmental Data Resources (EDR) for the Project Area and provide a description of historical site conditions for areas that have the potential for the release of contaminants through ground disturbance, etc.;
- Conduct a review of environmental database and regulatory agency records; and
- Conduct a review of previous environmental reports/documentation.
- Identify the need and extent of sediment sampling for material that will be excavated during construction for contaminant testing.

A summary of findings, opinions, conclusions, and any recommendations for further investigations will be compiled to inform final design and construction planning and any enhancement and mitigation measures BWPH may include in the Surrender Application and Decommissioning Plan.

7.1.1.7 Schedule

The proposed study will be performed in 2023 with study results provided in the Draft Study Report to be issued for agency, stakeholder and public review in late 2023.

7.1.1.8 Level of Effort

The estimated cost of conducting the study is $30,000.

7.1.2 Sediment Volume Assessment and Sampling

7.1.2.1 Goals and Objectives

The goal of this study is to determine the volume and extent of sediment upstream of structures proposed for removal (western portion of Bar Mills dam and submerged timber crib dam, upstream of the canal headgate structure) and within the canal to inform the extent of sediment sampling for testing, including development of removal, treatment, and disposal plans and final construction design.

7.1.2.2 Known Resource Management Goals

In addition to the FERC surrender and decommissioning process, BWPH will be required to apply for permits from MDEP and U.S. Army Corps of Engineers (USACE) under Clean Water Act (CWA) Section 401 and 404, as well as the Maine Waterway Development and Conservation Act (MWDC). These applications will require plans and quantities of excavated and fill material, including plans for any testing, handling, and disposal of sediments.

7.1.2.3 Study Area

Based upon hydraulic modeling of water depths developed from field collection of bathymetry data, it is anticipated that under partial dam removal conditions, the presence of a hydraulic control approximately 2,000 feet upstream of the Bar Mills Dam is likely to limit the most significant change in water surface elevations to the area between the dam

and the hydraulic control (Photo 1). Along this reach BWPH will conduct probing of the riverbed in a grid to classify substrate (sand, gravel, cobble, bedrock) and depth to refusal.

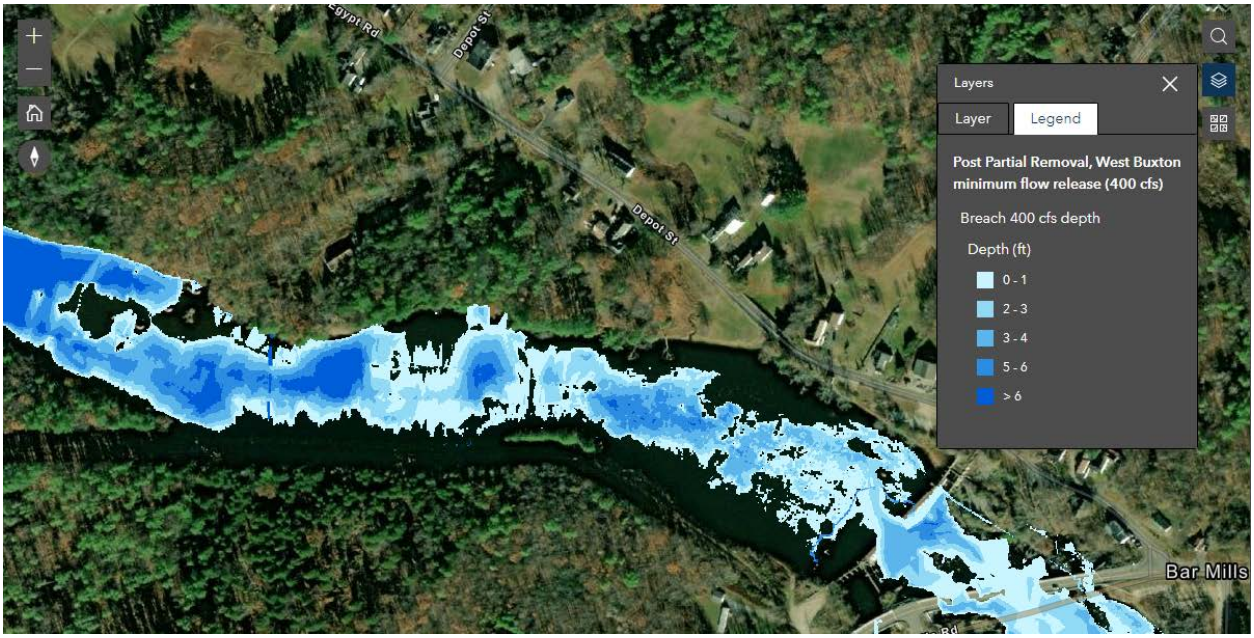

Photo 1 Reach Between Bar Mills Dam and Upstream Hydraulic Control

7.1.2.4 Background and Existing Information

In order to develop modeling of partial removal conditions, BWPH collected detailed bathymetry data upstream of Bar Mills dam in 2021. Because limited information about the extents of sedimentation upstream of Bar Mills dam and canal headworks, upstream of the submerged timber crib dam, and within the canal, additional field investigations are necessary to estimate quantities of sediments that may be removed as part of the partial dam removal. BWPH's preliminary site restoration strategy involves the "beneficial use of dewatered excavated material as construction fill" in the decommissioned canal in accordance with Maine's Solid Waste Management Rules Chapter 418, Section 7.A.

7.1.2.5 Project Nexus

Ground disturbing activities will be limited to the study area identified above. Because the sediment immediately upstream of the section of the spillway and canal headworks proposed for removal within the confines of the cofferdam will be removed as part of decommissioning activities, an assessment of depths and extent of sediments and associated contaminant testing will inform quantities. Sediment testing will inform best

practices during construction to minimize potential adverse effects on surrounding resources and inform potential sediment removal, treatment, and disposal plans and final construction design, including the potential for repurpose of the excavated sediment as construction fill in the dewatered canal.

7.1.2.6 Methodology

Sediment Quantity

To estimate the volume of sediment behind the Bar Mills Dam, a series of depth probes will be completed in areas with anticipated sediment deposition, to the extent safe access allows, as inferred from the longitudinal profiles of the bathymetry data collected in 2021. Along this reach BWPH will conduct probing of the riverbed in a grid to classify substrate (sand, gravel, cobble, bedrock) and depth to refusal. Surveying may occur under drawdown conditions depending on access safety and river flow conditions. The sediment depth will be recorded by driving a steel rod or implement to refusal at selected locations in the impoundments. Driving shall be done with a pneumatic hammer, 18-pound fence post driver, or other consistent method to drive a 1-inch rod (or similar) probe to refusal depth.

The one-dimensional (1D model) and two-dimensional hydraulic model (2D model) developed for the Project utilize a surface that was developed using bathymetric data collected in 2021. The sediment depths from proposed probes will be used to generate a new bathymetry of potential post-partial removal conditions by lowering the existing bathymetry by the depth of the sediment found in that area. This potential post-removal surface will then be compared to the existing bathymetry to estimate the potential volume of sediment. A subset of these samples will have a sample collected to perform a grain size analysis to inform the particle size distribution. The volume will be used to inform final design and construction planning and any enhancement and mitigation measures BWPH may include in the Surrender Application and Decommissioning Plan.

Sediment Testing

The sediment immediately upstream of the section of the spillway and canal headworks proposed for removal within the confines of the cofferdam will be removed as part of decommissioning activities. This sediment will be tested in accordance with the methods, with necessary safety measures to accommodate access to the areas being sampled, and for the contaminants outlined in Maine's Solid Waste Management Rules Chapter 418, Section 7.A., as follows:

"In order to characterize dredge material intended for beneficial use, representative samples shall be collected and analyzed prior to dredging in conformance with E.P.A. SW-846. A minimum of 4 samples per site or 1 sample per acre shall be collected unless an alternative sampling plan is otherwise approved by the Department; information on sediment depth represented by each sample shall be provided. Samples shall have been collected, and analyzed within the holding times for each parameter, within 5 years of application submittal. However, if there have been significant spills, discharges, or disruptions in sediment deposition within the 5 year period, sampling and analysis is required to evaluate current conditions. Composite samples for analysis may be approved by the Department on a case-by-case basis. Analysis must be for the following parameters:

(a) Total metals (mg/kg dry wgt.) including Arsenic (As), Cadmium (Cd), Chromium (Cr), Lead (Pb), and Mercury (Hg);

(b) Semi-volatiles listed in paragraph (3), below (mg/kg dry weight);

(c) PCBs and dioxin TEQ unless waived by the Department, and organopesticides from commercial and agricultural ponds greater than 1/4 acre (mg/kg dry weight)"

Depending on the results of the Phase IA review, additional parameters may be tested. Depending on the results of contaminants testing, this sediment may be used for regrading the canal or disposed of in accordance with state law, as necessary. Should the sediment be repurposed for the beneficial use as fill, a grain size analysis will be conducted as well.

7.1.2.7 Schedule

The proposed study is targeted for 2023 with study results provided in the Draft Study Report to be issued for agency, stakeholder and public review in late 2023.

7.1.2.8 Level of Effort

The estimated cost of conducting the study to estimate the extent and quantity of sediment in the study area is $30,000. Results of the Phase I ESA based due diligence evaluation will be used to inform the extent and costs for sediment testing above required parameters but is anticipated to be on the order of $200,000.

7.1.3 Shoreline Erosion

7.1.3.1 Goals and Objectives

The goal of this study is to determine areas of the shoreline along the Bar Mills impoundment that may have higher erosive potential in the post-partial removal condition, that could warrant enhancement or mitigation measures to be incorporated into the Surrender Application and Decommissioning Plan.

7.1.3.2 Known Resource Management Goals

In addition to the FERC surrender and decommissioning process, BWPH will be required to apply for permits from MDEP and USACE under CWA Section 401 and 404, as well as the MWDCA. These applications may require both short term erosion control measures and longer-term mitigation measures necessary to address effects of partial dam removal on shoreline resources, include measures to address potential areas of shoreline erosion.

7.1.3.3 Study Area

Shoreline characterization using soil maps will be evaluated for erodibility characteristics along the impoundment and areas immediately downstream of the dam that may possess higher erosive potential in the post-partial removal condition.

