LOW IMPACT HYDROPOWER INSTITUTE

CERTIFICATION APPLICATION FOR THE

BRASSUA PROJECT (FERC NO. 2615-ME)

December 2021

Brookfield

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1.0 PROJECT DESCRIPTION

1.1 PROJECT FACILITIES AND HISTORY

The Brassua Project, for which this application is being submitted, is licensed to Brookfield White Pine Hydro LLC (BWPH), Eagle Creek Kennebec Hydro LLC and Merimil Limited Partnership and is located on the Moose River in Somerset County, Maine. The Moose River watershed is located within the Kennebec River basin in western Maine primarily in Somerset County. The Moose River is approximately 76 miles long and has a total drainage area of approximately 716 square miles. The Brassua project is located roughly 3 miles upstream from the inlet to Moosehead Lake. The Brassua dam is the only dam on the Moose River. (Figure 1)

The Brassua Project was originally constructed as a reservoir storage project in 1927, became operational in 1928, and has provided stabilized river flows to other downstream interests since that time. The Federal Power Commission (FPC) issued an original license for the Brassua Project by order dated September 16, 1977. The license was for a term effective April 1, 1962 and terminating December 31, 1993. The Brassua Project is licensed by the Federal Energy Regulatory Commission (FERC) as Project No. 2615.

The Project license was amended in 1987, resulting in FERC approval for the construction of the generating facilities in 1989, as they exist today. The Project powerhouse was constructed in 1989 and began generation on October 1, 1989. This order extended the license term by 19 years, whereby the license expiration was designated as March 31, 2012. The FERC issued a new license for the Brassua Project to Brookfield White Pine Hydro LLC, Merimil Limited Partnership, and Eagle Creek Kennebec Hydro, LLC (licensees) on April 15, 2020 for a period of 40 years, effective April 1, 2020.

The Project generally consists of the dam, powerhouse, reservoir and appurtenant facilities. The FERC authorized capacity of the Project is 4.18 MW. The Brassua Project includes a 1,789-foot-long dam impounding a 9,400-acre reservoir (Brassua Lake); a 108-foot-long penstock connected to a powerhouse containing a single turbine generating unit with an installed capacity of 4.18 MW; and a 2,000-foot-long, 34.5-kilovolt transmission line. The project is operated as a seasonal storage and generation facility where flow releases are determined by minimum instream flow requirements and downstream demands for hydroelectric generation in the Kennebec River, as well as flood control.

The Brassua Dam includes the following sections:

- a 410-foot-long south embankment section with a concrete core wall and topped with a 3.5-foot-high wave barrier
- a 342-foot-long concrete-faced earth embankment section topped with a 3.5-foot-high wave barrier

- a 284-foot-long Ambursen-type slab and buttress spillway section with five vertical slide gates, a log sluice steel slide gate, ten wooden stop log slots, four deep gates
- a crest elevation of 1,074 feet mean sea level (msl) at the top of the vertical slide gates
- a 19-foot-long section that consists of an inactive concrete fishway
- a 734-foot-long north embankment section with a concrete core wall and topped with a 3.5-foot-high wave barrier

The powerhouse is a in a 60-foot-long, 33-foot-wide concrete structure located near the toe of the dam on the downstream side of the south embankment. The powerhouse contains a single horizontal shaft generator unit with the nameplate rating of 4,180 kW. The existing turbine is a Voith horizontal-shaft double-regulated Kaplan unit rated at 6,166 Hp (4.6 MW). The rated hydraulic capacity of the unit is 1,600 cfs at a rated head of 30.1 feet. The maximum hydraulic capacity of the turbines is approximately 1,800 cfs and the minimum is approximately 240 cfs.

From Brassua Lake, water enters a concrete intake structure equipped with a trash-rack with 3-inch clear bar spacings. Water flows through a 108-foot-long concrete penstock to the turbine-generator unit located in the powerhouse. From the powerhouse, water flows into a 40-foot-wide, 60-foot-long tailrace before emptying into the mainstem of the Moose River. Flows are also passed from the impoundment to the downstream reach of the Moose River through four 6-foot-diameter outlet pipes located at the base of the spillway section of the dam.

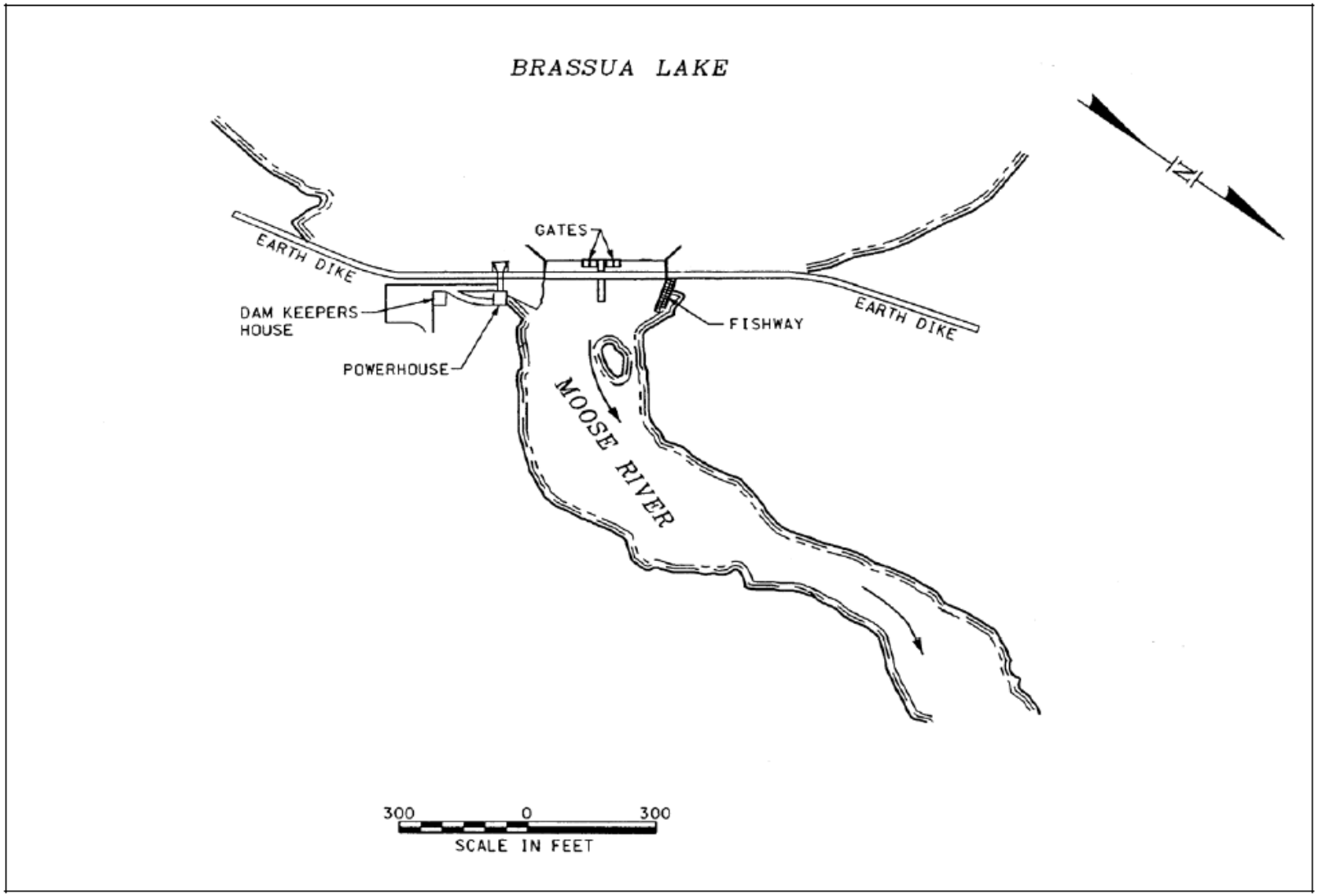
The existing Project reservoir, Brassua Lake, is approximately 7.75 miles long with a surface area of approximately 9,400 acres at normal maximum elevation of 1,074'. Along the impoundment, the Project boundary follows elevation 1,076 feet. The Project boundary encompasses the Project works and extends approximately 650 feet downstream of the dam[1]. The normal tailwater elevation for the Project is between 1,038' and 1,040', depending on spillway and unit discharge.

[1] Exhibit G Project Boundary Maps also linked in Section 6.0
https://elibrary.ferc.gov/eLibrary/filedownload?fileid=15653959

FIGURE 1 AERIAL OF BRASSUA PROJECT

FIGURE 2 BRASSUA PROJECT DAM AND IMPOUNDMENT

FIGURE 3 BRASSUA PROJECT FACILITIES



1.2 PROJECT OPERATIONS

Brassua Project was originally licensed by the Commission in 1977, this license was amended in 1987. The Project works consist of a dam and powerhouse and appurtenant facilities. The dam was built in 1927, construction of the generating facilities as they are today was in 1989. The current license for Brassua Project was issued in April of 2020 and expires in 2060.

The Project is operated for water storage, regulating downstream flows, and as a generation facility. By storing water on a seasonal basis, the Project provides significant downstream flood mitigation. The Brassua Project is one of three storage projects that combine to form the Kennebec River storage system. The nine-billion cubic feet of gross storage at Brassua represents approximately 20 percent of the storage in the Kennebec River storage system. Operation of the Brassua Project, along with the Moosehead and Flagstaff storage projects, regulates flows for downstream municipal and industrial uses, hydroelectric generation and flood control. The reservoir is operated in coordination with the other two storage projects.

Brassua Reservoir is operated with seasonal water level fluctuations that are governed by downstream water demands for hydroelectric generation in the Kennebec River and current license requirements which are discussed below. Historical reservoir levels within the system follow an annual cycle under which the reservoir levels are reduced during the fall and winter to provide additional flows to downstream users with the onset of cold weather, as well as to make storage volume available for the capture and control of spring snow melt and runoff. The spring run-in fills the reservoir to support summer flows and to help prevent flooding. After the spring refill, natural flow levels in the Kennebec River subside and the storage reservoirs are used to supplement downstream flows through the summer and fall to support hydroelectric generation and the industrial and municipal uses on the river. Use of the available storage capacity at Brassua also allows the maintenance of minimum flows and target flows to enhance fish spawning in the lower Moose River.

1.3 PROJECT LOCATION

The Project is located on the Moose River in western Maine in Somerset County. The Project is located in several unorganized territories including Brassua Township (T2R2), Tomhegan Township (T1R2), Rockwood Strip (T2R1 and T1R2), Sandwich Academy Grant lands (T2R1), and Taunton and Raynham Academy Grant lands (T1R1). The 9,400-acre Project reservoir, Brassua Reservoir (also known as Brassua Lake), discharges to the Moose River, which empties into Moosehead Lake three miles further downstream. The Moose River watershed is located in the upper portion of the Kennebec River basin.

The closest community to the Project is Rockwood, Maine. The surrounding area is remote, but the Project is located within approximately 20 miles of the town of Greenville which lies on the shores of Moosehead Lake, a popular tourist destination in the state.