7.1.3.4 Background and Existing Information

An erosion survey of the Project area was conducted in June 2002 associated with the FERC relicensing. This survey involved traversing the entire shoreline by boat, taking note of and photographing areas of erosion, and assessing causes of actively eroding shoreline sections. The results of the survey indicated that shoreline erosion is not prevalent in the Project area (FPLE Maine 2003). A few small, concentrated areas of erosion were observed along the impoundment during the survey; however, the primary cause of these small areas of erosion was determined to be a result of human foot traffic to access the river near homes. Project operations were not considered to be a potential cause of erosion primarily because shoreline areas that are not subject to heavy human use did not have significant erosion except in localized areas where natural erosion would be expected (*i.e.,* very steep shoreline areas with non-cohesive soils) (FPLE Maine 2003). Natural erosion in areas of steep banks with non-cohesive soils were observed in a few small places but was limited to small areas at the upstream edge of the upper island and on exposed outer banks, which showed signs of minor slumping and tree toppling (FPLE Maine 2003).

7.1.3.5 Project Nexus

The proposed partial removal of Bar Mills dam will result in a lower normal water level in the reach between the remainder of the dam and the upstream West Buxton Project tailwater. The reduction of water levels has potential to expose more areas of shoreline prone to erosion. However, based upon hydraulic and hydrology modeling of water depths and bathymetry, it is anticipated that under post-breach conditions, the presence of a hydraulic control approximately 2,000 feet upstream of the Bar Mills Dam is likely to limit the most significant change in water surface elevations to the area between the dam and the hydraulic control.

7.1.3.6 Methodology

Shoreline characterization using soil maps and prior relicensing studies will be evaluated for erodibility characteristics for the impoundment and areas immediately downstream of the dam that may experience higher erosive potential in the post-removal condition. Shoreline characterization will evaluated for such properties as K factor (soil erodibility), T factor (soil loss tolerance) and wind erodibility for areas of shoreline that will be exposed under post-partial breach conditions. Field classification will be conducted along shoreline areas determined to be highly susceptible erosion utilizing a modified Bank Erosion Hazard Index (BEHI) procedure including metrics for four categories:

- Ratio of root depth to bank height
- Root density (%)
- Surface protection (%)
- Bank angle (degrees)

A numerical value will be assigned to categories of very low, low, moderate, high, very high, and extreme. The qualitative assessment will be conducted during impoundment drawdown condition (i.e., lowered flashboards) to identify areas of potential concern to inform the need for post-decommissioning monitoring or protection measures. The assessment will be used to inform final design and construction planning and any enhancement and mitigation measures BWPH may include in the Surrender Application and Decommissioning Plan.

7.1.3.7 Schedule

The proposed study will be performed in 2023 with study results provided in the Draft Study Report to be issued for agency, stakeholder and public review in late 2023.

7.1.3.8 Level of Effort

The estimated cost of conducting the study to evaluate potential areas of shoreline erosion is $15,000.

7.2 Water Quality and Quantity

7.2.1 Goals and Objectives

The goal of this study is to characterize water quality and quantity, including assessment of effects of post-partial breach water level elevations, based on a summary of available relevant water quality data, publicly available water supply well and dry hydrant information, and hydraulic and hydrology modeling developed in 2021.

7.2.2 Known Resource Management Goals

Water quality standards for the Saco River were established by the Maine Legislature (38 M.R.S.A. §467), such that the portion of the river extending from its confluence with the impoundment formed by the Bar Mills Dam to the confluence with the impoundment formed by the Skelton Dam is classified as Class A waters. Designated uses for Class A waters include; drinking water supply after treatment, fishing, recreation in and on the water, industrial process and cooling water supply, hydroelectric power generation, navigation, and habitat for fish and other aquatic life. The Maine statutes include a provision recognizing that some changes to aquatic life and habitat may occur due to existing hydropower impoundments. The provision states that within the influence of an existing hydropower impoundment, habitat characteristics and aquatic life criteria for Class A waters are considered to be met "provided that the receiving waters shall be of sufficient quality to support all species of fish indigenous to the receiving waters and maintain the structure and function of the resident biological community."

The water quality standards for Class A waters require that dissolved oxygen (DO) concentrations be maintained at not less than 7 parts per million (ppm) or 75 percent saturation, whichever is higher.

Table 1 Maine Water Quality Standards for Select Parameters for Class A Waters

Parameter	Standard Class A
DO (mg/L)	7 parts per million or 75% of saturation, whichever is higher
pH (su)	6.0 to 8.5
E. coli	As naturally occurs

Source: Maine Statute 38 MRSA §465 & §465A

7.2.3 Study Area

A summary of available relevant water quality data, water supply well and dry hydrant information, and hydraulic and hydrology modeling developed in 2021 will be developed for the Bar Mills impoundment between Bar Mills dam and West Buxton tailwater, the Bar Mills bypassed reach, and tailwater reach.

7.2.4 Background Information

The major industrial water users on the Saco River are located close to the coast in the cities of Saco and Biddeford downstream of the Project. As such, no industrial or municipal water uses will be affected by the breach of Bar Mills Dam and the lowering of the Bar Mills impoundment.

There are no significant discharges further up in the Maine portion of the basin upstream from the cities of Saco and Biddeford. Thus, water quality in the Saco River, including throughout the Project area, is generally considered very good (FPLE Maine 2003).

Water quality monitoring data, such as pH, conductivity, and DO, have been collected by the Saco River Corridor Commission (SRCC) since 2001 at numerous (over 50) stations along the Saco River (SRCC 2020). In general, the SRCC monitoring program collects surface water quality data from May to September with field meters and grab samples at sites along the Saco River, the Ossipee River, the Little Ossipee River, and several smaller tributaries and ponds (SRCC 2020). SRCC (2020) reports that DO trends and median values show good concentrations and saturation with only two locations below Class A standards, located in Biddeford at Thatcher Brook, which MDEP has classified as an impaired waterway. One sampling site is located in Buxton, off Depot Street near the site of old Rogers Fibre Mill (Site Code S18). Of the 168 samples collected at this location

between 2001 and 2019, Class A standards were met or exceeded for pH. All 163 samples for DO saturation met or exceeded Class A standards and median DO levels exceeded standards.

FPLE Maine collected ambient water quality data (temperature and DO) at the Project in August 2001 to support the FERC relicensing. Results of the study and comments provided by the MDEP demonstrated that the Project waters meet the designated water quality standards (FPLE Maine 2003).

The MDEP implemented a standardized protocol for sampling invertebrate communities in 1983 to assess attainment of the State's narrative aquatic life standards in its rivers and streams. MDEP historically coordinated assessment of major river basins on a five-year rotating schedule, with assessments of the Saco River Basin occurring in 1995 and 2000. The most recent sampling in the vicinity of the Bar Mills Dam occurred in 2002 at station S-648 in the Bar Mills bypassed reach, with result attaining Class A standards[9].

FPLE Maine collected benthic macroinvertebrate samples from the Project impoundment, bypass reach and tailwater in August and September of 2001. Additional sampling was completed in 2002. The results of macroinvertebrate sampling and comments provided by the MDEP demonstrate that the Project waters are attaining their designated aquatic life standards (FPLE Maine 2003).

Project operations and river flows at the Project, in accordance with the Project license and the 1997 Saco River Instream Flow Agreement, have been unchanged since water quality studies were conducted in support of project relicensing. As such, compliance with and attainment of Class A water quality standards would likewise be unchanged. The reach of the Saco River from below West Buxton Dam to below Bar Mills Dam is designated by MDEP in the 2022 Integrated Water Quality Report as Category 2: Rivers and Streams Attaining Some Designated Uses - Insufficient Information for Other Uses.

In 2021, BWPH developed a models of water levels based upon existing historical river flow data and field collected bathymetry data to characterize water levels under pre- and post-partial removal conditions under a range or inflows. The results can be found at: https://experience.arcgis.com/experience/0e26d508492e418a95aa7639de8c2ef0/

[9] https://www.maine.gov/dep/gis/datamaps/lawb_biomonitoring/station_web/S-648M.htm

7.2.5 Project Nexus

Although historical water quality data upstream, within, and downstream of the Project indicates State standards are being met, compilation of historic data and data collected since the relicensing will provide a representation of existing baseline conditions to assess anticipated effects of partial dam removal on water quality conditions. Result of anticipated sediment testing in areas of construction disturbance will inform any necessary protection or mitigation measures during and post-construction.

7.2.6 Methodology

Water Quantity (River Flow and Elevations)

BWPH has completed a river elevation model of the reach from Bar Mills Dam to the upper limit of the existing impoundment just downstream of West Buxton. A 1-dimensional (1D) and 2-dimensional (2D) hydraulic model was developed using the state-of-the-art U.S. Army Corps of Engineers' HEC-RAS v6.1 software to simulate the water levels and depths for the existing conditions and post- partial removal conditions. Each condition modeled three flows: 300 cubic feet per second (cfs), 400 cfs, and the annual mean flow of 2,600 cfs. The 300 cfs flow is intended to represent the lowest summer flows and 400 cfs represents the typical low summer flow. Shading on the map represents the HEC-RAS model-calculated water depths for a given flow (300, 400, or 2,600 cfs) for the existing and proposed conditions.

The following data sources were used to create the HEC-RAS models:

- Aerial Imagery – Environmental Systems Research Institute (ESRI) Aerial Color Imagery Server, accessed April 2020.
- Topographic Data – 2013 Maine Statewide 3 feet LiDAR survey obtained from the U.S. Geological Survey's National Map online data viewer.
- Bathymetric Data – Kleinschmidt Associates collected river bottom data for the river channel between Bar Mills to West Buxton Dam on April 26 through April 29, 2021, using an Acoustic Doppler Current Profiler (ADCP) with an echosounder. The precision or spacing of the data collected is approximately 2-foot spacing for the first 500 feet upstream of the dam and 50-foot spacing for the remainder of the river reach. Note that the proposed bathymetric conditions immediately adjacent to and under the existing concrete and timber crib dams were developed using engineering judgement.

In addition to utilizing the model to characterize and compare pre- and post-partial breach water level conditions, BWPH will utilize model output and historic hydrology data to evaluate potential impacts to reduction of available volume in water supply wells and the dry hydrants resulting from lower impoundment levels, based on geologic concepts.