FIGURE 4 BRASSUA PROJECT LOCATION

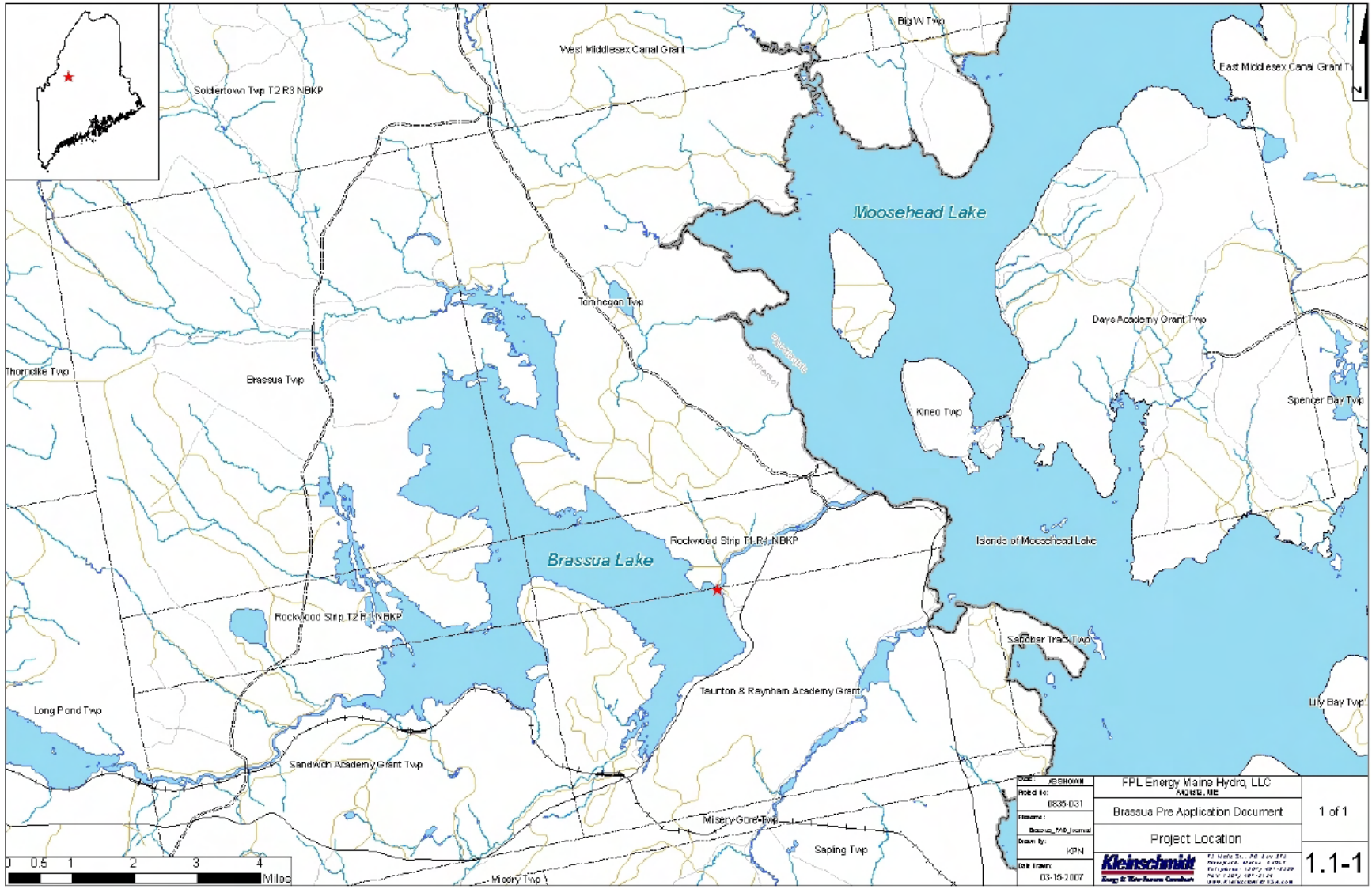
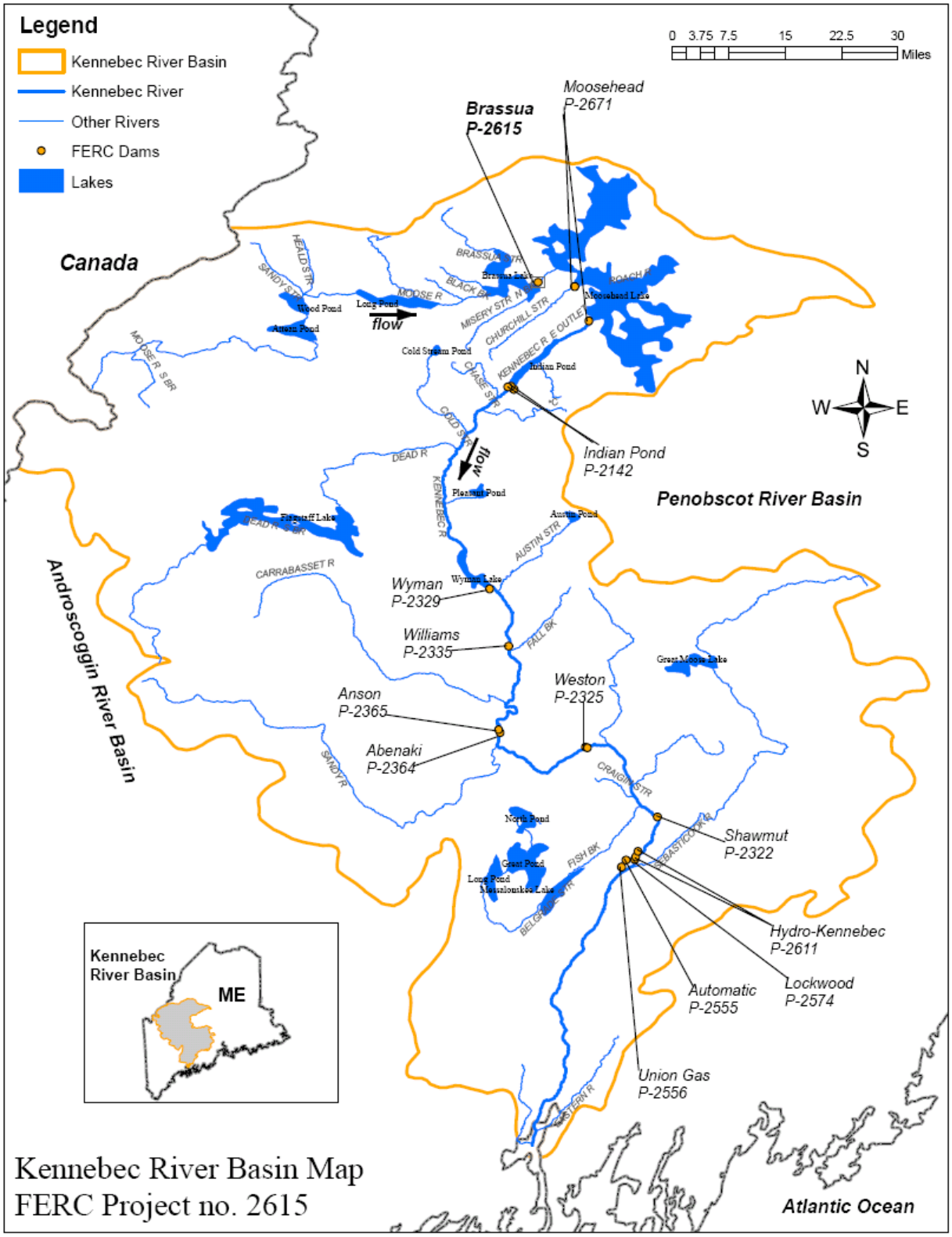


FIGURE 5 OVERVIEW MAP OF THE WATERSHED



(Source: Environmental Assessment, FERC Link provided in section 6.1)

1.4 REGULATORY AND OTHER REQUIREMENTS AND COMPLIANCE STATUS

1.4.1 FERC LICENSE REQUIREMENTS AND COMPLIANCE STATUS

In 1977, the Commission issued the original license for the Brassua Project, this license was amended in 1987. In 1989 construction of the generating facilities as they are today occurred. On April 15, 2020 the Commission issued a new license for the Project, effective April 1, 2020 for a period of 40-years. The FERC license contains multiple articles governing how the Project is operated. The articles refer to issues such as power production, public safety, streamflow's, and recreation among others. The current license can be found in Section 6.0.

The following articles dictate the operational and environmental requirements of the Brassua Project, as approved:

- Article 301 – requires consultation with the Commission's Division Dam Safety and Inspections, New York Regional Engineer if Environmental requirements under this license require modification that may affect the project works or operations
- Article 401 – requires minimum flow releases, reservoir elevation limits, planned deviations, and unplanned deviations
- Article 402 – required the filing of an Operation Compliance Monitoring Plan
- Article 403 – requires the implantation of the Tributary Access Plan
- Article 405 – requires the implementation of a Loon Management Plan
- Article 406 – requires protection measures for the Northern Long-Eared Bat
- Article 407 – required the filing of a Recreation Facilities Management Plan
- Article 408 – required the filing of a Shoreline Management Plan
- Article 409 – required the implementation of the Programmatic Agreement and Historic Properties Management Plan

The Project does not operate under an existing Section 401 water quality certification as FERC deemed the certification waived by the Maine Department of Environmental Protection.

Operational Requirements

The Project is operated for water storage, flood mitigation, regulating downstream flows, and as a generation facility. The reservoir is operated in coordination with the other two storage projects - Moosehead and Indian Pond – with seasonal water level fluctuations that are governed by downstream water demands for hydroelectric generation in the Kennebec River and current license requirements, as well as providing downstream flood control benefit. The reservoir levels are reduced during the fall and winter to provide additional flows to downstream users with the onset of cold weather, as well as to make storage volume available for the capture and control of spring snow melt and runoff. The spring run-in fills the reservoir to support summer flows and to help prevent flooding. After the spring refill, natural flow levels in the Kennebec River subside and the storage reservoirs, including Brassua, are used to supplement downstream flows through the summer and fall to support hydroelectric generation and the industrial and municipal uses on the river. Use of the available storage capacity at Brassua also allows the maintenance of minimum flows and target flows to enhance fish spawning in the lower Moose River. Article 401 dictates the reservoir elevation limits as follows:

To protect aquatic, terrestrial, and recreational resources at the project, the licensees must maintain the following seasonal reservoir elevation limits:

(a) from the end of the spring refill in May through June 15, the licensees must maintain the reservoir elevation at or above 1,072.0 feet msl;

(b) from June 16 through July 31, the licensees must maintain the reservoir elevation at or above 1,071.0 feet msl;

(c) from August 1 through September 15, the licensees must maintain the reservoir elevation at or above 1,069.0 feet msl;

(d) from September 16 through October 15, the licensees must maintain the reservoir elevation at or above 1,067.0 feet msl; and

(e) after October 16 and until the end of the spring refill in May, the reservoir elevation must be maintained at no lower than 1,050.0 feet msl; with the exception that in years with "snowpack conditions" (as defined in the Operation Compliance Monitoring Plan required by Article 402), the reservoir elevation must be maintained at an elevation no lower than 1,045.0 feet msl.

Planned Deviations:

Minimum flow release requirements and reservoir elevation requirements may be temporarily modified for short periods, of up to 3 weeks, after mutual agreement among the licensees and the U.S. Fish and Wildlife Service, the Maine Department of Inland Fisheries and Wildlife, and the Maine Department of Environmental Protection (collectively, resource agencies). After concurrence from the resource agencies, the licensees must file a report with the Secretary of the Commission as soon as possible, but no later than 14 calendar days after the onset of the planned deviation. The report must include: (1) the reasons for the deviation and how project operations were modified, (2) the duration and magnitude of the deviation, (3) any observed or reported environmental effects, and (4) documentation of consultation with the resource agencies. For planned deviations exceeding 3 weeks, the licensees must file an application for a temporary amendment of the operational requirements of this license and receive Commission approval prior to implementation.

Unplanned Deviations Lasting More Than 3 Hours or Resulting in Environmental Effects:

If the licensees deviate from the operational requirements, the licensees must report each incident to the Secretary of the Commission. For any unplanned deviation from the operational requirements that lasts longer than 3 hours or results in visible environmental effects such as a fish kill, the licensees must file a report no later than 14 calendar days after each such incident. The report must include: (1) the cause of the deviation; (2) the duration and magnitude of the deviation; (3) any pertinent operational and/or monitoring data; (4) a timeline of the incident and the licensee's response; (5) any comments or correspondence received from the resource agencies, or confirmation that no comments were received from the resource agencies; (6) documentation of any

observed or reported environmental effects; and (7) a description of measures implemented to prevent similar deviations in the future.

Unplanned Deviations Lasting 3 Hours or Less with No Environmental Effects:

For unplanned deviations from minimum flow release requirements and reservoir elevation requirements lasting 3 hours or less that do not result in environmental effects, the licensees must file an annual report by January 31 describing each incident up to 1 month prior to the reporting date, including: (1) the cause of the deviation; (2) the duration and magnitude of the deviation; (3) any pertinent operational and/or monitoring data; (4) a timeline of the incident and the licensee's response to each deviation; (5) any comments or correspondence received from the resource agencies, or confirmation that no comments were received from the resource agencies; and (6) a description of measures implemented to prevent similar deviations in the future. (2020 License, pgs. 48-50)

Article 401 also dictates the required flows from the project:

(a) from May 1 through September 15 of each year, the licensees must release a minimum flow of 358 cubic feet per second (cfs); however, when daily inflow is less than 358 cfs, the licensees must release a minimum of 250 cfs or inflow, whichever is greater;

(b) from September 16 through October 15, when daily inflows are between 425 cfs and 1,200 cfs, the licensees must release a flow between 800 and 1,200 cfs; when daily inflow is less than 425 cfs, the licensees must release a minimum flow of 250 cfs or inflow, whichever is greater; and when daily inflow is greater than 1,200 cfs and the reservoir elevation is at or above 1,073.0 feet mean sea level (msl), there is no minimum flow release requirement (i.e., the licensees may pass flows greater than 1,200 cfs to manage the elevation of the reservoir);

(c) from October 16 through November 5, when daily inflow is greater than or equal to 425 cfs, the licensees must release a flow of 425 cfs; when daily inflow is less than 425 cfs, the licensees must release a minimum flow of 250 cfs or inflow, whichever is greater; and when the reservoir elevation is above 1,073.0 feet msl, there is no minimum flow release requirement (i.e., the licensees may pass flows necessary to manage the inflow and the reservoir surface elevation); and

(d) from November 6 through April 30, the licensees must release a minimum flow of 425 cfs; however, when daily inflow is less than 425 cfs, the licensees must release a minimum flow of 250 cfs or inflow, whichever is greater.

Article 402 required BWPH to submit an Operation Compliance Monitoring Plan (OCMP) with the following requirements:

Within 6 months of the effective date of the license, the licensees must file with the Commission, for approval, an Operation Compliance Monitoring Plan that describes how the licensees will document compliance with the operational requirements of this license. The plan must include the provisions of the Minimum Flow and Reservoir

Elevation Monitoring Plan that was filed as Appendix E3-1 of Exhibit E of the March 31, 2010 license application, and the following additional provisions:

(a) a detailed description of how the licensees will document compliance with the operational requirements of the license (as required by Article 401), including: (a) descriptions of the monitoring frequency for documenting reservoir elevations and minimum flow releases; and (b) a log for documenting reservoir elevations and minimum flow releases;

(b) a description of the mechanisms and structures (i.e., type and exact locations of all flow and reservoir elevation monitoring equipment and gages) to be used for maintaining compliance with operational requirements, procedures for maintaining and calibrating monitoring equipment, and the methods and frequency for reporting monitoring data to the Commission, and the U.S. Fish and Wildlife Service, the Maine Department of Inland Fisheries and Wildlife, and the Maine Department of Environmental Protection (collectively, resource agencies);

(c) standard operating procedures to be implemented outside of normal operating conditions, including during: (a) scheduled facility shutdowns and maintenance, and impoundment drawdowns and impoundment refilling associated with scheduled facility shutdowns and maintenance; and (b) emergency conditions such as unscheduled facility shutdowns and maintenance;

(d) definitions of all hydrologic conditions and emergency electrical system conditions under which deviations from the operational requirements listed in Article 401 would be allowed, including but not limited to "snowpack conditions;" a description of the criteria used to determine if such conditions exist; and a proposed date by which such determinations will be made each year and filed with the Commission; and

(e) a schedule for installing any monitoring equipment needed to document compliance with the operational requirements of the license.

The OCMP was filed on September 30, 2020 and approved by the FERC on December 4, 2020 (both documents are linked in section 6.4).

Excursions from minimum flows and headpond elevations are reported to the resource agencies and to FERC. In the last 5 years, the Project has had four excursions as a result of headpond elevation deviations resulting from drought conditions at the Project. The four elevation excursions occurred on October 15, 2016; September 3-15, 2020; September 25 – October 15, 2020; and on July 31, 2021, where the headpond elevation reached the August 1 target one day early. FERC considered the incidents not to be a violation of license due to drought conditions outside of the Licensee's control. These incidents are described in more detail below:

On October 15, 2016, the target reservoir elevation of 1070.6 ft was not attained as a result of the project area experiencing dry conditions in the fall due to below-average rainfall. In anticipation of needing to make an adjustment to the required reservoir level in anticipation that the October 15 target was unattainable,

BWPH approached the Maine DIFW in September, who directed BWPH to favor providing the attraction flows over meeting the required reservoir elevation. To balance out the effect of favored attraction flows on reservoir elevation and aid in recovering the reservoir elevation, the Maine DIFW requested that BWPH reduce the duration of attraction flows, such that the flow was provided from September 16th to October 1st, rather than to October 15th as specified in Article 405. Despite these efforts, the reservoir elevation was 1069.0 feet on October 5, 2016; 1.6 feet short of the October 15 target 1070.6 elevation and clearly not achievable. FERC determined this deviation was not a violation of Article 401 by letter dated December 20, 2016.