The Towns of Buxton and Hollis requested a study to determine whether dry hydrants on Depot Street in Buxton and Canal Road in Hollis will remain operational and whether the proposed diversion weir at the upstream end of the canal will not allow sufficient water to keep the hydrant operational. The request also includes submittal of a plan to the Towns for approval, to mitigate negative effects of water levels on the dry hydrants. BWPH's proposal includes a diversion weir at the upstream end of the canal to prevent flow into the canal under normal river flow conditions. Therefore, the proposed decommissioning will affect the dry hydrant on Canal Road and BWPH proposes to consult with the Town of Hollis to develop plans to mitigate those effects, which may include modification to or relocation of the dry hydrant. BWPH will assess the effects of lower normal water level on the Depot Street dry hydrant and will consult with the Town of Buxton to assess the need for mitigative measures as appropriate.

Further, the HEC-RAS model will be used to determine potential velocity and flow issues associated with downstream infrastructure, namely, the Route 4A bridge piers.

Water Quality

BWPH will conduct a desktop search, compilation, and summary of existing baseline water quality data, including prior relicensing studies identified above, any recent and ongoing water quality monitoring and data reporting by the state, the SRCC, and any other relevant sources. These data and results will be summarized relative to State classification parameters for Class A waters including DO, pH, temperature and E. coli.

Should sediment sampling determine that contaminants are present, BWPH will consult with MDEP to determine appropriate during and post-construction monitoring measures may be required relative to water quality.

7.2.7 Schedule

The proposed study will be performed in 2023 with study results provided in the Draft Study Report to be issued for agency, stakeholder and public review in late 2023.

7.2.8 Level of Effort

The estimated cost of field data collection of bathymetry, compilation of hydraulic and hydrology data, development of the 1D and 2D models, compilation of existing, readily available water quality data, and evaluating potential effects of lower impoundment water levels on surrounding water supply, including dry hydrants, is $60,000.

7.3 Fish and Aquatics

7.3.1 Goals and Objectives

The objective of the study is to utilize HEC-RAS modeling developed to assess effects of partial dam removal on water levels, supplemented by field investigations, to evaluate effects on impoundment habitat and tributary access for resident fish species and zone of passage characteristics through the dam breach zone for migratory species based upon agency defined depth and velocity criteria for American shad, blueback herring, alewife, Atlantic salmon, and sea lamprey.

7.3.2 Known Resource Management Goals

USFWS, NMFS, MDMR, and MDIFW are responsible for managing and protecting fishery resources. MDEP is responsible for ensuring that general aquatic stream ecosystem parameters are supported. FERC must consider the effects of surrender and decommissioning of the Project operations on natural resources. This evaluation will provide information to confirm the suitability of riverine habitat upstream and downstream of the partially removed dam for resident and migratory species and zone of passage through the breach zone for migratory species.

7.3.3 Study Area

The study area relative to resident species habitat and tributary access is the current impoundment and confluence of primary tributaries with the impoundment. The study area for zone of passage evaluation for migratory species is at and immediately upstream and downstream of the west half of the spillway that is proposed for removal.

7.3.4 Background Information

In support of the previous FERC relicensing, FPLE Maine conducted a fisheries resources survey and bass spawning survey and impoundment drawdown study, finding smallmouth bass and largemouth bass to be the most abundant warmwater species and

that historic impoundment fluctuations were not adversely affecting smallmouth bass reproduction at the Project (FPLE Maine 2003). The bass spawning survey documented that all bass nesting occurred below the daily fluctuation zone (under operating regime of the previous FERC license) in 2.5 to 5 feet of water and that only a 3.8% of the impoundment substrate, consisting of fine substrate not preferred by spawning bass, was exposed during a two-foot drawdown. This suite of studies determined that regular fluctuation of the impoundment did not adversely affect resident species as fish would likely move into deeper water (FPLE Maine 2003).

In 2019, BWPH and resource agencies executed a revised Saco River Fish Passage Assessment Agreement (SRFAA) for migratory fish species, superseding the 2007 SRFAA. The 2019 Amendment replaced Section 5.3.b.1, including a provision for a "single permanent upstream anadromous fish passage facility at each of the Projects, or an alternative method agreed upon and approved by the Parties" with an implementation schedule of May 1, 2025 for Bar Mills.

As part of BWPH conceptual designs for partial dam removal, developed in consultation with fisheries agencies, removal criteria considered zone of passage and velocities for both partial and full breach at a range of flows (5, 50, and 95% exceedance conditions[10]) for Atlantic salmon, American shad, blueback herring, alewife, and sea lamprey. Modeling results were presented to agencies in a meeting on December 12, 2021 and in a technical memo on February 23, 2022. BWPH is proposing partial dam removal utilizing nature-like fishway design criteria to provide volitional passage that will provide effective fish passage with a natural channel configuration that is preferable over a lift or ladder in the particular situation. Hydraulic modeling of partial and full removal scenarios demonstrated that modeled conditions for 5% exceedance (low flow conditions) provide a wider zone of suitable depths for upstream passage (Figure 4) under partial removal conditions and at 95% exceedance (high flow conditions), flow velocities in the target criteria range exist over a significantly wider zone (Figure 3). Historic river flow data indicates that flow in excess of or equal to 95% exceedance and less than or equal to 5% exceedance occur only about 4 days each within the passage season. Modeled conditions under a full breach do not demonstrate significantly superior conditions to partial breach for the concerned fish passage parameters and full breach, particularly as including the former mill intake,

[10] 5, 50, and 95% exceedance values are calculated to be 9,900 cfs, 2,725 cfs, and 762 cfs, respectively.

would result in disturbance and erosion of the former Rogers Fibre Mill Superfund site. Therefore, a partial breach is being pursued.

7.3.5 Project Nexus

Without an economically viable solution to return the generating units to an operable condition and provide upstream migratory fish passage, BWPH is electing to surrender and decommission the Project. In order to address fish passage requirements as part of the decommissioning, BWPH proposes partial removal of the dam to an extent that addresses agency design criteria for upstream fish passage.

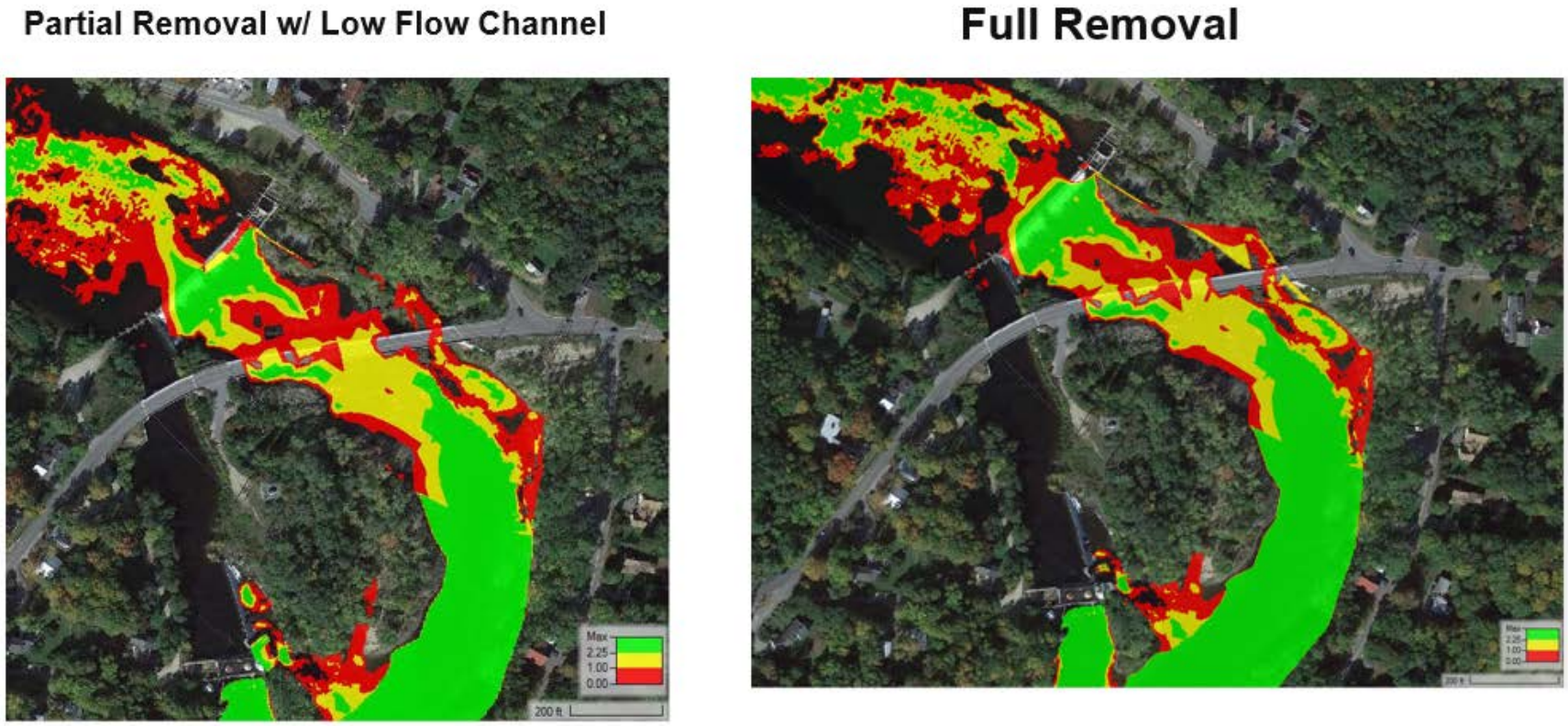

Figure 3 Water Depths at 762 cfs

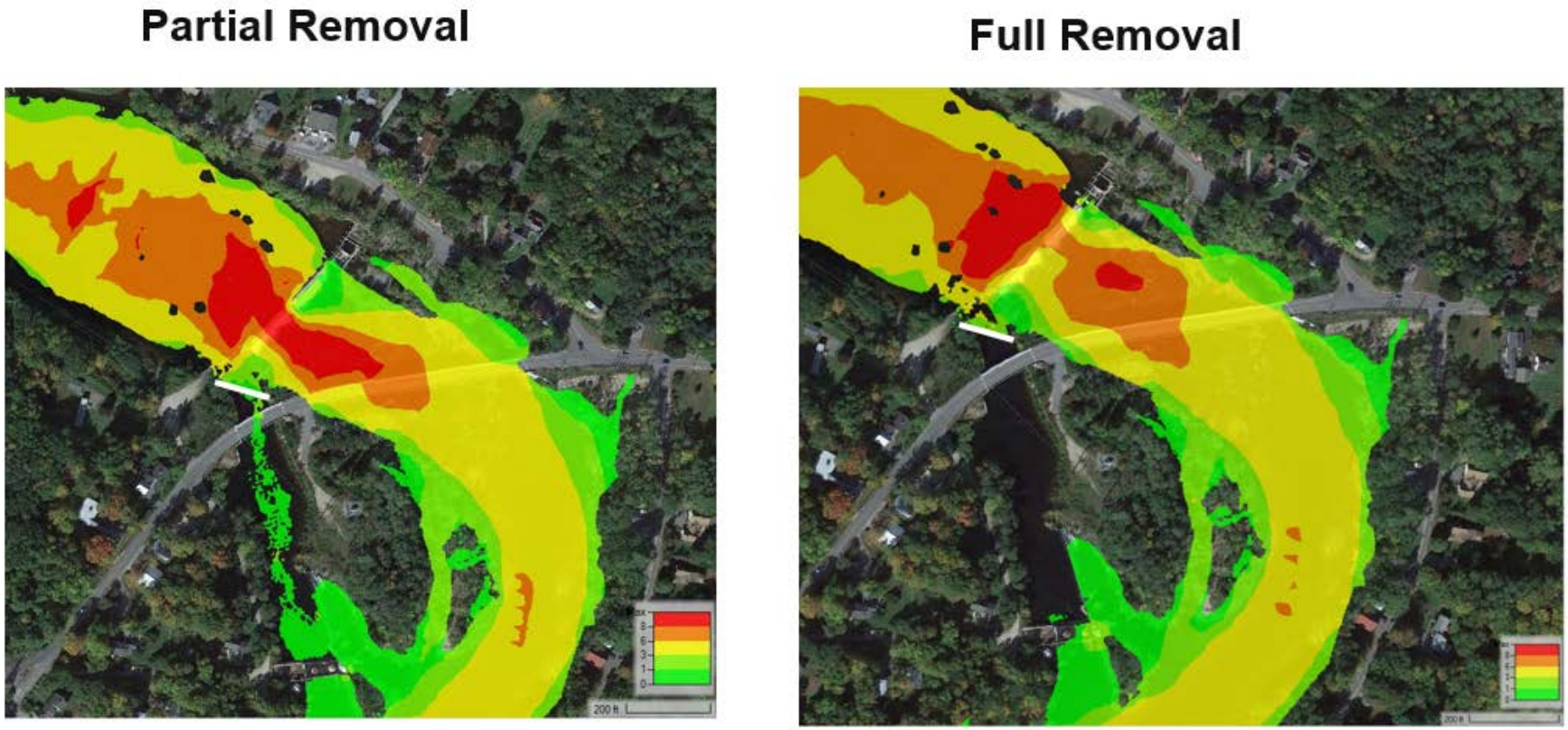

Figure 4 Water Velocities at 9,900 cfs

7.3.6 Methodology

Resident and Anadromous Species and Habitats and Tributary Access

BWPH will conduct a metadata review of existing baseline fisheries and habitat information which will be summarized, including prior relicensing studies conducted at Bar Mills and other BWPH facilities on the Saco River.

BWPH will conduct a field assessment of zone of passage in water depth and velocities for tributaries to the Bar Mills impoundment. This assessment will be carried out through a site visit to primary tributaries to document if there are any obstacles that potentially restrict fish at modeled post-breach river depth. Tributaries to be examined include Crocket Brook and Smith Brook. These tributaries will be visited, surveyed, and photo-documented during low-water (drawdown) conditions to determine if obstacles to access are present. Velocities, minimum depths, minimum widths and maximum lengths of tributaries passing over the post-breach dewatered zone will be estimated and recorded. To the extent feasible under drawdown conditions, substrate and aquatic habitat will be characterized in the zone between normal impoundment elevation and post-partial removal elevation.

Zone of Passage

An evaluation of zone of passage for depth and velocity in the vicinity of the proposed breach was completed as part of HEC-RAS modeling of post-breach conditions for partial and full removal scenarios as summarized above and in the Scoping Document.

In evaluating partial and full removal BWPH utilized *Federal Interagency Nature-like Fishway Passage Design Guidelines for Atlantic Coast Diadromous Fishes* (Turek, J., A. Haro, and B. Towler. 2016) and 1D and 2D hydraulic modeling. The HEC-RAS depth and velocity results data were reviewed for the 5%, 50% and 95% exceedance flows to evaluate the potential zone of passage for both American shad, and Blueback herring, based upon minimum depth and maximum velocity criteria for these species. These fish have some of the strictest velocity and depth passage criteria compared to species such as Atlantic salmon.

7.3.7 Schedule

The proposed study will be performed in 2023, under drawdown conditions to the extent feasible, with study results provided in the Draft Study Report to be issued for agency, stakeholder and public review in late 2023.

7.3.8 Level of Effort

The estimated cost of field data collection and evaluating potential effects of lower impoundment water levels on impoundment aquatic habitat and tributary access is $20,000.

7.4 Wildlife and Botanical Resources

7.4.1 Goals and Objectives

The goal of this study is to characterize existing wildlife, botanical, and wetland resources, including threatened and endangered species and significant habitats and invasive botanical species to the extent they have the potential to occur, and evaluate the effects of lowered water levels upstream of Bar Mills dam on these resources.

7.4.2 Known Resource Management Goals

MDIFW and USFWS have responsibilities for protecting wildlife and botanical resources. FERC must consider the effects of continued Project operations on natural resources. This study will provide the necessary information to assess wildlife and botanical resources (species and habitats), including rare, threatened and endangered (RTE) species that may be present, within the current Project boundary and potential effect of lower water levels upstream of the Bar Mills dam.

MDIFW has management goals of ensuring that wildlife and aquatic resources in the State of Maine are maintained and perpetuated for their intrinsic and ecological values, for their economic contribution, and for their recreational, scientific and educational use by the people of the State.

The USFWS has goals to evaluate the need for protection, mitigation and enhancement measures necessary to meet state and federal fish and wildlife objectives; and to conserve, protect, and enhance the habitats for wildlife species that may be affected by surrender and decommissioning of the Project with partial dam removal.

7.4.3 Study Area

The study area for wildlife, botanical, and wetland investigations are primarily the impoundment shoreline where post-breach water levels will be reduced from current normal impoundment levels.

7.4.4 Background Information

FPLE Maine completed a terrestrial resources study in September 2001 that assessed wetland and upland habitats, RTE species, and wildlife resources in the Project area. Cover types along the Bar Mills impoundment and tailrace were characterized as dominantly mature mixed hardwood forest (upland forest), agriculture (hay field, cornfield, pasture), and utility right-of-way. Although not dominant, additional cover types include several types of palustrine wetlands (forested, scrub-shrub, emergent and unconsolidated bottom), and scattered areas of residential development. Two wooded islands (upland forest) occur in the lower and middle portions of the impoundment (FPLE Maine 2003). There are several larger wetland systems within or adjacent to the Project boundary, primarily in low, level areas where small tributaries enter the impoundment. These larger wetlands were mapped in the field during September 2001 using the Standish and Bar Mills quadrangles of the National Wetlands Inventory (NWI) maps as a base map and adjusting/updating these based on the field investigations (FPLE Maine 2003).

The terrestrial study completed in 2001 included a field component to search for potential rare botanical features and a review of MDIFW records for rare botanical features and significant wildlife habitat. No federally-listed RTE plant species were found to occur in the study area during the terrestrial study field work in September 2001. One state-listed species, swamp white oak (*Quercus bicolor*) was found within the study area, however it was determined to be outside of the area of Project influence (FPLE Maine 2003). MDIFW indicated no records of any significant wildlife habitats (*e.g.*, mapped inland wading bird and waterfowl habitat, or deer wintering areas) in or near the Project. No transient or resident eagles or any federally or state-listed terrestrial RTE wildlife species were observed during field surveys in 2001 – 2002 (FPLE Maine 2003).

7.4.5 Project Nexus

The vicinity of the Bar Mills Project provides habitat for a variety of wildlife and botanical species. While a reduction in existing normal water levels upstream of Bar Mills dam is not anticipated to have adverse effects on these resources, field verification of baseline

wetlands, upland, littoral and riverine habitat conditions will serve as a basis to evaluate potential effects of partial removal water levels on wetlands that are hydraulically connected to the impoundment under current water levels and on wildlife habitats within the drawdown zone.

Review of present day USFWS Information for Planning and Consultation (IPac) data and Maine Department of Inland Fisheries and Wildlife (MDIFW) and Maine Natural Areas Program (MNAP) data will determine if threatened or endangered species have been documented or have the potential to occur at the Project since the previous relicensing and field observations will provide an opportunity to confirm any such identified species or habitats.

7.4.6 Methodology

Species and Habitats

BWPH will conduct a metadata review of wildlife species and a reconnaissance level field evaluation of existing upland, littoral, and riverine habitats to verify historic characterizations from the prior FERC relicensing via observations by boat.

Wetlands

A review of USFWS mapped wetlands and wetland mapping from the prior relicensing, coupled with a reconnaissance level field verification to assess baseline wetlands conditions in the pre-breach scenario. This will include field verification of wetland mapping via observations by boat and assessment of potential effects on wetland connectivity and classification type under modeled post-breach water levels. This includes field evaluation and estimation of how much of the hydrological input to the existing wetlands appears to be associated with the impoundment to qualitatively assess whether the wetland extent and types may change from lowered impoundment levels depending on the local topography and other sources of hydrological input. (e.g. ground water, tributaries, overland surface flow).

Endangered Species

Inquiries to develop a potential state and federal threatened and endangered wildlife and botanical resources list will be conducted using USFWS IPac and MDIFW MNAP inquiries. Observations of the presence of listed species and suitable habitats will be recorded

during field efforts conducted for wetlands and shoreline surveys. Should listed botanical species be identified by MNAP, field reconnaissance to confirm presence/absence will be conducted.