On September 3, 2020, Brassua Lake dropped below the required reservoir elevation of 1,069.0 feet msl due to abnormally dry conditions. The reservoir remained below the required elevation through September 15, 2020, after which time the required reservoir elevation became 1,067.0 feet msl. The lowest reservoir elevation reached during the incident was 1,068.54 feet msl. The resource agencies were notified on June 23, 2020, that the Brassua Project was one of many projects experiencing abnormally dry conditions and low inflow and that Brookfield would be challenged to maintain the required reservoir elevation. On August 20, 2020, the resource agencies were again of the ongoing abnormally dry conditions and the anticipated deviation from the required reservoir elevation. No adverse impacts to fish and wildlife resources or water quality were observed or reported as a result of the incident and no agency comments were received. FERC determined this deviation was not a violation of Article 401, by letter dated November 23, 2020.

On September 24, 2020, Brassua Lake dropped below the required reservoir elevation of 1,067.0 feet msl due to abnormally dry conditions. The reservoir remained below the required elevation through October 15, 2020, after which time the required reservoir elevation became 1,050.0 feet msl. The lowest reservoir elevation reached during the incident was 1,065.05 feet msl. The June 23 and August 20, 2020 emails to the resource agencies served to notify them of the abnormally dry conditions and low inflow. Again, no adverse impacts to fish and wildlife resources or water quality were observed or reported as a result of the incident and no agency comments were received. FERC determined this deviation was not a violation of Article 401, by letter dated November 23, 2020.

Due to the severe drought conditions, Brassua Lake dropped below its target elevation of 1071.0 feet msl on July 31, 2021 one day short of the August 1 target elevation of 1069.0 feet msl. The lake elevation was less than a tenth of a foot below the required level at 1070.96 ft msl. BWPH notified the resource agencies on July 30, 2021 of the anticipated lake level excursion and submitted a formal excursion report on August 5, 2021. FERC has not made a determination to date. Due to the drought conditions, other Kennebec River storage reservoirs have been challenged to maintain target lake elevations in the months of June, July and August in 2021. FERC determined this deviation was not a violation of Article 401, by letter dated November 15, 2021.

In addition to the above detailed excursions, a planned drawdown for maintenance and repairs has been requested of the FERC. Specifically, BWPH requested by letter dated February 26, 2021, that the Commission approve a temporary reservoir variance to drawdown the

Brassua Lake reservoir elevation to 1,065.0 feet msl by approximately September 15, 2021 through October 16, 2021 as well as September 15, 2022 through October 16, 2022 in order to accommodate required dam safety repairs. This variance will be two feet below the September 16 through October 15 reservoir elevation of 1,067 feet msl. Resource agencies were consulted and concurred with the request, which was approved by the FERC on May 25, 2021. On November 16, 2021, BWPH filed a letter with the FERC indicating that the Brassua Project was returning to normal operations following the completion of the south embankment slope remediation work.

BWPH submitted the required annual excursion and planned deviation report for the Project to the FERC on April 9, 2021 (see Section 6.0).

Water Quality

The Moose River from the outlet of Long Pond to Moosehead Lake is classified as Class A. Class A waters are managed as high quality with limited human disturbance allowed. Direct discharges of pollutants are allowed but highly restricted. Brassua Reservoir is classified as Class GPA, which is the highest classification available for great ponds. The Project does not hold a Section 401 Water Quality Certification, see 2020 FERC license discussion below.

> *Under section 401(a)(1) of the Clean Water Act (CWA), the Commission may not issue a license authorizing the construction or operation of a hydroelectric project unless the state water quality certifying agency either has issued water quality certification (certification) for the project or has waived certification by failing to act on a request for certification within a reasonable period of time, not to exceed one year. Section 401(d) of the CWA provides that the certification shall become a condition of any federal license that authorizes construction or operation of the project. As discussed below, Maine has waived certification…. section 401(a)(1) of the CWA limits the time for a state certifying agency, here the Maine DEP, to act on a request for certification to one year after receipt of such request. If a state "fails or refuses to act on a request for certification, within a reasonable period of time (which shall not exceed one year) after receipt of such request, the certification requirements of [section 401(a)(1)] shall be waived with respect to such Federal application." (2020 FERC License)*

Water quality within the Project is good. No portion of waters within the Project are included on the Maine 303(d) list of impaired waters due to a pollutant. The Maine Department of Environmental Protection's (MDEP) final 2016 Integrated Water Quality Monitoring and Assessment Report (Integrated Report) classifies Brassua Reservoir as both Category 1 (obtaining all designated uses) and Category 4-C (non-attainment of aquatic life habitat standards due to seasonal drawdown of the reservoir; no pollutant) (MDEP, 2016). The Moose River and its tributaries from Brassua Reservoir to Moosehead Lake are classified as attaining some of their designated uses (Category 2). This classification indicates that no designated use is threatened but there is insufficient data or no data available to determine if the remaining uses are attained.

Sampling conducted by the Licensees for the projects relicensing showed that the reservoir meets all applicable physical and chemical water quality standards. Temperature and dissolved oxygen sampling in the tailrace of Brassua Dam illustrate attainment of the

appropriate Class A water quality standard throughout a 17-year monitoring period (20100330 Application for New License Volume 3, pg. 211)

BWPH holds a Maine Pollutant Discharge Elimination System Permit (MEPDES No. ME0036404) most recently filed by the Maine Department of Environmental Protection on June 15, 2018. The MEPDES permit requires Best Management Practices (BMPs) which tie into the Project's Spill Prevention, Control and Countermeasure Plan (SPCC) in the event an oil spill occurs. The MEPDES permit prevents the release of hazardous chemicals, oil, hydraulic fluid or grease from entering the Moose River. Annual training is presented to BWPH staff reviewing our MEPDES permit conditions, BMPs and SPCC plan.

Fish Passage

There is no active upstream or downstream fish passage at the project and no requirements for such in the Project license. Article 404 reserves authority to prescribe fishways at the Brassua Project in the future and states:

> *Article 404. Reservation of Authority to Prescribe Fishways. Authority is reserved to the Commission to require the licensees to construct, operate, and maintain, or to provide for the construction, operation, and maintenance of such fishways as may be prescribed by the Secretary of the Interior or Secretary of Commerce pursuant to section 18 of the Federal Power Act.*

Article 403 requires BWPH to implement the Tributary Access Plan as that was filed with Appendix E3-2 of Exhibit E of the March 31, 2010 license application. Article 403 states:

> *Article 403. Tributary Access Plan. The licensees must implement the Tributary Access Plan that was filed as Appendix E3-2 of Exhibit E of the March 31, 2010 license application with the exception of section 5 (Misery Stream Salmonid Access Study).*

The plan has been implemented with the exception of section 5 (Misery Stream Salmonid Access Study) which was completed and submitted to the Commission on March 30, 2017. The intent of the tributary access plan is to address concerns about the potential impact of fall reservoir water levels on access to the reservoir tributaries by spawning salmonids. The plan contains provisions for the Licensees to conduct annual fall inspections of the tributary stream mouths and to clear woody debris and other materials that may form a temporary obstruction to the tributary for spawning salmonids.

Wildlife Management

Loons

Article 405 requires BWPH to implement the Loon Management Plan that was filed as Appendix E3-3 of Exhibit E of the March 31, 2010 license application. Article 405 states:

> *Article 405. Loon Management Plan. The licensees must implement the Loon Management Plan that was filed as Appendix E3-3 of Exhibit E of the March 31, 2010 license application, to enhance loon nesting success in Brassua Lake.*

The plan includes provisions for the establishment of an artificial nesting raft program that will include the annual deployment, maintenance and monitoring of artificial nesting rafts. The plan also includes provisions for annual monitoring of loon nesting activity and nesting success. The Plan is expected to enhance loon productivity at the Project. Beginning in the spring of 2020, the Loon Management Plan was implemented.

Bats

Article 406 requires BWPH to provide Northern Long-Eared Bat Protection Measures. Article 406 states:

> *Article 406. The licensees must avoid cutting trees equal to or greater than 3 inches in diameter at breast height on project lands from June 1 through July 31, unless a tree poses an immediate threat to human life or property.*

There have been no tree removal activities to date during the specified timeframes.

Recreation

Article 407 requires the submittal of a Recreation Facilities Management Plan (RFMP) as follows:

> *Within six months of the effective date of this license, the licensees must file with the Commission, for approval, a final Recreation Facilities Management Plan that includes the measures described in the Recreation Facilities Management Plan that was filed as Appendix E3-5 of Exhibit E of the March 31, 2010 license application, and the following additional measures:*
>
> *(a) monitor and conduct periodic excavation of the gravel bar at the Misery Cove Boat Launch to ensure that boating access is maintained at elevations of 1,067.0 feet msl or higher;*
>
> *(b) conduct the proposed recreation use survey every five years instead of every six years;*
>
> *(c) during the recreation use survey, conduct spot counts at each project recreation facility to determine site utilization and capacity on eight weekdays and five weekends, including one holiday weekend (Memorial Day, Independence Day, or Labor Day) between May 31 and October 1, and between the hours of 8 a.m. and 5 p.m.;*
>
> *(d) continue to maintain a toll-free phone system that is updated daily at 6 p.m. from April to October to provide the anticipated elevation levels of Brassua Lake and river flow from dam for the following day;*
>
> *(e) provide a public internet site that: (1) describes recreational access at the project; (2) describes the amenities available at each project recreation facility; (3) includes a map of the project recreation facilities; and (4) displays the telephone number for the toll-free phone system; and*

(f) file with the Commission the results of the recreation use survey, including any comments received from interested parties about the survey, and any conclusions regarding the need for additional access areas or expansion of existing project recreation sites, by April 1 of each year following the recreation use survey.

The Recreation Facilities Management Plan must also be updated to reflect any improvements or modifications that have been made to project recreation facilities since the plan was filed on March 31, 2010. In addition, references to the FERC Form 80 reporting requirement must be removed from the Recreation Facilities Management Plan.

The licensees must prepare the plan after consultation with the Maine Department of Inland Fisheries and Wildlife, the Maine Bureau of Parks and Lands, the Maine Department of Conservation, and the U.S. Fish and Wildlife Service (collectively, resource agencies). The licensees must include with the plan: (1) documentation of consultation with the resource agencies; (2) copies of comments and recommendations on the completed plan after it has prepared and provided to the resource agencies; and (3) specific descriptions of how their comments are accommodated by the plan. The licensees must allow a minimum of 30 days for the resource agencies to comment and to make recommendations before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing must include the licensees' reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan must not begin until the plan is approved by the Commission. Upon Commission approval, the licensees must implement the plan, including any changes required by the Commission.

The plan includes an annual maintenance program for existing public recreation facilities and specific proposals to improve existing facilities and develop new facilities. BWPH will develop a new water access group campsite in the vicinity of the existing canoe portage trail. Other recreation improvements in the plan include improvements to the existing canoe portage trail, improvements to the access trail at the Brassua Dam and Tailwater Access, the addition of picnic tables and a portable toilet at the Misery Cove Boat Launch, and a commitment to develop new primitive campsites if at any time, one of the four existing primitive campsites is closed to public use. The four primitive campsites, angler access trail improvement and Misery Cove boat launch improvements were completed in 2021 with the exception of the group campsite and wooden canoe rest due to the ongoing FERC-required embankment work at the project. BWPH respectfully requested an extension of time from FERC to complete the group campsite and wooden canoe rest. The embankment work is scheduled be completed by December 2022; thus, the group campsite and canoe rest will be completed by June 2023.

BWPH submitted the RFMP on September 28, 2020, with a request for modifications from the previously submitted RFMP including with the 2010 FLA. Specifically, two proposed changes to the required measures were included: 1) the Licensees proposed that recreation monitoring be conducted every six years to align with the monitoring schedule of nearby projects, beginning in 2021; and 2) as BWPH does not currently have website capabilities for the Brassua Project, the Licensees are instead proposing to meet the requirements of 18 CFR § Part

8.1 by providing the required information via publication in a local newspaper as well as by maintaining signage at the Project. The FERC requested additional information clarifying the RFMP the BWPH's proposed modifications on February 10, 2021 to which BWPH filed responses on February 24, 2021. FERC approved the Plan on March 31, 2021.

An extension of time request was submitted to the Commission on April 1, 2021 to delay recreational monitoring at the Project to 2022 as a result of Covid 19. This extension was granted by the FERC on May 14, 2021. An updated to the required recreation improvements was filed with the FERC on November 3, 2021. That updated indicated that the angler access trail improvements were completed and that the canoe portage trail improvements and water access group campsite will be completed following the north embankments slope remediation work is completed.

Shoreline Protection

Article 408 requires BWPH to file and implement a Shoreline Management Plan as dictated by the new license below.

> *Within six months of the effective date of this license, the licensees must file with the Commission, for approval, a final Shoreline Management Plan that includes provisions of the Shoreline Management Plan that was filed as Appendix E3-6 of Exhibit E of the March 31, 2010 license application, and the following additional provisions:*
>
> *(a) procedures for identifying sensitive environmental areas (e.g., wetlands, smelt and brook trout spawning areas), and for reviewing and approving shoreline development in these areas, in consultation with the U.S. Fish and Wildlife Service and the Maine Department of Inland Fisheries and Wildlife (collectively, resource agencies); and*
>
> *(b) procedures for identifying new sites of loon and bald eagle nests and for reviewing and approving any proposed shoreline development that would be near known bald eagle and loon nesting sites, in consultation with resource agencies.*
>
> *The plan must be prepared in consultation with resource agencies. The licensees must include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has prepared and provided to the resource agencies, and specific descriptions of how their comments are accommodated by the plan. The licensees must allow a minimum of 30 days for the resource agencies to comment before filing the plan with the Commission. If the licensees do not adopt a recommendation, the filing must include the licensees' reasons, based on project-specific information.*
>
> *The Commission reserves the right to require changes to the plan. Implementation of the plan must not begin until the plan is approved by the Commission. Upon Commission approval, the licensees must implement the provisions of the plan, including any changes required by the Commission.*

The SMP establishes consistent procedures and rules for the review and approval, if approval is appropriate, of any shoreline development proposed by others within the Project

boundary. Moreover, significant areas of the reservoir shoreline that support important natural resources or significant cultural sites are designated under the SMP as Resource Zones. Development proposed within these Resource Zones will receive a higher level of review and protection by the Licensees and consulted resource agencies, before being approved (if approval is appropriate). The SMP also delineates lands to be used for potential future public recreation use and establishes specifications and standards for shoreline activities that may be permitted by the Licensees.

Subsequent to the filing of the 2010 FLA, several changes in lands management in the region were implemented. Specifically, during the 2010 drafting of the SMP, two notable residential developments were planned along the Brassua shoreline. Both are discussed in detail in the draft SMP. The smaller of the two developments, Moosehead Wildlands Concept Plan, has since been mostly implemented. The larger of the two planned developments, Moosehead Lake Region Concept Plan, was on July 15, 2020 terminated by the Maine Land Use Planning Commission (LUPC). As discussed in the SMP, LUPC has initiated a regional planning process to determine the appropriate zoning designations for lands no longer covered under the concept plan, and the landowner has committed to not develop, propose to develop, or clear cut any of the affected lands until the regional planning process is complete or until December 31, 2022, whichever occurs first. As land use on lands surrounding the Project is regulated by LUPC, the zoning districts prescribed by LUPC will define the allowable activities on those lands. However, regardless of LUPC zoning designation, proposed development on lands within the Project boundary designated as "Resource Zones," which contain areas found to support the most important and sensitive habitats in the Project area, would undergo a thorough review to assess potential impacts and would require agency consultation under the SMP.

The SMP was filed with the FERC on September 28, 2020 and BWPH is awaiting FERC approval.

Cultural Resources

Article 409 requires the implementation of the Programmatic Agreement and Historic Properties Management Plan.

> *The licensees must implement the "Programmatic Agreement Between the Federal Energy Regulatory Commission and the Maine State Historic Preservation Officer for Managing Historic Properties that May be Affected by Issuing a License for the Brassua Hydroelectric Project in Somerset County, Maine (FERC No. 2615)," executed on October 17, 2011, and including but not limited to the Historic Properties Management Plan (HPMP) for the project. In the event that the Programmatic Agreement is terminated, the licensees must continue to implement the provisions of the approved HPMP. The Commission reserves the authority to require changes to the HPMP at any time during the term of the license.*

The HPMP establishes specific steps to be taken by the Licensees to protect and preserve significant cultural resources at the Project, over the term of the new license. The HPMP was submitted under separate cover to FERC as Appendix E3-7 to this Exhibit E of the FLA (and is attached in Section 7.0). The Historic Properties Management Plan Annual Report, the

first one under the new license, was filed with the Commission on February 16, 2021 and accepted by the FERC on May 18, 2020 (see Section 7.0).

1.4.2 LIHI Certification Requirements and Compliance Status

As this is an initial application for LIHI Certification, the Brassua Project is not currently subject to LIHI Certification Conditions.

TABLE 1-1. BRASSUA PROJECT FACILITY INFORMATION

Item	*Information Requested*	*Response (include references to further details)*
Name of the Facility	Facility name (use FERC project name or other legal name)	Brassua Hydroelectric Project (FERC No. 2615)
Reason for applying for LIHI Certification	1. To participate in state RPS program and specify the state and the total MW/MWh associated with that participation (value and % of facility total Mw/MWh). 2. To participate in voluntary REC market (e.g., Green-e) 3. To satisfy a direct energy buyer's purchasing requirement 4. To satisfy the facility's own corporate sustainability goals 5. For the facility's corporate marketing purposes 6. Other (describe)	1. Yes, MA RPS. 2. Yes, as a secondary channel but usually trade at a discount to MA RPS 3. No, but potentially in the future 4. Possibly, RPS/Voluntary RECs are still the primary reason for applying 5. Possibly, RPS/Voluntary RECs are still the primary reason for applying
	If applicable, amount of annual generation (MWh and % of total generation) for which RECs are currently received or are expected to be received upon LIHI Certification	Usually a 100% of the facility's output would be qualified for MA RPS RECs.
Location	River name (USGS proper name)	Moose River
	Watershed name - Select region, click on the area of interest until the 8-digit HUC number appears. Then identify watershed name and HUC-8 number from the map at: https://water.usgs.gov/wsc/map_index.html	01030001; Upper Kennebec
	Nearest town(s), county(ies), and state(s) to dam	Rockwood Strip (T1R1 and T2R1), Taunton & Raynham Academy Grant (T1R2), Brassua TWP (T2R2), Tomhegan TWP, and Sandwich Academy Grant (T2R1); Somerset County; Maine
	River mile of dam above mouth River mile of diversion dam	Approx. RM 3 (RM 0 being the outlet of the Moose River where it empties into Moosehead Lake).
	Geographic latitude of dam	45° 39' 36.86" N
	Geographic longitude of dam	69° 48' 45.81" W

Item	*Information Requested*	*Response (include references to further details)*
Facility Owner	Application contact names (Complete the Contact Form in Section B-4 also):	Kelly Maloney, Compliance Manager, Northeast Region
	Facility owner company and authorized owner representative name. **For recertifications: If ownership has changed since last certification, provide the effective date of the change.**	Brookfield Renewable Partners LP Kelly Maloney, Compliance Manager, Northeast Region
	FERC licensee company name (if different from owner)	Brookfield White Pine Hydro LLC; Merimil Limited Partnership; and Eagle Creek Kennebec Hydro, LLC
Regulatory Status	FERC Project Number (e.g., P-xxxxx), issuance and expiration dates, or date of exemption	FERC No. 2615 Issued April 15, 2020 Expires April 30, 2060
	FERC license type (major, minor, exemption) or special classification (e.g., "qualified conduit", "non-jurisdictional")	Hydropower license for Major Project; Federal Power Act
	Water Quality Certificate identifier, issuance date, and issuing agency name. Include information on amendments.	N/A – see section 3.2
	Hyperlinks to key electronic records on FERC e-library website or other publicly accessible data repositories[2]	See Section 6.0 and 7.0 or hyperlinks to or documentation of relevant records including FERC License and Amendment Orders; FERC and regulatory filings; and other key documents. Amendments have been primarily associated with specific plans filed pursuant to license requirements and are discussed by resource.
Powerhouse	Date of initial operation (past or future for pre-operational applications)	Dam constructed in 1927, modified in 1958 and License amended in 1987 to allow for generating facilities
	Total installed capacity (MW) **For recertifications: Indicate if installed capacity has changed since last certification**	4.2 MW

<table>
<tr><th>Item</th><th>Information Requested</th><th>Response (include references to further details)</th></tr>
<tr><td></td><td>Average annual generation (MWh) and period of record used
For recertifications: Indicate if average annual generation has changed since last certification</td><td>
<table>
<tr><th>Year</th><th>Brassua Gross generation (MWh)</th></tr>
<tr><td>2010</td><td>22,585</td></tr>
<tr><td>2011</td><td>23,081</td></tr>
<tr><td>2012</td><td>19,400</td></tr>
<tr><td>2013</td><td>17,246</td></tr>
<tr><td>2014</td><td>16,039</td></tr>
<tr><td>2015</td><td>15,615</td></tr>
<tr><td>2016</td><td>17,872</td></tr>
<tr><td>2017</td><td>19,743</td></tr>
<tr><td>2018</td><td>16,734</td></tr>
<tr><td>2019</td><td>15,591</td></tr>
<tr><td>2020</td><td>12,763</td></tr>
<tr><td>Avg</td><td>17,879</td></tr>
</table>
</td></tr>
<tr><td></td><td><u>Mode of operation</u> (run-of-river, peaking, pulsing, seasonal storage, diversion, etc.)
For recertifications: Indicate if mode of operation has changed since last certification</td><td>Storage & Peaking (Peaking limitations discussed in detail in section 3.1 Ecological Flows)</td></tr>
<tr><td></td><td>Number, type, and size of turbine/generators, including maximum and minimum hydraulic capacity and maximum and minimum output of each turbine and generator unit</td><td>One double-regulated horizontal Kaplan Turbine, Max 1800 cfs, Min 240 cfs;
One horizontal shaft generator unit, Max 4.2MW
Total station capacity 1,800cfs</td></tr>
<tr><td></td><td>Trashrack clear spacing (inches) for each trashrack</td><td>Trash rakes with 3 inch clear spacing are included in front of each deep gate.</td></tr>
<tr><td></td><td>Approach water velocity (ft/s) at each intake if known</td><td>Unknown</td></tr>
<tr><td></td><td>Dates and types of major equipment upgrades
For recertifications: Indicate only those since last certification</td><td>Stand by propane generator added in 2019.

Oil-water separator added in 2017.</td></tr>
</table>

Item	*Information Requested*	*Response (include references to further details)*
	Dates, purpose, and type of any recent operational changes **For recertifications: Indicate only those since last certification**	At the request of MDIFW the 2017 and 2019 timing of fall attraction and spawning flows were adjusted. FERC approved these variances by letters dated August 29, 2017 and September 11, 2019). A temporary variance request for operations was submitted to the FERC for embankment remediation work on February 26, 2021 which was granted by the FERC on May 25, 2021. See Section 1.4.1
	Plans, authorization, and regulatory activities for any facility upgrades or license or exemption amendments	None
Dam or Diversion	Date of original dam or diversion construction and description and dates of subsequent dam or diversion structure modifications	1927: date of original construction 1958: increased height of retaining walls and dikes by 2.5 ft
	Dam or diversion structure length, height including separately the height of any flashboards, inflatable dams, etc. and describe seasonal operation of flashboards and the like	Total length: 1,789 ft Description South to North of sections: 310 ft long earthen embankment, 100 ft long earthen embankment with core wall, 342 ft long fill-buttressed gravity section (including the powerhouse intake), 284 ft long Ambursen-type slab and buttress section with four deep sluice gates and log sluice gate, 19 ft long concrete gravity fishway (inactive), 350 ft long earth embankment section with concrete core wall, and a 384 ft long earth section. Concrete Ambursen dam is 52 ft in height. Earth sections are topped with 3.5 ft high wave barriers.
	Spillway maximum hydraulic capacity	The project spillway is divided into 16 bays separated by concrete piers, five of which are controlled by 15 ft wide by 9.5 ft high steel slide gates with a sill at elevation 1,065.0 ft. The remaining bays are controlled with 15 ft wide stoplogs. The deep sluice gates have a sill elevation of 1034.0 ft. Max Hydraulic Capacity: 1,800cfs

Item	*Information Requested*	*Response (include references to further details)*
	Length and type of each penstock and water conveyance structure between the impoundment and powerhouse	110 ft long by 13 ft diameter concrete penstock which runs to the powerhouse
	Designated facility purposes (e.g., power, navigation, flood control, water supply, etc.)	Power, flow management, flood control
Conduit Facilities Only	Date of conduit construction and primary purpose of conduit	N/A
	Source water	N/A
	Receiving water and location of discharge	N/A
Impoundment and Watershed	Authorized maximum and minimum impoundment water surface elevations **For recertifications: Indicate if these values have changed since last certification**	(a) End of the spring refill in May through June 15, the licensees must maintain the reservoir elevation at or above 1,072.0 ft msl (b) from June 16 through July 31, the licensees must maintain the reservoir elevation at or above 1,071.0 ft msl (c) August 1 through September 15, the licensees must maintain the reservoir elevation at or above 1,069.0 ft msl (d) September 16 through October 15, the licensees must maintain the reservoir elevation at or above 1,067.0 ft msl (e) After October 16 and until the end of the spring refill in May, the reservoir elevation must be maintained at no lower than 1,050.0 ft msl; with the exception that in years with "snowpack conditions" the reservoir elevation must be maintained at an elevation no lower than 1,045.0 ft msl
	Normal operating elevations and normal fluctuation range **For recertifications: Indicate if these values have changed since last certification**	Normal full pond is 1,074 ft
	Gross storage volume and surface area at full pool **For recertifications: Indicate if these values have changed since last certification**	Gross Storage Volume: 207,000 acre-feet Surface Area: Approximately 9,400 acres (excluding islands)

Item	*Information Requested*	*Response (include references to further details)*
	Usable storage volume and surface area **For recertifications: Indicate if these values have changed since last certification**	Usable Storage Volume: 207,000 acre-feet
	Describe requirements related to impoundment inflow and outflow, elevation restrictions (e.g., fluctuation limits, seasonality) up/down ramping and refill rate restrictions.	Per FERC license (see section 1.2 above and discussion in section 3.1 below)
	Upstream dams by name, ownership and river mile. If FERC licensed or exempt, please provide FERC Project number of these dams. Indicate which upstream dams have downstream fish passage.	N/A
	Downstream dams by name, ownership, river mile and FERC number if FERC licensed or exempt. Indicate which downstream dams have upstream fish passage	Moosehead West Outlet & Moosehead East Outlet FERC # 2671 Kennebec Water Power Company Indian Pond Project FERC # 2142 Brookfield White Pine Hydro, LLC Wyman Project FERC # 2329 Brookfield White Pine Hydro, LLC Williams Project FERC # 2335 Brookfield White Pine Hydro, LLC Abenaki Hydro Project FERC #2364 Eagle Creek Renewable Energy Anson Hydro Project FERC #2365 Eagle Creek Renewable Energy Weston Project FERC # 2325 Brookfield White Pine Hydro, LLC Shawmut Project FERC # 2322 Brookfield White Pine Hydro, LLC Hydro Kennebec Project FERC # 2611 Hydro Kennebec Limited Partnership Lockwood Project FERC # 2574 Merimil Limited Partnership
	Operating agreements with upstream or downstream facilities that affect water availability and facility operation	N/A
	Area of land (acres) and area of water (acres) inside FERC project boundary or under facility control. Indicate locations and acres of flowage rights versus fee-owned property.	Water: 9,400 acres at normal full pond elevation of 1,074 ft Land: Approximately 310 acres above full pond elevation, the project boundary follows the 1,076 ft contour
Hydrologic Setting	Average annual flow at the dam, and period of record used	1,338cfs, (1989-2006)

<table>
<tr><th>Item</th><th>Information Requested</th><th>Response (include references to further details)</th></tr>
<tr><td></td><td>Average monthly flows and period of record used</td><td><table><tr><th>Month</th><th>Average Outflow (cfs)</th></tr><tr><td>January</td><td>1,412</td></tr><tr><td>February</td><td>1,423</td></tr><tr><td>March</td><td>1,139</td></tr><tr><td>April</td><td>1,849</td></tr><tr><td>May</td><td>2,369</td></tr><tr><td>June</td><td>1,397</td></tr><tr><td>July</td><td>1,025</td></tr><tr><td>August</td><td>683</td></tr><tr><td>September</td><td>724</td></tr><tr><td>October</td><td>937</td></tr><tr><td>November</td><td>1,157</td></tr><tr><td>December</td><td>1,395</td></tr></table>(1989-2006)</td></tr>
<tr><td></td><td>Location and name of closest stream gaging stations above and below the facility</td><td>None</td></tr>
<tr><td></td><td>Watershed area at the dam (in square miles). Identify if this value is prorated from gage locations and provide the basis for proration calculation.</td><td>716 sq. miles not prorated</td></tr>
<tr><td></td><td>Other facility specific hydrologic information</td><td>None</td></tr>
<tr><td>Designated Zones of Effect</td><td>Numbers and names of each of zone of effect</td><td>Zone 1 – Project Impoundment
Zone 2 – Project Bypass Reach
Zone 3 - Project Tailrace/Regulated River Reach Downstream</td></tr>
<tr><td></td><td>River mile of upstream and downstream limits of each zone of effect</td><td>Zone 1 – Project Impoundment
RM 10.8 – RM 3
Zone 2 – Project Bypass Reach
RM 3 – RM 2.9
Zone 3 – Project Tailrace/Regulated River Reach Downstream
RM 2.9 – RM 2.8
Rivermiles based on Moose River</td></tr>
</table>

Item	*Information Requested*	*Response (include references to further details)*
	Description of modifications made to a pre-existing conduit, dam or diversion structure needed to accommodate facility generation. This includes installation of flashboards or raising the flashboard height. Date the modification is expected to be completed Date generation is expected to begin	N/A
Pre-Operational Facilities		
Expected operational date	Date generation is expected to begin	N/A
Dam, diversion structure or conduit modification	Description of modifications made to a pre-existing conduit, dam or diversion structure needed to accommodate facility generation. This includes installation of flashboards or raising the flashboard height. Date the modification is expected to be completed	N/A
Change in water flow regime	Description of any change in impoundment levels, water flows or operations required for new generation	N/A

2.0 ZONES OF EFFECT

The Brassua Project includes three zones of effect; the Project Impoundment, the Project Bypassed Reach, and the Project Tailrace - Regulated River Reach Downstream.