Invasive Species

During field efforts for wetlands and shoreline surveys, BWPH will also observe and document invasive botanical species (e.g., milfoil, hogweed, phragmites) as a baseline assessment of existing conditions. As discussed above, a site restoration plan will be developed that includes considerations for the propagation of native species.

7.4.7 Schedule

The proposed wetland field surveys and wildlife and botanical species and habitat observations (should it be warranted for threatened, endangered or special status species) will be performed in 2023, under drawdown conditions to the extent feasible, with study results provided in the Draft Study Report to be issued for agency, stakeholder and public review in late 2023.

7.4.8 Level of Effort

The estimated cost of field data collection and evaluating potential effects of lower impoundment water levels on wetland, wildlife, and botanical species is $25,000.

7.5 Recreation

7.5.1 Goals and Objectives

BWPH proposes to summarize recent recreational use data to inform any potential enhancement measures for the existing trailered boat launch to be reverted back to hand carry access, as well as assess adequacy of existing recreational facilities that will continue to be maintained after surrender and decommissioning of the Project.

7.5.2 Known Resource Management Goals

The resource management goals are to identify and provide for appropriate utilization of recreational opportunities associated with the Project. The Bureau of Parks and Lands under the Maine Department of Agriculture, Conservation, and Forestry has a mission to manage natural and cultural resources to offer a recreational and educational opportunities within the State. The Boat Facilities Program supports programs to provide

access to lakes, ponds, rivers, and the coast within the State of Maine, such as providing grants for public boat access and producing boat launch and navigational aids information. The Maine Department of Inland Fisheries and Wildlife also manages public recreational safety for whitewater rafting, boating, hunting and fishing, and other outdoor recreational activities.

7.5.3 Study Area

The study area includes existing recreational facilities and access of the impoundment boat launch, canoe portage, tailwater canoe access, and Usher Island parking area and trails.

7.5.4 Background Information

The recreation facilities around the Bar Mills Project include the impoundment boat launch, canoe portage, tailwater canoe access, and Usher Island parking area and trails. These facilities will remain available for public use after the Project is decommissioned. Because the reduced water levels are likely to reduce accessibility by motorized watercraft to the impoundment, the existing boat launch that had been hand-carry and was modified in 2010 to accommodate trailered boat access will be returned to a hand-carry facility to accommodate canoe and kayak access.

7.5.5 Project Nexus

BWPH currently provides recreational opportunities in accordance with the conditions of the existing FERC license due to FERC policy that requires licensees to provide reasonable public recreation opportunities consistent with the safe operation of the Project. Because BWPH will continue to maintain recreational access at the Project and proposes to redevelop the impoundment boat launch for hand carry access, review of recent usage will help to inform potential enhancements and future maintenance of the facilities.

7.5.6 Methodology

A summary of existing recreation usage within the project impoundment will be provided based upon an assessment of use and needs conducted during the Summer of 2022, and 2023 including user surveys that indicate an estimate of annual use and an assessment of opinions on crowding and condition at the existing boat launch. An evaluation of conditions in the post-breach scenario will be conducted concurrent with other upland studies in 2023 and utilizing the river elevation model of the impoundment to inform any

potential enhancement measures for the existing launch or other recreational facilities that may be proposed in the surrender application as well as identify any potential safety risks to be ameliorated (e.g., fall risk and turbulence around remaining structures).

7.5.7 Schedule

The proposed assessment of recreational use and enhancements, including conceptional design of the redesigned boat launch, will be provided in the Draft Study Report to be issued for agency, stakeholder and public review in late 2023.

7.5.8 Level of Effort

The estimated cost of the recreation study is $20,000.

7.6 Land Use

7.6.1 Goals and Objectives

BWPH proposes to utilize HEC-RAS modeling to quantify additional shoreline lands under modeled water level and river flow conditions for partial breach conditions to help BWPH and adjacent landowners identify and quantify lands that would previously have been subject to BWPH's flowage rights which will become part of the adjacent landowner's property.

7.6.2 Known Resource Management Goals

Land uses withing the shoreland zone, generally within 250 of most water bodies and wetlands, are afforded protections under the Mandatory Shoreland Zoning Act (MSZA), under the authority of the MDEP. The MSZA requires local municipal ordinances for among other purposes, the management of activities in this zone for the protection of natural resources, public access, and historic resources.

Maine Principles of Ownership Along Water Bodies (Hermansen and Richards, 2018) summarizes state riparian laws and common law which provide for public rights to access the riparian property along navigable waterways for activities such as hunting, fishing, and navigation.

7.6.3 Study Area

The study area includes existing privately owned, BWPH owned and public shoreline lands along the impoundment.

7.6.4 Background Information

The Project Boundary encompasses lands and waters necessary for the operation of the hydro facility, this includes lands and flowage rights up to El. 148.5 ft MSL around the impoundment that may or may not be owned in fee by BWPH, as well as several BWPH-owned parcels containing the powerhouse, recreation sites, and appurtenant facilities.

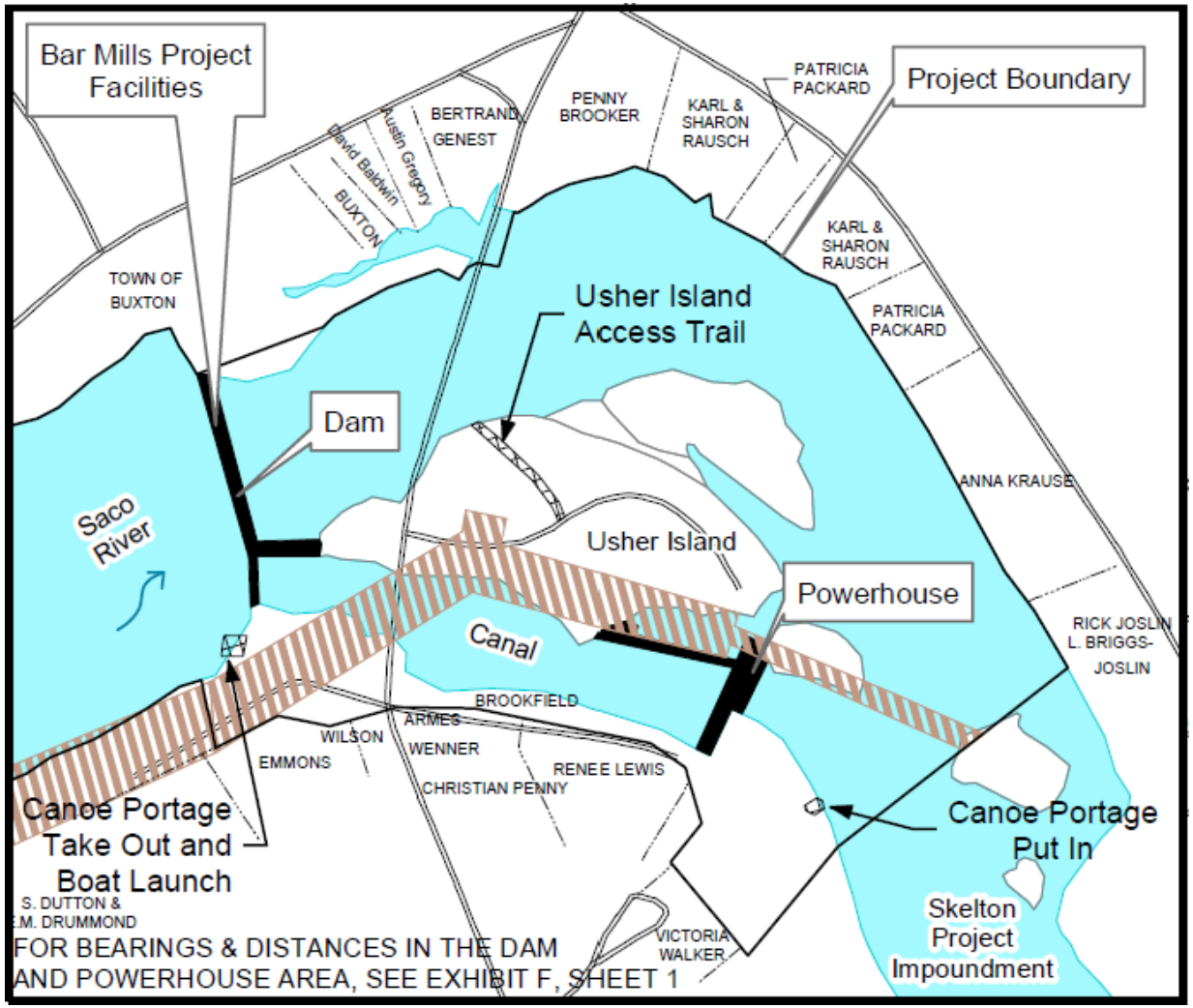

Figure 5 Project Boundary and Surrounding Land Ownership

7.6.5 Project Nexus

Upon license surrender, the FERC Project Boundary will no longer exist, and the lands within the former Project Boundary not owned by BWPH will no longer be encumbered by eminent domain rights under the FERC license, no longer needing BWPH permission for structures such as docks, etc. Lands and structures owned by BWPH (i.e., the powerhouse, canal, and remaining dam structure) will remain retained by the Company.

Additionally, a new normal waterline for the Saco River will be established following the partial removal of the dam, creating additional acreage for landowners adjacent to the former impoundment. These lands would previously have been subject to BWPH's flowage rights, but would become part of the adjacent landowner's property, held in fee, at least up to the bank of the Saco River, following the Project decommissioning.

7.6.6 Methodology

A modeled assessment of potential additional shoreline lands under the post-breach condition will be conducted. Hydraulic modeling for the river elevation model of the impoundment will be utilized to quantify additional shoreline lands under modeled water level and river flow conditions. Past land uses will also be further considered and evaluated towards informing and planning site specific decommissioning activities.

7.6.7 Schedule

The proposed assessment of land use and ownership will be provided in the Draft Study Report to be issued for agency, stakeholder and public review in late 2023.

7.6.8 Level of Effort

The estimated cost of the land use study is $10,000.

7.7 Aesthetics

The aesthetics of the Project area under the post-breach condition is of concern to local property owners and to the communities of Hollis and Buxton.