The zones of effect are delineated by the project boundary and facilities which consist of the dam, dike, penstock, powerhouse, and appurtenant facilities. The FERC authorized capacity of the Project is 4.18 MW.

Zone 1 - The Project Impoundment, Brassua Lake, is an integral part of the Kennebec River storage system providing approximately 20 percent of the river systems storage. Brassua Lake is approximately 7.75 miles long extending from RM 10.75 down to RM 3 from the uppermost reach of the lake to the Project dam. RM 0 is measured as the outlet of Moose River where it empties into Moosehead Lake. The Project impoundment is formed by Brassua Dam.

Zone 2 – The Project Bypass Reach extends approximately 0.1 mile below the dam located at approximately RM 3.0 down to RM 2.9. This zone of effect is delineated by the project structures – dam and powerhouse.

Zone 3 - The Project powerhouse discharges into a 40-foot-wide, 60-foot-long tailrace, where it meets the Lower Moose River. The project boundary extends approximately 650 feet downstream of the dam, this zone of effect is estimated at RM 2.9 – RM 2.8.

FIGURE 6 ZONES OF EFFECT OVERVIEW MAP(S)

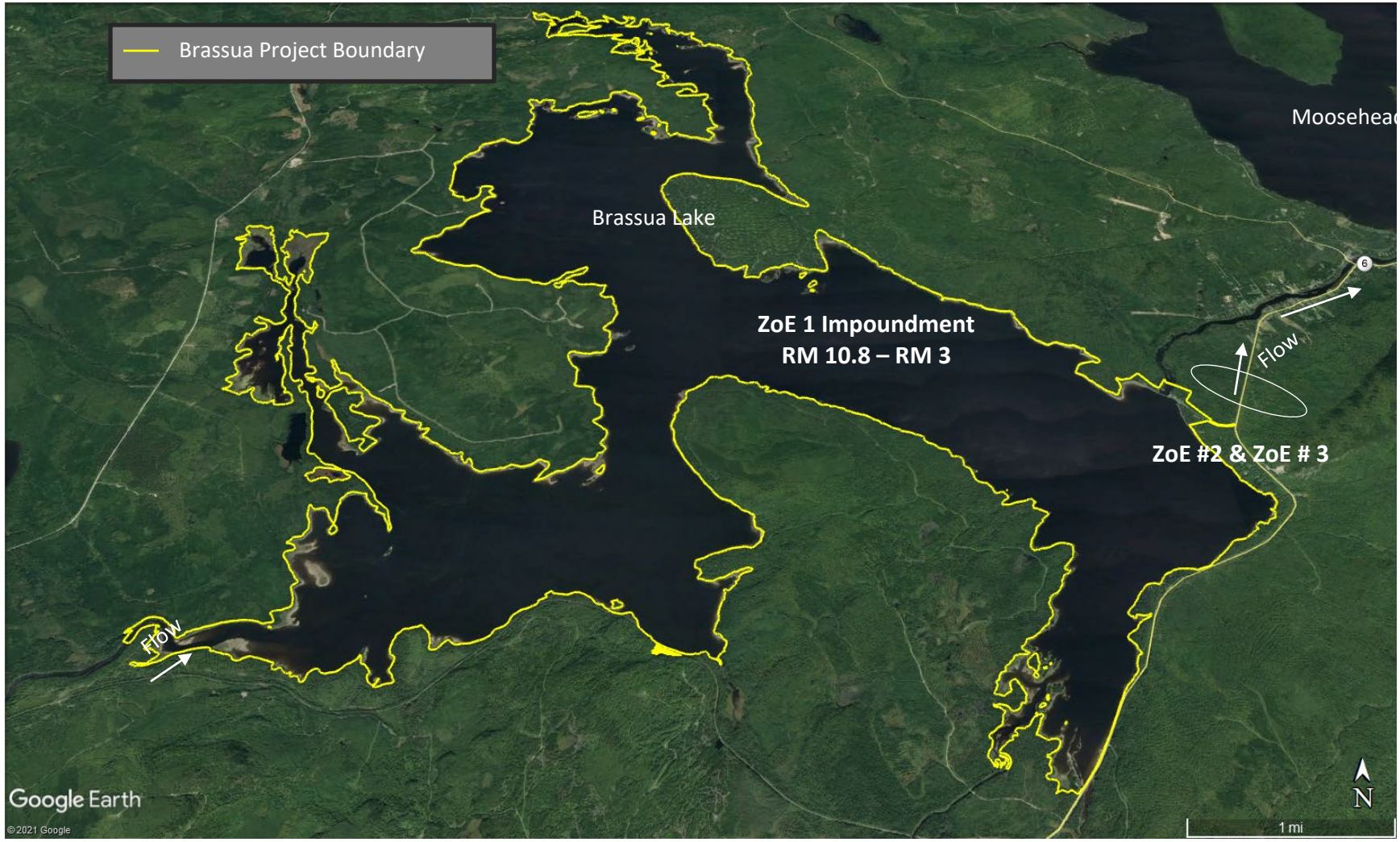
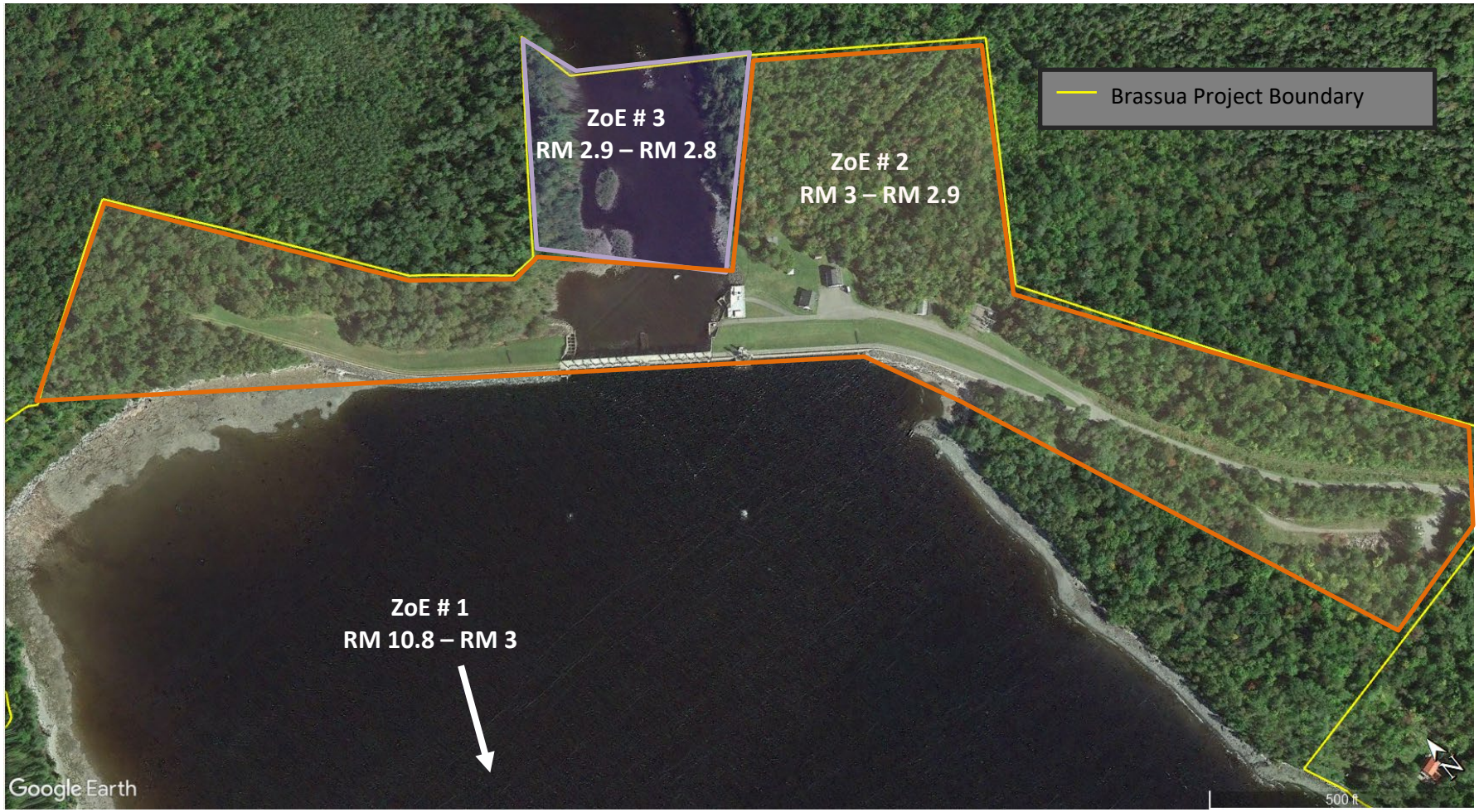


FIGURE 7 ZONES OF EFFECT



2.1 ZONE 1 – BRASSUA PROJECT IMPOUNDMENT

Brassua Lake is approximately 7.75 miles long with a surface area of approximately 9,400 acres at the normal full pond elevation of 1,074' (USGS Datum). The reservoir has a usable storage capacity of 207,000 acre-feet.

TABLE 2-1. ZONE 1 – BRASSUA PROJECT IMPOUNDMENT MATRIX OF ALTERNATIVE STANDARDS

Facility Name: Brassua Project **Zone of Effect: _1 –Impoundment**

	Criterion	*Alternative Standards*				
		1	***2***	***3***	***4***	***Plus***
A	**Ecological Flow Regimes**		**X**			
B	**Water Quality**		***X***			
C	**Upstream Fish Passage**	***X***				
D	**Downstream Fish Passage**	***X***				
E	**Watershed and Shoreline Protection**		***X***			
F	**Threatened and Endangered Species Protection**		***X***			
G	**Cultural and Historic Resources Protection**		***X***			
H	**Recreational Resources**		***X***			

The Brassua Project is one of three storage projects that combine to form the Kennebec River storage system. The nine-billion cubic feet of storage at Brassua represents approximately 20 percent of the storage in the Kennebec River storage system. Operation of the Brassua Project, along with the Moosehead (FERC No. 2671-ME) and Flagstaff (FERC No. 2612-ME) storage projects regulate flows for downstream hydroelectric generation and flood control. The Brassua Project is operated in a coordinated manner with the other two storage projects. The operation of the Storage System, including Brassua Lake, is typical of most seasonal storage reservoirs and Brassua Lake is operated in compliance with the FERC license.

The Project reservoir has good water quality and meets Maine Department of Environmental Protection (MDEP) trophic level standards for class GPA. The reservoir supports a typical northern lakes fish community, which is managed for salmonids, and is most notable for its smelt production. There are no current requirements for fish passage at the Brassua Project.

The project boundary generally follows the normal maximum headpond elevation for all areas except in the immediate vicinity of the powerhouse and dam; as such, there is limited upland or riparian habitat within the project boundary.

The Project reservoir is remote and receives modest recreational use by boaters and anglers. The vast majority of the reservoir shoreline is undeveloped, public access to the project reservoir is provided in this ZoE at the Misery Cove Boat Launch. Four primitive campsites open to the public on the project impoundment are discussed in detail in section 3.8.1.

FIGURE 8 ZONE 1 - BRASSUA PROJECT IMPOUNDMENT

FIGURE 9 ZONE 1 - BRASSUA PROJECT IMPOUNDMENT

A total of 162 Native American sites and six historic Euroamerican cultural sites are known at the Brassua Project. Only a small portion of these sites are considered significant or potentially eligible for the National Register of Historic Places (NRHP) ("historic properties"). Five Native American sites were determined to be eligible for listing in the NRHP under Criterion D (has yielded or is likely to yield information important to history or prehistory). These are Maine state site numbers 111.111, 117.138, 117.181, 117.182 and 111.184. These sites are variously subject to a degree of shoreline erosion. Two historic sites associated with timber harvesting and log driving in the area of Brassua Reservoir were determined to be eligible for listing in the NRHP under Criterion D. These are Maine state site numbers ME 525-002 and ME 887-001. Portions of the two eligible historic archaeology sites are within the APE for the Project, however the major portions of these are outside the Project boundary and are not affected by Project operations.

2.2 ZONE 2 – BRASSUA PROJECT BYPASS REACH

The dam is comprised of three sections totaling 1,789 feet in length. The intake and penstock are located within the fill-buttressed gravity section. The spillway is formed by the crest and downstream slab of the Ambursen-type slab and buttress section. The Project spillway is divided into 16 bays separated by concrete piers. The right five bays are fitted with 15-feet-wide by 9.5-feet-high steel vertical slide gates (sill at elevation 1,065'). The remaining ten bays are fitted with wooden stoplogs (sill at elevation 1,065 feet) these bays are 15-feet-wide and 9.5-feet high.