7.7.1 Goals and Objectives

BWPH proposes to develop a graphical rendering of post-breach conditions based upon HEC-RAS modeling described in Section 7.2 to assess of pre-and post-breach aesthetic conditions in the viewshed.

7.7.2 Known Resource Management Goals

The Saco River Corridor Act (38 M.R.S. § 951) established the Saco River Corridor and the Commission (38 M.R.S. § 954). The Act found the Saco River and "adjacent lands possess outstanding scenic and aesthetic qualities.". The purpose of the Act includes preservation of the scenic character along the Saco River, from Saco Bay to the border of New Hampshire, under the authority of the corridor Commission.

7.7.3 Study Area

The study area includes the project intake canal, canal gate structure and canal spillway, and main dam and spillways.

7.7.4 Background Information

The proposed surrender and decommissioning includes permanent removal of the west portion of the spillway, canal gate structure, and draining, grading, and seeding the canal, which will result in natural river flow through the removed portion of the dam.

7.7.5 Project Nexus

BWPH's proposed partial removal will return this section of the Saco River to a more natural free flowing condition and remove portions of structures currently spanning the width of the river. Development of post-breach renderings will provide a depiction of the viewshed resulting from the partial dam removal.

7.7.6 Methodology

BWPH has completed an initial aerial rendering of post-breach conditions (Photo 2). An assessment of pre-and post-breach aesthetic conditions in the viewshed including additional post-breach renderings will be completed for this study. BWPH will develop additional renderings from the two locations where the general public has visual access to the Bar Mills dam, the public boat launch and the Bar Mills Bridge (Route 4A).

Photo 2 Post-breach Rendering of Bar Mills Dam

7.7.7 Schedule

The proposed assessment of pre-and post-breach aesthetic conditions will be provided in the Draft Study Report to be issued for agency, stakeholder and public review in late 2023.

7.7.8 Level of Effort

The estimated cost of the recreation study is $15,000.

7.8 Cultural/Historic Resources

Three pre-European archaeological sites identified as eligible for listing in the National Register of Historic Places during the prior relicensing were managed under BWPH's Historic Properties Management Plan (HPMP). Two of the three sites were located in upland areas of the riverbank, however, Brookfield conducted archaeological recovery mitigation for all three sites, in consultation with the State Historic Preservation Officer

(SHPO). As reported by then licensee NextEra Energy on February 13, 2013[11], all data recovery field work, analysis, and reporting was completed at the sites between 2011 and 2012, completing all archaeology mitigation under the Programmatic Agreement (PA) and HPMP. Therefore, no additional study is proposed, although BWPH will consult with the SHPO as part of the surrender process.

Consultation with the SHPO during the prior relicensing determined that Maine Department of Transportation historic bridge surveys indicated two historic bridges in the project area were eligible for National Register listing at the time, but the SHPO determined that continued operation of the Bar Mills Project would have no effect on these structures. No measures with respect to historic structures were required under the PA or HPMP. Therefore, BWPH is not proposing any studies associated with historic structures as part of the surrender process, though as noted above, SHPO consultation will be conducted as part of the process.

[11] https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01ABF89B-66E2-5005-8110-C31FAFC91712

8.0 REFERENCES

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FPL Energy Maine Hydro LLC (FPLE Maine). 2003. Bar Mills Hydroelectric Project, FERC No. 2194, Application for New License, Volume I – Application and Exhibits A, E, F, G and H and Appendix A.

Knud E. Hermansen & Donald R. Richards, Maine Principles of Ownership Along Water Bodies, 47 Me. L. Rev. 35 (2018)

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APPENDIX A

RESPONSE TO COMMENTS

Name	Organization	Category	Subtopic	Recommendation/Comment	Response
Mary Hoffman	Hollis Select Board	Aesthetics		The surrounding fencing and aspects of the powerhouse that can be seen are unsightly and does nothing to improve the outward appearance of the Town.	The asthetics of the site are consistent with current conditions. The only public vantage point from which the powerhouse can be seen is from the Route 4A bridge over the canal which offers a transient, distant (almost 600 ft) and limited view to passing traffic and pedestrians. A second opportunity for views of the powerhouse is by recreationists via the canoe portage trail. The powerhouse is otherwise obscured from view by the area topography, geomorphology, and intervening vegetation. The powerhouse will be maintained consistent with the existing local viewshed.
Mary Hoffman	Hollis Select Board	Aesthetics	Power Lines	My understanding is that some of the power lines and towers are not in use so the Towns would like to have them removed from the area if no longer used.	The only transmission equipment associated with the Project is attached to the powerhouse at the point of interconnection with the local grid. All lines and towers in the vicinity are owned, operated and maintained by Central Maine Power.
Julie A. Larry		APE		Once the dam is decommissioned will the Bar Mills section of the river up to West Buxton become part of the APE for any future relicensing of Skelton Dam?	Decommissioning of the Bar Mills Project will have no effect on the Skelton Project FERC boundary or APE as the current Skelton Project boundary is the upstream extent of the backwater effect of the Skelton impoundment.
Mary Hoffman	Hollis Select Board	Canal Pooling		Have an evaluation of the depth of the canal and possible filling in the area to avoid a mud hole, a swampy insect breeding area, or being overtaken by invasive species. This area could then be developed as either a parking area or a recreational area for use. If Brookfield maintained the area, would be responsible for site maintenance. If not interested in maintaining, could donate to the Hollis Conservation Commission once initial work had been completed and provide funds for continued maintenance.	BWPH's proposal is to install a diversion weir at the upstream end of the canal to keep it dewatered during normal river flows and provide a drain mechanism at the downstream end of the canal to ensure it will drain after high flow events. BWPH intends to grade and seed (with native species) the canal to minimize pooling of water and to revegetate the canal area.
Rita Bradbury		Canal Pooling		Fisheries - Tributary created in canal area, if good water quality is supported, (not becoming stagnant pool due to backflow, creating a potential bacteria pool.	See response regarding grading and seeding the canal.
Mary Hoffman	Hollis Select Board	Consultation	Partial versus Full Removal of the Bar Mills Dam	I would ask that DEP be asked for their input in when it would be safe to remove either part or the full structure of the dam based on the location of contaminants and what might happen to the cap that was placed over the site.	Maine Department of Environmental Protection (MDEP) is a consulting agency in the surrender process and BWPH will apply for an MDEP Maine Waterway Development and Construction Act (MWDCA) and Section 401 water quality certificate for the proposed removal activities. The intent of BWPH's partial removal alternative is to leave the Town property on which the former Rogers Fibre Mill is located unaltered in terms of both ground disturbance (that would be necessary in a full removal scenario) as well as shoreline erosion (that would also result in a full removal scenario) to avoid impacts.

Francis E. Pulsoni	Town of Buxton	Consultation		It is our understanding that many stakeholders received notification that Brookfield was accepting requests for studies to be performed prior to the decommissioning. The Towns of Buxton and Hollis did not receive any of these notifications, nor any other notifications from Brookfield concerning the decommission process. We were only made aware through second-hand informants. We would very much like to be included in any correspondence in the future. Please send all future notifications, updates, or any information regarding the decommission to our assistant Hunter Cox at hcox@buxton.me.us.	The Towns will be included on future correspondence for the project and we continue to encourage interested parties to periodically review the Bar Mills Decommissioning website for updates. A public informational meeting was held on August 2, 2022 at the Bar Mills municipal offices.
Mary Hoffman	Hollis Select Board	Erosion	For property owners both upriver and downriver	Have a group of individuals to include Saco River Corridor Commission, Property Owners, Landscapers, Maine Master Naturalists, Brookfield, etc. initiate studies to evaluate current conditions for property owners and conditions with the dam removal. Make recommendations and have funds available to landscape to preserve property. What is going to prevent the banks from erosion? Escrow account available to spend on projects which have been approved by the group. Length of time for operation and amount of account to be determined by the group. (Recommend start prior to decommissioning and work forward after the decommissioning for 5-10 years). Emphasis on not having banks going into the river and not having pools of insect breeding water and mud as well as not letting invasive plants take over the area.	The potential for shoreline erosion is proposed for study and will be evaluated in the Surrender Application. Any potential mitigation measures will be presented in the Surrender Application if deemed necessary. However, five high profile dam breaches and removals (Fort Halifax, Edwards, and Sandy in the Kennebec watershed and Great Works and Veazie in the Penobscot watershed) have been undertaken in the last decade with no long term issues with erosion.
Rita Bradbury		Erosion		Geology - erosion effects/corrections over time. There are areas where the river bank is supported by higher waters. These are at risk to collapse, and could cause harm and other effects to the river.	See response to comments regarding erosion.
Mary Hoffman	Hollis Select Board	Full Removal	Partial versus Full Removal of the Bar Mills Dam	Due to the environmental concerns with the removal of the Roger Fiber Mill and contamination being capped, consideration of removal of the whole Bar Mills Dam is not being considered. This continues to be an eyesore for the Town of Buxton. My understanding is that when the contamination was cleaned up, the remaining concrete structures of the Mill were not removed as they were part of the Dam. If this is so, would not the Town of Buxton be within their rights to ask that the whole dam be removed. My understanding is that above the structure that would remain will be an area of stagnant water as well as an area where the dam has been removed that is dangerous to individuals using the Saco River as a recreational area.	Based upon tax mapping and deed descriptions, the former mill buildings and the property on which the fiber mill buildings were located are owned by the Town of Buxton (see attached figure), are not within the project boundary, and outside the scope of BWPH's responsibility. As discussed above, the partial breach option avoids any potential disturbance of the Rogers Fibre Mills site and removal of the remnant intake structure on Town property would cause inundation and signficant erosion of the site. However, the Town is within its rights to remove the adjacent remnant structures and remediate the site should it see fit. The study plan includes review of the HEC-RAS modelling to demonstrate that the remaining portion of the spillway and the remnant intake structure will not create an isolated pool upstream nor will it create hazardous velocities at normal summer recreation season flows.