There are four deep gates, two on either side of the log sluice, that provide a low-level reservoir outlet in the approximate center of the slab and buttress section. The outlets are 6 feet in diameter and are controlled by butterfly valves, the low-level outlets have an invert elevation of 1034.0'. Trash rakes are included in front of each deep gate.

The intake and the buried penstock are located within the fill-buttressed gravity section. The powerhouse intake structure penetrates through the right embankment approximately 70 feet from the spillway. The intake is concrete, with steel trash racks and a mechanized trash rake to facilitate cleaning. A 108-foot-long 13-foot high by 12-foot wide rectangular reinforced concrete penstock extends between the intake and the powerhouse. Inside the powerhouse, the penstock transitions to a 12-foot diameter steel conduit.

While the project structures are located within this Zone of Effect, only the dam spillway conveys flows to the Project bypass reach. The minimum and fish spawning flows required by the license are conveyed via the powerhouse, spillway or both.

FIGURE 10 ZONE 2 – BRASSUA PROJECT BYPASS REACH

TABLE 2-2. ZONE 2 – BRASSUA PROJECT BYPASS REACH MATRIX OF ALTERNATIVE STANDARDS

Facility Name: Brassua Project **Zone of Effect: 2 – Brassua Bypass Reach**

	Criterion	*Alternative Standards*				
		1	*2*	*3*	*4*	*Plus*
A	Ecological Flow Regimes		X			
B	Water Quality		X			
C	Upstream Fish Passage	X				
D	Downstream Fish Passage	X				
E	Watershed and Shoreline Protection	X				
F	Threatened and Endangered Species Protection		X			
G	Cultural and Historic Resources Protection		X			
H	Recreational Resources		X			

There are seasonal minimum flow requirements prescribed for habitat and fish protection downstream of the Project though these are not specific to the bypass reach and there are no requirements for fish passage at the project at this time. The shoreline along the bypass reach is forested and undeveloped. Based on the information reviewed, there are no federally or state-listed TE fish or freshwater aquatic species within or in the vicinity of the Project boundary.

An angler access trail is located adjacent to but does not provide direct access to the bypass reach, terminating at the regulated river reach downstream. The Brassua Dam was determined eligible for the NRHP under Criterion A, for its association with the efforts to improve the water storage in the upper Kennebec River watershed and the flow of water in the Kennebec River for both water power and log driving purposes, under Criterion B, for its association with H. S. Ferguson, the Resident Engineer, who was responsible for other significant water power projects in Maine in the early twentieth century, and under Criterion C for its representative design.

2.3 ZONE 3 – BRASSUA PROJECT TAILRACE/REGULATED RIVER REACH DOWNSTREAM

The project powerhouse discharges into an approximately 60-foot-long tailrace that meets the Lower Moose River just below Brassua Dam. The tailrace is located at RM 2.9 – RM 2.8 of the Moose River and the project boundary ends approximately 650 feet below the dam structure.

The Brassua powerhouse is located on the right bank of the Moose River near the toe of the dam (on downstream side of the right/south embankment). The powerhouse is a concrete structure measuring approximately 60 feet by 33 feet and houses one double-regulated horizontal Kaplan turbine that operates under a gross head of 37 feet, with a turbine rated capacity of 4.6 MW, generator rated capacity of 4.18 MW and a hydraulic capacity of 1,600 cfs at a rated head of 31.1 feet.

FIGURE 11. ZONE 3 – BRASSUA PROJECT TAILRACE/REGULATED RIVER REACH DOWNSTREAM

TABLE 2-3. ZONE 3 – BRASSUA PROJECT TAILRACE MATRIX OF ALTERNATIVE STANDARDS

Facility Name: Brassua Project Zone of Effect: _3 – Project Tailrace/Regulated River Downstream

	Criterion	*Alternative Standards*				
		1	*2*	*3*	*4*	*Plus*
A	Ecological Flow Regimes		*X*			
B	Water Quality		*X*			
C	Upstream Fish Passage	*X*				
D	Downstream Fish Passage	*X*				
E	Watershed and Shoreline Protection	*X*				
F	Threatened and Endangered Species Protection		*X*			
G	Cultural and Historic Resources Protection		*X*			
H	Recreational Resources		*X*			

There are seasonal minimum flow requirements prescribed for habitat and fish protection though there are no requirements for fish passage at the project at this time.

The shoreline along the tailrace and the regulated downstream portion of the Moose River is forested and undeveloped. Based on the information reviewed, there are no federally or state-listed TE fish or freshwater aquatic species within or in the vicinity of the Project boundary.

There are no recreation sites providing access to the tailrace. The Angler Access Trail follows the northern shoreline of the bypass reach and terminates at the downstream regulated reach. There are no cultural resources in this Zone of Effect.

3.0 LIHI CERTIFICATION CRITERION

The Project is operated as a seasonal storage facility with agency required minimum and fish spawning flows. Lands within the project boundary are limited to those required for project operations (including flowage rights), project structures, and project recreation facilities as well as a shoreline buffer at an elevation 2 ft above full pond. The Project has a Shoreline Management Plan. There are no documented endangered or threatened aquatic species in this reach of the Moose River and no passage for anadromous fish in the river due to a lack of presence and lack of fish passage at downstream facilities. The Canada Lynx and the Northern Long Eared Bat range is identified in the vicinity of the Project, the Project has no effect on the species as there are no tree-clearing activities or corridor maintenance activities and recreation site development is not anticipated to have an affect on lynx migrations and habitat. Cultural sites are present within and adjacent to the project boundary, and the Project has an Historic Properties Management Plan with required annual reports. The project has a FERC approved Recreation Facilities Management Plan and a requirement for periodic recreation monitoring in place.

TABLE 3-1 STANDARDS MATRIX BRASSUA PROJECT

Brassua Project		***CRITERION***							
		A	***B***	***C***	***D***	***E***	***F***	***G***	***H***
Zone No., Zone Name, and Standard Selected (including PLUS if selected)	**River Mile at upper and lower extent of Zone**	**Ecological Flows**	**Water Quality**	**Upstream Fish Passage**	**Downstream Fish Passage**	**Shoreline and Watershed Protection**	**Threatened and Endangered Species**	**Cultural and Historic Resources**	**Recreational Resources**
1 - Impoundment	10.8 - 3	2	2	1	1	2	2	2	2
2 – Bypass Reach	3 – 2.9	2	2	1	1	1	2	2	2
3 – Tailrace	2.9 – 2.8	2	2	1	1	1	2	2	2

3.1 ECOLOGICAL FLOWS

The stated Low Impact Hydropower Institute goal for Criterion A – Ecological Flow Regimes is "The flow regimes in riverine reaches that are affected by the facility support habitat and other conditions suitable for healthy fish and wildlife resources." A discussion of the applicable standards by Zone of Effect is provided in the Sections below.

The Project is subject to storage mode of operation, pursuant to the requirements of Article 401, as discussed for Zone 1 below. In addition, there are minimum flow and fish spawning flow requirements as dictated by Article 401, as discussed for Zone 3 below. The tailrace, Zone 3, receives flows from generation and required minimum flows pursuant to Article 401 as well as spill flows discharged to the bypass reach, which converges with the tailrace downstream. This seasonal flow release—recommended by the agencies –varies depending on the target aquatic habitat.

Article 402 required the filing of a plan to monitor compliance with water level and minimum flow requirements. The Plan was filed on September 30, 2020 and accepted by the FERC on December 4, 2020 (see Section 6.0).

3.1.1 ZONE 1 – PROJECT IMPOUNDMENT

Criterion	Standard	Supporting Information
A	**2** The flow regime at the facility was developed in accordance with a science-based resource agency recommendation	Agency Recommendation: • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement. • Explain how the recommendation relates to formal agency management goals and objectives for fish and wildlife. • Explain how the recommendation provides fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking rate conditions, and seasonal and episodic instream flow variations). • Explain how flows are monitored for compliance

The FERC licensed operating band at Brassua Lake is between El. 1045.0 to El. 1072.0, a 27-foot band. On an intra-daily timestep water levels remain relatively stable with changes in water level occurring over the course of days, weeks, or months as is typical of a seasonal storage reservoir.

Pursuant to Article 401, reservoir elevation limits must be met to protect aquatic, terrestrial, and recreational resources at the Project. The Licensees must maintain the following seasonal reservoir elevation limits:

(a) from the end of the spring refill in May through June 15, the Licensees must maintain the reservoir elevation at or above 1,072.0 feet msl -

(b) from June 16 through July 31, the Licensees must maintain the reservoir elevation at or above 1,071.0 feet msl;

(c) from August 1 through September 15, the Licensees must maintain the reservoir elevation at or above 1,069.0 feet msl;

(d) from September 16 through October 15, the Licensees must maintain the reservoir elevation at or above 1,067.0 feet msl; and

(e) after October 16 and until the end of the spring refill in May, the reservoir elevation must be maintained at no lower than 1,050.0 feet msl; with the exception that in years with "snowpack conditions" (as defined herein), the reservoir elevation must be maintained at an elevation no lower than 1,045.0 feet msl.

From spring fill until June 15, the drawdown elevation limit of 1072.0 feet results in some minor enhancements to yellow perch and smelt spawning habitat. Both species spawn in the spring. Yellow perch prefer littoral zone habitat with vegetation. Smelt typically spawn in riffle areas of tributary streams but are also known to spawn in gravelly areas near stream mouths. From June 16 until July 31, the minimum reservoir elevation of 1,071.0 feet results in some minor enhancement to late spring and summer spawning fish, such as pumpkinseed sunfish and smallmouth bass, both of which build their nests in sand or gravel areas in shallow water during this time of the year.

From August 1 until September 15, the drawdown limit is 5 feet to elevation 1,069.0 feet. Aquatic vegetation, woody debris, and a wide range of substrates (mud, sand, gravel, cobble, and boulder) are found in the Brassua Lake drawdown zone. This diversity of habitat is important for macroinvertebrates as well as juvenile fish that use these habitats to feed and find cover from predators. The fry and juveniles of spring and summer spawning fish species could benefit from any decrease in dewatering littoral zone habitat. These habitats are also used as cover and feeding areas for adult fish. To the extent that these littoral zone habitats are enhanced by the reservoir drawdown limit during this period, the aquatic community as a whole benefits. For example, healthier aquatic vegetation beds in the littoral zone results in more macroinvertebrate production and greater protective cover for fish which in turn, results in better fish survival and grown rates.

The elevation of the reservoir during the fall is important because during this time brook trout and landlocked salmon are staging to spawn in the tributaries. The tributary spawning access study conducted in the late summer and fall of 2008 evaluated access to the six tributaries of the reservoir: Brassua Stream, Moose River, Misery Stream, Johnson Brook, Fletcher Stream, and Black Brook. Other than natural obstructions, such as beaver dams and

rock ledges, all 6 streams were accessible to trout and salmon at elevation 1073.3 feet. Based on the tributary spawning access survey, a drawdown limit of 1,067.0 feet provides salmonid spawning access to the Moose River and Brassua Stream, and Misery Stream. The Licensee has implemented tributary access inspections annually pursuant to the FERC approved Tributary Access Plan.

Several 10(j) and 10(a) recommendations were made during relicensing with respect to the maintenance of target headpond elevations as follows:

> USFWS recommended that the Licensee develop a rule curve in consultation with the USFWS, Maine resource agencies, and FERC, that follows a "natural hydrograph, to the extent possible, and does not exceed a 6-foot drawdown" to maintain littoral zone aquatic habitat. USFWS also recommended limit full drawdown to 1,060.0 feet msl to prevent annual pulse of methyl mercury from former wetlands submerged by construction of the project. The benthic macroinvertebrate studies conducted by the licensee indicate that the winter drawdowns have little to no effect on the BMI communities in the littoral zone. Further, The EA assessed this issue and notes that studies of mercury contamination from reservoir sediments into organisms and the food chain have been inconclusive in demonstrating that drawdowns are causative factors in mercury mobilization. Additionally, Maine DIFW commented that due to the "significant economic and recreational fishing importance" … "lake elevations are secondary to maintaining appropriate flows below the Brassua Dam."
>
> USFWS recommended that the Licensee achieve maximum drawdown by February 1 and maintain at or above this level until April 1 to protect burbot spawning habitat. Maine DIFW commented that this recommendation is not needed to sustain burbot populations in Brassua Lake, which FERC's EA notes is self-sustaining under the full drawdown.
>
> USFWS recommended that the Licensee maintain reservoir at or above 1,070.5 feet msl from October 1 until November 15 to ensure tributary access for spawning brook trout and landlocked salmon. If necessary, conduct a study, in consultation with the FWS and Maine DIFW, to refine this elevation. Conduct annual inspections of the 6 major tributaries, clear woody debris or other obstructions from tributaries, and report the inspection results and measures taken to enhance access. Maine DIFW commented by letter dated August 19, 2010,2 that the Licensees should implement its proposed tributary access plan first, and then implement this recommendation if necessary based on the results of monitoring. Landlocked salmon and brook trout populations have typically met or exceeded average state-wide catch rates, the brook trout population in Brassua Lake is wild and self-sustaining, and the landlocked salmon population of Brassua Lake is supported primarily through stocking by the Maine DIFW. The USFWS recommended drawdown restriction would reduce the licensees' operational flexibility and ability to meet the attraction and spawning flows downstream of the project in some years, which Maine DIFW has stated is the fisheries management priority. The drawdown limit of 1,067.0 feet would provide salmonid spawning access to tributaries and Article 403 requires a Tributary Access Plan that includes inspections and clearing of obstructions.

The Brassua Project has a pond level sensor (transducer) installed behind the intake rack structure which reads the pond level elevation continuously. The reading is transmitted to the Licensees' SCADA and PI systems which records the pond level every hour. The record is maintained permanently in electronic form and a daily basis. The sensor readings are verified quarterly by comparison with the staff gage located on the intake structure of the inoperable upstream fish ladder at the Project. The SCADA and PI systems will send a real time alarm signal to the station operator if the pond level is at or lower than the target elevation so that the operator can take corrective action. Corrective action could include adjusting a gate or flow through the generating unit in order to maintain the target pond level, while still maintaining the required minimum flow.

The Brassua Project is an unmanned facility and reservoir levels are monitored remotely utilizing transducers and communicated via satellite communication to the Brookfield National System Control Center (NSCC) in Marlborough, Massachusetts. The NSCC is manned 24/7 and this data is stored to the SCADA and PI systems for compliance monitoring purposes. In addition to the remote monitoring, a roving operator will routinely utilize staff boards located at the dam to verify the remote monitoring system is working appropriately. The roving operator communicates flow data to the NSCC daily, or when changes are made. This flow data is manually entered in the SCADA and PI systems. The operator also records daily headpond elevation data and distributes to the National Oceanic and Atmospheric Administration (NOAA), Brookfield Operations Group, and the NSCC. Flow and elevation data are provided to an internet web-based interface (safewaters.com) or equivalent, which provides the daily head pond and river flow data to the general public.

3.1.2 ZONE 2 – PROJECT BYPASS REACH

Criterion	Standard	Supporting Information
A	**2** The flow regime at the facility was developed in accordance with a science-based resource agency recommendation	Agency Recommendation: • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement. • Explain how the recommendation relates to formal agency management goals and objectives for fish and wildlife. • Explain how the recommendation provides fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking rate conditions, and seasonal and episodic instream flow variations). • Explain how flows are monitored for compliance

Brookfield operates Brassua Project pursuant to article 401. To protect aquatic resources downstream of the Project, the Licensee releases through the turbines or the deep gates at the dam, the following seasonal minimum flows from the project:

> (a) from May 1 through September 15 of each year, the Licensees must release a minimum flow of 358 cfs; however, when daily inflow is less than 358 cfs, the licensees must release a minimum of 250 cfs or inflow, whichever is greater;
>
> (b) from September 16 through October 15, when daily inflows are between 425 cfs and 1,200 cfs, the Licensees must release a flow between 800 and 1,200 cfs; when daily inflow is less than 425 cfs, the Licensees must release a minimum flow of 250 cfs or inflow, whichever is greater; and when daily inflow is greater than 1,200 cfs and the reservoir elevation is at or above 1,073.0 feet mean sea level (msl), there is no minimum flow release requirement (i.e., the Licensees may pass flows greater than 1,200 cfs to manage the elevation of the reservoir);
>
> (c) from October 16 through November 5, when daily inflow is greater than or equal to 425 cfs, the Licensees must release a flow of 425 cfs; when daily inflow is less than 425 cfs, the Licensees must release a minimum flow of 250 cfs or inflow, whichever is greater; and when the reservoir elevation is above 1,073.0 feet msl, there is no minimum flow release requirement (i.e., the Licensees may pass flows necessary to manage the inflow and the reservoir surface elevation);
>
> (d) from November 6 through April 30, the Licensees must release a minimum flow of 425 cfs; however, when daily inflow is less than 425 cfs, the Licensees must release a minimum flow of 250 cfs or inflow, whichever is greater.

The minimum flow through the Brassua Project is passed by one of three routes. The Project normally passes the required minimum flow for the Project through the turbine generator unit (Zone 3). When the unit trips off-line or is not available, the minimum flow is passed through one of the deep gates in Brassua dam or through the top steel gates (Zone 2). One of the deep gates is automated to open automatically if the unit trips off-line, and an alarm is sent to the roving operator. In circumstances where there is a planned outage of the unit, a gate can be opened manually. The Licensees monitor the minimum flow for the Brassua Project and record the data on an hourly basis. See section 3.1.1 for NSCC monitoring discussion.

From May 1 to September 15 annually, the minimum flow is between 250 and 358 cfs. Landlocked salmon and brook trout fry emerge from redds near the beginning of this period. Results of the Incremental Flow Instream Model study show that WUA for both brook trout and landlocked salmon fry peaked at the lowest measured flow of 250 cfs and declined gradually at higher flows. WUA for juveniles and adults of both species peaked at higher flows in the range of 500 to 1,500 cfs, depending on the specific habitat conditions at each studied transect. Adult landlocked salmon preferred the highest flows. However, better fry survival could result in better recruitment of younger year classes into the population and, ultimately, larger populations of salmonids; however, better adult habitat during the growing season could increase the average size and condition of spawning fish, which could lead to higher egg and fry production and larger populations of salmonids.

Flows released during the period from September 16 to October 15 are described as "attraction flows," meaning that they are meant to attract salmonids from Moosehead lake and the lower Moose River to spawning habitat in the river. Based on the telemetry studies conducted by the licensees, adult salmonids are attracted to spawning habitat from throughout the lower Moose River or from Moosehead Lake under these flow releases. Flows during the period from October 16 to November 5 are intended to provide spawning habitat for salmonids as well as to encourage spawning in areas of the river that are likely to remain wetted throughout the late fall and winter incubation season. The IFIM study determined that WUA for brook trout spawning peaked at 250 cfs, whereas spawning habitat for landlocked salmon peaked at 500 cfs. Flows during the period from November 6 to April 30 are referred to as "incubation flows" and are intended to protect salmonid spawning redds and allow successful incubation of the eggs and emergence of the fry.

3.1.3 ZONE 3 – PROJECT TAILRACE/DOWNSTREAM REGULATED RIVER REACH

Criterion	Standard	Supporting Information
A	**2** The flow regime at the facility was developed in accordance with a science-based resource agency recommendation	Agency Recommendation: • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement. • Explain how the recommendation relates to formal agency management goals and objectives for fish and wildlife. • Explain how the recommendation provides fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking rate conditions, and seasonal and episodic instream flow variations). • Explain how flows are monitored for compliance

The seasonally variable minimum flow through the Brassua Project are passed by one of three routes – primarily flow through the powerhouse. The biological basis for the seasonal minimum flow is discussed above under Zone of Effect 2.

Flow through the powerhouse is determined by monitoring generation output (i.e. there is a definable mathematical relationship between generation (in kW) and flow through any particular unit). Flow is calculated based on electrical output and hydraulic head at any time. By monitoring electrical output continuously and applying known conversion factors, the minimum flow is monitored continuously by the NSCC. The unit electrical output is measured at the existing unit electric meters. Additionally, the unit is set with a low operating limit that will provide for the required flow to be passed. The NSCC records the output on an averaged hourly

basis, and an audible or visible alarm is sent to the operator on a real time basis if the minimum flow is not being passed through the unit. The hourly readings and any activated alarm readings are archived daily.

3.2 WATER QUALITY

The stated Low Impact Hydropower Institute goal for Criterion B – Water Quality is "Water quality is protected in waterbodies directly affected by the facility, including downstream reaches, bypassed reaches, and impoundments above dams and diversions."

The Moose River from the outlet of Long Pond to Moosehead Lake is classified as Class A. Class A waters are managed as high quality with limited human disturbance allowed. Direct discharges of pollutants are allowed but highly restricted. Brassua Reservoir is classified as Class GPA, which is the highest classification available for great ponds. The operation of the Project and its consistency with these standards is discussed in Exhibit E, Section 4.4.2. (20100331 Application For New License, Volume 1 pg. 314)

There are no numeric standards for Class GPA waters. Water quality standards for Class A waters require that dissolved oxygen (DO) concentrations be at least 7 milligrams per liter (mg/l) or 75 percent saturation, whichever is higher. There are also aquatic life standards for Class A waters based on the species diversity and relative abundance of aquatic macroinvertebrates. Designated uses for both Class GPA and 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.

Sampling conducted by the Licensees for the relicensing showed that the reservoir meets all applicable physical and chemical water quality standards. Temperature and dissolved oxygen sampling in the tailrace of Brassua Dam illustrate attainment of the appropriate water quality standard throughout a 17-year monitoring period. (20100330 Application For New License Volume 3, pg. 211)

No waters within the project area are listed on Maine's 303(d) list of impaired waters. Maine DEP has identified Brassua Lake on its list of Water Quality Limited lakes since their 1998 Section 303(d) listing, due to the presence of the dam. According to Maine DEP's final 2016 Integrated Water Quality Monitoring and Assessment Report (Integrated Report) on the quality of inland waters, the Moose River and its tributaries from Brassua Lake to Moosehead Lake fall into Category 2, indicating that they attain some of their designated uses, with no use threatened, but there is insufficient data to determine if the remaining uses are attained (Maine DEP, 2016). The Integrated Report classifies Brassua Lake as both Category 1 (obtaining all designated uses) and Category 4-C (impairment not caused by a pollutant, but impaired by habitat modification).

Maine has a statewide advisory for the consumption of fish taken from all fresh waters in Maine. This advisory is due to elevated levels of mercury. Maine has instituted statewide programs for removal and reduction of mercury sources, such as pollution from coal-burning power plants.

Under section 401(a)(1) of the Clean Water Act (CWA), the Commission may not issue a license authorizing the construction or operation of a hydroelectric project unless the state water quality certifying agency either has issued certification (certification) for the project or has waived certification by failing to act on a request for certification within a reasonable period of time, not to exceed one year. Section 401(d) of the CWA provides that the certification shall become a condition of any federal license that authorizes construction or operation of the project. As Order No. 464 notes, "[t]he Commission believes that a one-year waiver period, calculated from the date of receipt of a certification request, should in all but the most unusual cases provide certifying agencies with sufficient time to complete the certification proceeding." Moreover, an applicant's submittal of additional information at a certifying agency's request generally would not rise to the level of a material change to a project's plan of development, such that an application to amend a pending license application, and a new certification request, would be warranted. Accordingly, FERC found that the Maine DEP waived certification.

3.2.1 ZONE 1 – PROJECT IMPOUNDMENT

Criterion		Standard	Supporting Information
B		**2** The facility is in compliance with all water quality conditions contained in a recent Water Quality Certification or science-based resource agency recommendation providing reasonable assurance that water quality standards will be met for all waterbodies that are directly affected by the facility. Such recommendations, whether based on a generally applicable water quality standard or one that was developed on a site-specific basis, must include consideration of all water quality components necessary to preserve healthy fish and wildlife populations, human uses and recreation.	Agency Recommendation: • If facility is located on a Water Quality Limited river reach, provide a link to the state's most recent impaired waters list and indicate the page(s) therein that apply to facility waters. If possible, provide an agency letter stating that the facility is not a cause of such limitation. • Provide a copy of the most recent Water Quality Certificate and any subsequent amendments, including the date(s) of issuance. If more than 10 years old, provide documentation that the certification terms and conditions remain valid and in effect for the facility (e.g., a letter from the agency). • Identify any other agency recommendations related to water quality and explain their scientific or technical basis. • Describe all compliance activities related to water quality and any agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.

Reservoir water quality sampling was conducted from May through October 2006. On August 9, 2007, sampling was performed at the same sites as in 2006 to supplement the data for the late summer stratification period. DO levels in the epilimnion (above the thermocline) remained above 7.0 mg/l during most of the sampling events throughout spring, summer, and fall of 2006. During the August 2007 sampling, DO levels in the epilimnion were above 7.0 mg/l. Based on the results of the sampling the Maine DEP, by letter dated February 19, 2010, described Brassua Lake as a moderately-colored oligotrophic lake with good water quality.

3.2.2 ZONE 2 – BYPASS REACH AND ZONE 3 – TAILRACE/DOWNSTREAM REGULATED REACH

Criterion		Standard	Supporting Information
B		**2** The facility is in compliance with all water quality conditions contained in a recent Water Quality Certification or science-based resource agency recommendation providing reasonable assurance that water quality standards will be met for all waterbodies that are directly affected by the facility. Such recommendations, whether based on a generally applicable water quality standard or one that was developed on a site-specific basis, must include consideration of all water quality components necessary to preserve healthy fish and wildlife populations, human uses and recreation.	Agency Recommendation: • If facility is located on a Water Quality Limited river reach, provide a link to the state's most recent impaired waters list and indicate the page(s) therein that apply to facility waters. If possible, provide an agency letter stating that the facility is not a cause of such limitation. • Provide a copy of the most recent Water Quality Certificate and any subsequent amendments, including the date(s) of issuance. If more than 10 years old, provide documentation that the certification terms and conditions remain valid and in effect for the facility (e.g., a letter from the agency). • Identify any other agency recommendations related to water quality and explain their scientific or technical basis. • Describe all compliance activities related to water quality and any agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.

The licensees had conducted annual summer monitoring of tailrace water temperature and DO from 1990 to 2007. Results of this monitoring indicate that the tailrace is well-oxygenated. Under worst-case conditions in July and August (low-flow and warm temperatures) for the past 17 years, mean water temperatures ranged from 18.0 to 22.1 degrees Celsius and mean DO ranged from 8.2 to 9.4 mg/l. These data illustrate attainment of Class A water quality standard throughout the 17-year monitoring period. Maine DEP's letter dated February 19, 2010, expressed the same conclusion.

3.3 UPSTREAM FISH PASSAGE

The stated Low Impact Hydropower Institute goal for Criterion C – Upstream Fish Passage is "The facility allows for the safe, timely, and effective upstream passage of migratory fish. This criterion is intended to ensure that migratory species can successfully complete their life cycles and maintain healthy, sustainable fish and wildlife resources in areas affected by the facility."

There are no migratory species in the upper reaches of the watershed, where the Project is located. The Project does not have, and is not required to have, fish passage facilities. As such, all Zones of Effect meet Standard C-1 and are discussed collectively below.

Criterion	Standard	Supporting Information
C	1 The facility does not create a barrier to upstream passage, or there are no migratory fish in the vicinity of the facility. If migratory fish were present historically, the facility did not contribute to the extirpation of such species.	<u>Not Applicable / De Minimis Effect:</u> • Explain why the facility does not impose a barrier to upstream fish passage in the designated zone. Typically, impoundment zones will qualify for this standard since once above a dam and in an impoundment, there is no facility barrier to further upstream movement. • Document available fish distribution data and the lack of migratory fish species in the vicinity. • If migratory fish species have been extirpated from the area, explain why the facility is not or was not the cause of the extirpation.

There is no upstream fish passage in the Moose River. Many areas within and around the Brassua Project support principal coldwater fisheries for native Brook Trout (*Salvelinus fontinalis*) and wild Landlocked Salmon (*Salmo salar*). These fisheries, though previously supplemented by stocking, are currently supported by natural reproduction only and are popular with anglers. MDIFW has implemented several management practices in Brassua Lake to improve salmonid growth and condition, including liberalized bag limits on Landlocked Salmon. Alternatively, the downstream tailwater fishery on the Moose River, which is primarily focused on Brook Trout, is managed differently by restricting harvest of Landlocked Salmon and prohibiting harvest of Brook Trout (i.e. catch and release). None of the species in the Moose River in the vicinity of the Project require migration to complete their lifecycle and no fish passage facilities are required for the Project.