Mary Hoffman	Hollis Select Board	Historical and Cultural Resources	Historical and Cultural Resources	Does the powerhouse have any historical significance? If not, the Town would like to have the structure removed or an escrow account set up to provide funds for its removal if needed later. The Town does not want to inherit the cost of the removal if at some point the structure is abandoned. What specifically is being removed around the powerhouse and what is being maintained?	A plan for long term ownership and maintenance of the property would be part of any decommissioning plan that would be approved by FERC. BWPH will retain ownership and be responsible for maintaining remaining structures. By way of example, BWPH has continued to own and maintain the Fort Halifax powerhouse in Winslow, in accordance with the FERC approved Decommissioning Plan, following the breach of the Fort Halifax Dam in 2008, 15 years ago.
Mary Hoffman	Hollis Select Board	Historical and Cultural Resources	Historical and Cultural Resources	Historical and Cultural Resources: As noted on page 11 of the Kleinschmidt report, three pre-European archaeological sites are eligible for listing in the National Register of Historic Places. These sites have been maintained but are privileged information. The Town of Hollis would like to be part of the management of the historic sites. What about the Historical Society being involved in preservation as well as having access to the public to be able to appreciate the sites.	The priviliged classification of eligible resources is intended to minimize potential for vandalism or looting by the general public. BWPH is not opposed to the Town participating in management of the historic sites, but anticipates such an approach would require approval by the Maine Historic Preservation Commission (MHPC).
Mary Hoffman	Hollis Select Board	Hydrants	Relocation of both dry hydrants on the Hollis and Buxton side	Because of the decrease in the water levels, the hydrants would need to be relocated to continue to allow use during fires by both towns.	BWPH will consult with the towns to address potential relocation of the existing hydrants or other mitigative measures, if determined necessary.
Francis E. Pulsoni	Town of Buxton	Hydrants		Assess any changes or effects on our dry hydrants as part of the study, and how Brookfield would mitigate any negative affects if the post-removal water level dropped too low.	See response regading consultation with the Town relative to the hydrants.
Rita Bradbury		Invasive Species		Wildlife and Botanical Assessment and clearance of invasive species along the river bank and potential for it's spread.	Any potential mitigation measures will be presented in the Surrender Application if deemed necessary. A wetlands evaluation is planned for 2023 and any site restoration plans would include propagating with native species and a plan to avoid the introduction and spread of invasives in newly reseeded areas.
Mary Hoffman	Hollis Select Board	Phase I/II		For the canal area which is to have the water diverted from the area Phase 1 (and by extension Phase II or additional testing as recommended for Power House portion of the property and Spillway portion of the property (ASTM Standard E-1527-13).	See response regarding grading and seeding the canal.
Mary Hoffman	Hollis Select Board	Phase I/II	Powerhouse	Phase 1 (and by extension Phase II or additional testing as recommended) for Power House portion of the property and the Spillway portion of the property (ASTM Standard E-1527-13) Structural/Property Condition Report on Power House (minimum ASTM Standard E 2018-15 or other as recommended by engineer)	BWPH will retain ownership of and continue to maintain the powerhouse, spillway and associated property. Equipment removal is currently underway. Past land use will be considered and evaluated toward informing and planning site specific decommissioning activities.

					Sediment accumulation in the canal will experience less opportunity for transport compared to existing conditions as flows into the canal would be reduced in terms of frequency and duration over the baseline. In addition, BWPH proposes to seed with a native mix, the accumulated canal sediments to encourage stabiliation and reduce erosion. Sediment in the impoundment and as accumulating upstream of the dam is readily disturbed, disrupted, suspended and transported by normal high flow run-off events such as spring freshette and fall precipitation. BWPH will investigate the nature and general quantity of sediment accumulation upstream of the dam. As part of the Decommissioning Plan, BWPH proposes to reduce the rate of impoundment drawdown to limit the rapid transport of sediments from upstream of the dam accordingly. In addition, sediments immediately upstream of the spillway section proposed for removal will be dredged and, if appropriate, repurposed to fill the canal.
Mary Hoffman	Hollis Select Board	Phase I/II	Evaluation of remaining contamination within the area	Both Towns would like to have sampling done of the sediments upstream of the Dam as well as the canal for contamination either from the original Roger Fiber Mill or PFAS contamination from use of sludge on farms in the area.	As discussed in the proposed Study Plan, BWPH will conduct sediment testing for the required analytes for beneficial uses in accordance with Maine's Solid Waste Management Rules Chapter 418, Section 7.A.
Mary Hoffman	Hollis Select Board	Phase I/II	Evaluation of remaining contamination within the area	Isn't the EPA supposed to be monitoring the site every five years since the Mill site was cleaned up? What are the results of the monitoring? What would ensure that the capped area would remain capped if there was heavy flooding or torrential rains like we have seen on an increasing basis. My understanding is that the area was capped with soil and riffraff.	Any questions regarding ongoing monitoring and long-term maintenance of the Rogers Fibre Mill site should be directed toward the Town of Buxton, the owner of that property.
Mary Hoffman	Hollis Select Board	Phase I/II	Proposed Studies	In the listed proposed studies, it appears that you are only doing "quantity" studies of the sediment and not qualitative studies. Whereas it is important to evaluate the volume of sediment for the fate and transport model it is also important to know the quality. As previously noted, the upper sediments may have encapsulated heavy metals etc. and with their removal will allow the release of the underlying sediments. Also, it does not appear that PFOS sampling was conducted when the Roger Fiber cleanup was conducted. The Towns would like to have analyses of what contaminants are present including those in the sediments within the canal. If elevated levels are present, cleanup would need to be undertaken (e.g., vacuum dredging prior to the dam removal.	As discussed elsewhere, the Town of Buxton owns the former Rogers Fibre Mill property. BWPH's partial breach proposal is intended to avoid any distrubance to the site. See response above regarding canal and impoundment sediments and assessments of prior land uses, which will inform the need for potential additional investigations.

Renee Lewis		Phase I/II		Phase I, and Phase II or additional testing recommended based on the results of the Phase I for at minimum the Powerhouse and Spillway portions of the property. This study will identify potential releases of hazardous substances, as well as determining the scope of any testing required to confirm the releases identified in the Phase I. The public has a clear interest in the results of this study as the property abuts residential properties with wells as well as a sensitive river and associated wetlands. There is limited public information regarding hazardous substances present on the Powerhouse or Spillway portions of the property, whether in soil or groundwater, and the scope of and threat posed by any potential releases of hazardous substances should be adequately identified. Due to the age of the dam and associated structures, there is significant potential for hazardous substances to be present on the property, including lead, asbestos, petroleum products, VOCs, and PCBs. The Phase I should be conducted in accordance with ASTM Standard E-1527-13, which is generally accepted practice. Phase I studies are non-invasive, and comparatively low cost. Further investigations would be informed and tailored based on the results of the Phase I. To date, we are unaware of alternative studies that would meet this information need.	As discussed above, BWPH will continue to own and maintain the structures retained as part of the FERC approved Decommissioning Plan. The powerhouse equipment and chemicals are currently being removed. BWPH proposes no additional significant ground disturbing activities. See response regarding the canal, upstream sediments and assessments of prior land uses, which will inform the need for potential additional investigations.
Rita Bradbury		Phase I/II		Soils - testing and collaboratin with DEP in the area surrounding the former Rogers Fiber mill, with concerns for possible toxic sediment release with changed water flow in that area	As discussed above, the Town of Buxton owns the property of the former Rogers Fiber mill and BWPH's proposed Decommissioning Plan is intended to avoid any ground disturbance or additional erosion to the property.
Mary Hoffman	Hollis Select Board	Powerhouse		Inventory of structure, improvements, and equipment at the Power House property, and plans for removal of all items that are not currently in service. Much more information is needed about the powerhouse to include what environmental hazards are contained within and what condition the structure is really in. Repurposing would need to meet all the requirements of the current zoning of the property.	See response to comments regarding BWPH plans for the powerhouse.
Mary Hoffman	Hollis Select Board	Powerhouse	Debris	Both Towns would like to have any equipment that is not able to be used to be totally removed and not placed in storage in the powerhouse as a dumping site. Residents are very concerned that at a future date the site will be abandoned and the Town responsible for cleanup of the area.	See response to comments regarding BWPH plans for the powerhouse.

Renee Lewis		Powerhouse		Structural condition report on the Powerhouse structure This study will evaluate the structural integrity of the Powerhouse structure and its fitness for the purpose currently be proposed by Brookfield. The public has an interest in the physical condition of the structure as it appears dilapidated and potentially poses a threat to public safety. Brookfield has not to date allowed any municipal agencies or representatives to inspect the structure, and there has been no evaluation of the viability of continuing to use the Powerhouse or if it is more appropriate to remove the structure. The structure was constructed many years ago and was not designed to serve the purpose proposed by Brookfield. Further, the structure likely does not meet current safety standards for structures occupied by people. The report should include an inventory of improvements and equipment including list of obsolete or unused equipment that should be removed prior to conversion of the Powerhouse. The report should be done in accordance with ASTM Standard E 2018-5, which is industry standard. This study is non-invasive, and comparatively low-cost. To date, we are unaware of alternative studies that would meet this information need.	See response to comments regarding BWPH plans for the powerhouse. The public will continue to be prevented from access to the facility.
Julie A. Larry		Powerhouse		Will there be any ongoing maintenance of the power station building once the dam is decommissioned? As we are a downriver neighbor, we've seen spalling of the concrete on the down river face and just wondered if the station will be left to deteriorate or what the maintenance plan would be going forward. Also does that station contain any environmental hazards, like asbestos or lead paint? If the power station isn't maintained going forward, is there any short of mitigation or monitoring of those materials if they exist? Is there any environmental assessment that has been undertaken on the power station and if so, is it available to the public?	See response to comments regarding BWPH plans for the powerhouse.
Mary Hoffman	Hollis Select Board	Property Ownership	Property Ownership	Is there a full-size survey plan of who currently owns what property in the entire area and who will own what property in the future? Very unclear in your documents what Brookfield owns as property versus water rights only. Would need to have a survey done now that clearly identifies what is owned and by whom. Also, this plan should show existing features such as retaining walls etc.	Land ownership information will be contained in the Surrender Application and developed based upon BWPH records and Town tax mapping data. As discussed elsewehere , Buxton tax maps and deed information indicates that the Town owns all land on the east shorline surrounding the dam, including the portion of the concrete structure adjacent to the spillway that served as the former mill intake, though the mill intake itself is a project feature.
Rita Bradbury		Public Safety		Recreation, land use, aesthetics - safety concers from proposed changes, canal area, high cement walls left - fall risk etc. Dam parts with potential turbulent flows under cement areas. Aesthetics - an old semi demolished dam left behind is not aesthetically pleasing and it does not support the normal flow of this river.	Brookfield will maintain necessary public safety measures at the project. The aesthetics of the site are in keeping and consistent with the existing viewshed. River flows will be effectively unimpeded in the post-breach condition.

Mary Hoffman	Hollis Select Board	Recreation	For the area to the left of the bridge prior to crossing the bridge from Hollis to Bar Mills: (current Board Access and Parking area)	If Brookfield maintains ownership of the land, develop as a recreational area for fly fishing and parking. If Brookfield not interested in maintaining property ownership, donate the property to the Hollis Conservation Commission to develop as noted. This will include losing the motor boat launch area and changing the launch area to one to accommodate canoes and kayaks. All testing of the property as far as contamination would be needed to be done prior to donating the property as well as funds provided by Brookfield to the Conservation Commission to support ownership and maintenance of the property.	BWPH intends to retain ownership and be responsible for maintaining remaining structures and existing recreation facilities. No new recreation facilities are proposed.
Mary Hoffman	Landowner	Recreation		One of the residents that live above the current parking lot has major concerns about the upkeep of this general area currently. I have provided you with their specific concerns below and would expect to get a response from Brookfield about what they are going to do about this area currently. “Greg & I have some very serious concerns regarding the current parking lot area below our house. This is the area you have mentioned for potential improved parking & recreation area. We are strongly against this. Our home/property is impacted by this decision more than any other and we have a firsthand account of what really happens there."	The reference to potential improved parking and recreation is related to the existing boat launch, which BWPH intends to revert back to hand-carry access, which may include improvements such as those recommended (e.g., cleaning up the existing parking area, mowing, and signage). BWPH has installed additional updated Part 8 (Public Use) signage in response to landowner comments.
Mary Hoffman	Landowner	Recreation		Greg & I propose a general cleanup of the area (as you mentioned) - removing the unsightly fencing, the abandoned concrete road barriers & the piles of wood that have accumulated around the parking lot since Brookfield took over. Once the dam is removed there is no need for the ugly metal chain fence that was installed. We also ask for basic maintenance of the area- mowing, clearing invasive brush/shrubs & snow plowing.	See responses to recreation access comments.
Mary Hoffman	Landowner	Recreation		Finally, there MUST be signage installed to deter the dusk to dawn activity. That is the only way we can ask for police assistance since there is nothing posted saying people cannot park or party there overnight. The only signage we have currently says ‘No overnight camping,’ and that came at my request but it isn’t being patrolled our monitored at all. Just last night there were cars parked there for over 2 hours with loud music & lights on. Signage is imperative.	See responses to recreation access comments.
Terry Walters		Recreation		I am pleased to read that Brookfield proposes to conduct a recreation assessment study as part of the Bar Mills Dam decommissioning project. It is imperative that the impact to the usability of the boat launch be researched. Access to water bodies is of great concern to local residents. Will recreationists still be able to access the upper portion of this section of the Saco River once the Dam is removed and the river flow is altered?	BWPH will continue to maintain recreational access upstream and downstream of the dam after partial removal. Potential modifications to the existing boat launch include changes from motorized boat access to hand carry access. The canoe portage ingress downstream of the powerhouse will continue to provide access to the portion of the Saco River downstream of the dam breach. The upper portion of the Bar Mills impoundment will also be accessible from the hand carry access downstream of the West Buxton powerhouse.

Terry Walters		Recreation		Hollis should do everything possible to assure that access to this impoundment stay available now and into the future. If the study determines that this site will no longer provide functional access, the study should identify possible alternative sites that could be developed through cooperation of Brookfield and the affected towns. The Department of Inland Fisheries and Wildlife, the Saco River Corridor Commission and the Land for Maine's Future Program might also be willing participants.	See response regarding recreational access.
Julie A. Larry		Recreation		Will Brookfield continue to be responsible for maintaining the two portages, parking areas and the steps at the downriver portage?	See responses to recreation access comments. BWPH will continue to operate and maintain existing recreation access.
Mary Hoffman	Hollis Select Board	River Model	River Elevation Model	On your model with the flow rates, it is unclear whether the 2600 annual mean flow mentioned in the legend is met to represent the annual mean high flow. Is this just a typo?	2,600 cfs is the annual mean flow which is typically defined as the average of daily flows over a calendar year, calculated using historical data measurements, which in this case was derived from USGS gage data.
Mary Hoffman	Hollis Select Board	Site Tour		With the repurposing of the powerhouse, a review by the Planning Board to include a site visit would be required. The Select Board of Hollis has asked for a tour of the powerhouse and been refused.	The accusation that BWPH has refused to provide the Select Board a tour is baseless. BWPH has offered a tour multiple times.
Francis E. Pulsoni	Town of Buxton	Study Request		We are requesting that Brookfield, in their assessment of impacts, perform a study with the flashboards on the Dam fully dropped or removed. Once removed we request that Brookfield test changes or affects in sediment transport, bank and island erosion, water quantity, zone of passage for fish migration, tributary connectivity, effects on wetlands, and effects on recreation, land use, and aesthetics.	BWPH may consider field investigations under a temporary drawdown condition to the extent such a drawdown would be informative and will consult with the appropriate agencies and FERC as necessary.
Rita Bradbury		Water Quality		Water Quality specifically around the old mill site and residual canal.	BWPH is not proposing new water quality studies due to the extensive existing information/data.
Mary Hoffman	Hollis Select Board	Wells	Wells	wells may dry up. Individuals would like to have well testing before, during and after decommissioning with Brookfield absorbing the costs if wells had to be replaced.	BWPH will obtain and review publicly available information regarding nearby water-supply wells and evaluate potential impacts as outlined in the Study Plan.
Hunter Cox	Town of Buxton	Flashboard Down Study		Conduct any field studies with flashboards lowered.	To the extent possible BWPH will conduct studies, as appropriate during drawdown conditions. However, even with flashboards lowered, water level conditions will not necessarily be representative of post breach conditions.
Hunter Cox	Town of Buxton	Recreation	Responsibilty for Facilities	Provide a scope of work to return the boat launch to a hand-carry facility for canoe and kayak access. List the future maintenance requirements, schedules, and cost estimates for upkeep of the recreational facilities identified in the Scoping Document: (Boat access and parking, Usher Island parking and trails, canoe access).	See response regarding recreational access.

Hunter Cox	Town of Buxton	Dry Hydrant Study	Determine whether the dry hydrants on Depot Street, Buxton and Canal Road, Hollis will remain operational by comparing their surveyed intake elevations to the predicted range of river elevations after the dam is breached. Determine whether the diversion weir, proposed for the upstream end of the canal, will not allow a sufficient water level in the canal to keep the dry hydrant operational. Submit a plan for approval by Buxton and Hollis that will mitigate negative effects of lower water levels on the dry hydrants.	See response regading consultation with the Town relative to the hydrants.
Hunter Cox	Town of Buxton	Assessment of Water Retaining Structures for Full Removal	Explain Brookfield's responsibility for the concrete foundation of the Rogers Fiber Mill by providing drawings and FERC approvals to the town of Buxton, state, and federal resource agencies. Develop a demolition plan that will not disturb residual sediment contamination in the tailrace of the former Rogers Fiber Mill by reviewing documents from the U.S. Environmental Protection Agency. Request permission for construction equipment to utilize town owned property during demolition. Obtain necessary permits from resource agencies to remove the water retaining structures.	As discussed elsewhere, the former mill intake is a project feature within the project boundary but none of the remnant structures of the former mill nor the lands upon which they are located are on BWPH lands nor in the project boundary. See response to full dam removal requests and future maintenance of remaining structures to be retained by Brookfield.
Hunter Cox	Town of Buxton	Risk Assessment of Brookfield Properties and Remaining Structures	Determine the current extent of damage to the powerhouse and water retaining structures caused by alkali aggregate reactions, efflorescence, water seeps, or other causes. Complete a Phase I Environmental Site Assessment of Brookfield properties within the Bar Mills Project area to determine environmental conditions that pose a risk to the public. Determine if the remnant structures will be strong enough to withstand a 100-year flood event. List the future maintenance requirements, schedules, and cost estimates to keep the powerhouse, canal, and water retaining structures in safe condition.	See response to future ongoing operation and maintenance of remaining structures to be retained by Brookfield.

Mark Woodruff	Saco Salmon Restoration Alliance	Fish Passage Design Consultation	The Scoping Document states that nature-like fishway design guidelines were utilized to evaluate partial versus full removal. Did Brookfield share its evaluation process to the resource agencies and the public?	Modeling results were presented to agencies in a meeting on December 12, 2021 and in a technical memo on February 23, 2022. A summary of the proposed action, including modeling information was provided to the public in the August 2, 2022 Scoping Document. A draft study plan that includes a summary of this evaluation will be issued for agency and public comment.
Mark Woodruff	Saco Salmon Restoration Alliance	Upstream Fish Passage Flows and Velocities	It appears only a narrow channel of optimum water depth will be available for fish passage under low flow conditions. While at high flows a narrow channel of high velocity water may prohibit upstream passage. Has Brookfield provided the data used in the model to the resource agencies for their review?	See previous response regarding agency consultation.
Mark Woodruff	Saco Salmon Restoration Alliance	Effects of Submerged Timber Crib on Fish Passage	The submerged timber crib dam appears to control water depth and velocity in the model illustrations. Will the 2022 studies assess these concerns in terms of fish passage and recreational safety?	The proposed action includes partial removal of the timber crib dam, which is included in the hyraulic analysis.
Mark Woodruff	Saco Salmon Restoration Alliance	Construction Access Constraints	Contamination from the former Roger's Fiber Mill and lack of access to the Buxton side of the dam were cited as major constraints preventing full removal of the dam. Has Brookfield requested documents from the EPA that more completely describe the extent of residual sediment contamination? Will Brookfield contact the Town of Buxton for access to the east side of the spillway dam?	See responses regarding requests for full dam removal, land ownership, and sediment testing.