3.4 DOWNSTREAM FISH PASSAGE

The stated Low Impact Hydropower Institute goal for Criterion D – Downstream Fish Passage is "The facility allows for the safe, timely, and effective downstream passage of migratory fish. For riverine (resident) fish, the facility minimizes loss of fish from reservoirs and

upstream river reaches affected by facility operations. Migratory species can successfully complete their life cycles and maintain healthy populations in the areas affected by the facility."

There are no migratory species in the upper reaches of the watershed, where the Project is located. The Project does not have, and is not required to have, fish passage facilities. As such, all Zones of Effect meet Standard D-1 and are discussed collectively below.

Criterion	Standard	Supporting Information
D	1 The facility does not create a barrier to upstream passage, or there are no migratory fish in the vicinity of the facility. If migratory fish were present historically, the facility did not contribute to the extirpation of such species.	Not Applicable / De Minimis Effect: • Explain why the facility does not impose a barrier to downstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural downstream movement (e.g., entrainment into hydropower turbines). Typically, tailwater/downstream zones will qualify for this standard since below a dam and powerhouse there is no facility barrier to further downstream movement. Bypassed reach zones must demonstrate that flows in the reach are adequate to support safe, effective and timely downstream migration. • For riverine fish populations that are known to move downstream, explain why the facility does not contribute adversely to the species populations or to their access to habitat necessary for successful completion of their life cycles. • Document available fish distribution data and the lack of fish species requiring passage in the vicinity. • If migratory fish species have been extirpated from the area, explain why the facility is not or was not the cause of the extirpation.

There is no downstream fish passage in the Moose River. All of the species in Brassua Lake may also exist in the Moose River below the Project dam, though additional species are present below the Project that are not known to exist in the reservoir. Other species known to be present in the Moose River include Chain Pickerel (Esox niger), Golden Shiner (Notemigonus crysoleucas), Smallmouth Bass (Micropterus dolomieu), and Yellow Perch (Perca flavescens). The principal fisheries in the Moose River are for native Brook Trout and wild Landlocked

Salmon. Non-native Smallmouth Bass are a potential threat to the native fish community and the coldwater fisheries, though catches of Smallmouth Bass in the Moose River by anglers has been infrequent despite their presence over the course of several years. None of the species in the Moose River in the vicinity of the Project require migration to complete their lifecycle and no fish passage facilities are required for the Project.

3.5 SHORELINE AND WATERSHED PROTECTION

The stated Low Impact Hydropower Institute goal for Criterion E – Shoreline and Watershed Protection is "The facility has demonstrated that sufficient action has been taken to protect, mitigate or enhance the condition of soils, vegetation and ecosystem functions on shoreline and watershed lands associated with the facility."

The Project is required to have a Shoreline Management Plan, pursuant to the FERC license Article 408 (see Section 6.0). Specifically, to protect sensitive shoreline habitat, the license requires the licensees to revise the proposed Shoreline Management Plan to include procedures for: (1) identifying sensitive resources and habitats (e.g., wetlands, smelt and brook trout spawning areas, habitat in the immediate vicinity of bald eagle nests, and loon-nesting territories); and (2) reviewing and approving any proposed shoreline development in sensitive environmental areas at the project.

The Shoreline Management Plan that includes procedures (e.g., a list of allowable and prohibited uses, permitting programs and guidelines, shoreline classification maps, a monitoring and enforcement program, and provisions for periodic review of the plan in consultation with the resource agencies) for undertaking non-project development activities in the project boundary. Non-project activities would include improvements such as docks, jetties, boathouses, and steps that property owners (who own up to the 1,076-foot contour elevation that serves as the project boundary) install within the project boundary to access the water. As part of the proposed Shoreline Management Plan, shoreline areas with sensitive habitat, such as loon and bald eagle nesting sites, or cultural resources are identified and designated. Any proposed development within these "resource zones" are subject to more scrutiny, including consultation with resource agencies.

Project lands are also managed pursuant to the FERC Standard Land Use Article 410 which states:

> *Article 410. Use and Occupancy. (a) In accordance with the provisions of this article, the licensees must have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensees may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensees must also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensees for protection and*

enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensees must take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and waters for which the licensees may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 water craft at a time and where said facility is intended to serve single-family type dwellings; (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline; and (4) food plots and other wildlife enhancement. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensees must require multiple use and occupancy of facilities for access to project lands or waters. The licensees must also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensees must: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the impoundment shoreline. To implement this paragraph (b), the licensees may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensees' costs of administering the permit program. The Commission reserves the right to require the licensees to file a description of their standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensees may convey easements or rights-of-way across, or leases of project lands for: (1) replacement, expansion, realignment, or maintenance of bridges or roads where all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project impoundment. No later than January 31 of each year, the licensees must file with the Commission a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed. No report filing is required if no conveyances were made under paragraph (c) during the previous calendar year.

(d) The licensees may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 water craft at a time and are located at least one-half mile (measured over project waters) from any other private or public marina; (6) recreational development consistent with an approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from project waters at normal surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 60 days before conveying any interest in project lands under this paragraph (d), the licensees must file a letter with the Commission, stating their intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked Exhibit G map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Commission's authorized representative, within 45 days from the filing date, requires the licensees to file an application for prior approval, the licensees may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article: (1) Before conveying the interest, the licensees must consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer. (2) Before conveying the interest, the licensees must determine that the proposed use of the lands to be conveyed is not inconsistent with any approved report on recreational resources of an Exhibit E; or, if the project does not have an approved report on recreational resources, that the lands to be conveyed do not have recreational value. (3) The instrument of conveyance must include the following covenants running with the land: (i) the use of the lands conveyed must not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee must take all reasonable precautions to ensure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project; and (iii) the grantee must not unduly restrict public access to project lands or waters. (4) The Commission reserves the right to require the licensees to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised Exhibit G drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this

article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project must be consolidated for consideration when revised Exhibit G drawings would be filed for approval for other purposes.

(g) The authority granted to the licensees under this article must not apply to any part of the public lands and reservations of the United States included within the project boundary.

The Standard Land Use Article requires the license to convey permission for structures in project lands and waters "only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project" and requires the licensee to ensure this to be continued through ongoing monitoring. Among the measures permitted are shoreline erosion control measures with certain specifications. However, shoreline erosion was not considered to be a substantive issue by the FERC and was not addressed in the EA or license.

3.5.1 ZONE 1 - IMPOUNDMENT

Criterion	Standard	Supporting Information
E	2 The facility is in compliance with all government agency recommendations in a license, exemption, water quality certificate, or other authorization, such as an approved SMP or equivalent for protection, mitigation or enhancement of shoreline surrounding the facility	<u>Agency Recommendation:</u> • Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility (e.g., Shoreline Management Plans). • Provide documentation that indicates the facility is in full compliance with any agency recommendations or management plans that are in effect.

The current project boundary encloses the dam and powerhouse and follows the reservoir shoreline up to the 1,076 ft NGVD elevation (see Exhibit G in Section 6.0) approximately 2 ft higher than the normal full pond elevation. The Exhibit G also encompasses project related recreation facilities. BWPH's rights are limited to those lands within the project boundary only some of which are owned in fee by BWPH.

The Brassua Reservoir shoreline is largely undeveloped, set in the heavily forested western part of Maine. The forests are working forests, providing important

economic benefits to the region, and are periodically harvested for timber and paper production. One plan for a small residential development and sporting camp on abutting lands was approved by the Maine Land Use Regulation Commission (LURC, the predecessor of the LUPC) in 2004 and has been largely completed. Certain environmental, recreation and cultural areas that occur along the Brassua Reservoir shoreline (within the Project boundary) may merit special consideration and protection from the impacts of future shoreline development. As discussed above, the Project operates under a FERC required SMP which ensures the protection of sensitive shoreline resources around the Project which are outlined and discussed in the SMP (see Section 6.0).

In addition, the SMP and Standard Land Use article control and limit development within the project boundary. Lands adjacent to the project boundary are subject to the regulations of the Land Use Planning Commission (LUPC). Several state laws and local regulations are designed to manage land development in the vicinity of the project area in accordance with certain objectives. Any development or ground disturbance on private lands adjacent to the Project requires the appropriate permits and must adhere to the design and development standards of the appropriate LUPC zoning regulations.

3.5.2 ZONE 2 – BYPASS REACH AND ZONE 3 – TAILRACE/DOWNSTREAM

Criterion	Standard	Instructions
E	1 There are no lands associated with the facility under the direct or indirect ownership or control of the facility owner that have been identified as having significant ecological value for protecting water quality, aesthetics, or lowimpact recreation, and the facility is not subject to any Shoreline Management Plan (SMP) or similar protection plan;	Not Applicable / De Minimis Effect: • If there are no lands with significant ecological value associated with the facility, document and justify this (e.g., describe the land use and land cover within the FERC project or facility boundary, and absence of critical habitat for protected species). • Document that there have been no Shoreline Management Plans or similar protection requirements for the facility.

The current project boundary encloses the dam and powerhouse and follows the tailrace and bypass reach shorelines approximately 650 ft downstream (see Exhibit G in Section 6.0). There are no significant shoreline lands along the tailrace or bypass reach.

As with those lands along the impoundment, BBHP's rights are limited to those lands within the project boundary. Therefore, BBHP only has the ability to manage limited shoreline and submerged lands below the corresponding tailrace elevation for the Project. Several state laws and local regulations are designed to manage land

development in the vicinity of the project area in accordance with certain objectives. Any development or ground disturbance on private lands adjacent to the Project requires the appropriate permits and must adhere to the design and development standards of the appropriate town zoning regulations. The Project is required to have and operates under an SMP, pursuant to FERC licenses and amendments (see Section 6.0).

3.6 THREATENED AND ENDANGERED SPECIES

The stated Low Impact Hydropower Institute goal for Criterion F – Threatened and Endangered Species Protection is "The facility does not negatively impact federal or state listed species".

An Information for Planning and Consultation (IPaC) report and USFWS Official Species List was developed for the Project and is provided in Section 7.0. The following federally-listed Endangered or Threatened species that may be present in the project vicinity: Northern Long-Eared Bat (NLEB) (Threatened; for which a Final Section 4(d) rule has been published for activities that may affect the species for streamlined consultation) and Canada Lynx. Critical habitat has been designated for the Canada lynx, but not for the northern long-eared bat.

In the final EA, FERC staff concluded that relicensing the project would have no effect on the Canada lynx because lynx and its prey prefer upland habitats, and make little, if any, use of aquatic or shoreline habitat in the project area. Commission staff concluded that relicensing the project is not likely to adversely affect designated Canada lynx critical habitat at the project because any project-related disturbance to lynx habitat would not change the characteristics of the habitat or the ability of lynx to move through the area within their larger home ranges.

Following the issuance of the final EA on September 14, 2011, the northern long eared bat was listed as a federally threatened species under the ESA on May 4, 2015. The USFWS finalized an ESA section 4(d) rule for the northern long-eared bat in January 2016. The ESA section 4(d) rule focuses on minimizing the effects of disturbances on known northern long-eared bat hibernacula and the effects of tree removal on roosting northern long-eared bats, including maternity colonies, located within the zone associated with the spread of white-nose syndrome. In the programmatic biological opinion for the section 4(d) rule (Programmatic BO), the FWS found that incidental take of the northern long-eared bat is not prohibited unless the action: (1) affects a northern long eared bat hibernaculum or could alter the entrance or the environment of a hibernaculum; (2) includes the removal of a known, occupied maternity roost tree or any trees within 150 feet of a known, occupied maternity roost tree during the pup season (June 1 – July 31); or (3) includes the removal of any trees within 0.25 mile of a northern long-eared bat hibernaculum at any time of year.

The project is located within the white-nose syndrome buffer zone for the northern long-eared bat. No hibernacula are known to occur at or near the project. Although there is no documentation of northern long-eared bat at the project, the project includes mature forest that could provide suitable habitat for northern long-eared bat summer roosting and foraging activities. Any northern long-eared bats that are present at the project could be affected by improvements to project recreation facilities (e.g., the development of a new group campsite and trail improvements), and by project maintenance activities that require tree removal (e.g.,

vegetation maintenance in the transmission line right-of-way). Article 405 requires cutting trees equal to or greater than 3 inches at the project from June 1 to July 31, unless a tree is a hazard to life or property, to ensure that prohibited take of northern long-eared bats under the Programmatic BO does not occur during the term of the new license. On September 26, 2019, USFWS issued a letter concluding that any take that may occur as a result of the project relicensing is not prohibited under the ESA Section 4(d) rule.

Under relicensing, an inquiry with the Maine Department of Inland Fisheries and Wildlife (MDIFW) and the Maine Natural Areas Program (MNAP) regarding state-listed Endangered or Threatened species that may be present in the project vicinity was conducted and analyzed by FERC in its EA. The inquiry was updated for the LIHI certification application (see Section 7.0). There are no federally-listed or state-listed Endangered or Threatened aquatic species that may be present in the project vicinity. However, Brassua Lake is within the geographic range of several wildlife species listed as State Endangered or Threatened little brown bat, northern long-eared bat and eastern small footed bat and several species of bat identified as Special Concern.

The Canada burnet and Orono sedge are state-listed Threatened plants that have the potential to occur in the project vicinity. Habitat preference for the Canada burnet is peaty or boggy soils. Small populations generally occur along riversides. Although potentially suitable habitat is present along the shores of Brassua Reservoir, the larger adjacent inlets and the tailrace of the dam, no specimens of Canada Burnet were observed during the 2008 field work conducted for relicensing. Orono Sedge is a fern that typically grows in the Penobscot River drainage, mostly along disturbed or man-made habitats such as fields, road sides, power lines etc. Slender rush is identified as state-listed Endangered and is a perennial herb that occurs along freshwater shorelines and open wetlands. Potential suitable habitat may exist for Orono sedge and Slender rush but these species have not been confirmed in the project area.

The discussion of the effects of the Project on listed species, and the applicable standards, are consistent within the Zones of Effect. As such, this resource is discussed by species collectively for all Zones of Effect.

Criterion	Standard	Supporting Information
F	**2** There are listed species in the area, but the facility has been found by an appropriate resource management agency to have no negative effect on them, or habitat for the species does not exist within the project's affected area or is not impacted by facility operations.	Finding of No Negative Effects: • Identify all federal and state listed species in the facility area based on current data from the appropriate state and federal natural resource management agencies. • Provide documentation that there is no demonstrable negative effect of the facility on any listed species in the area from an appropriate natural resource management agency or provide documentation that habitat for the species does not exist within the Zone of Effect or is not impacted by facility operations.

Routine project operations are not anticipated to affect Canada lynx, NLEB or other bat species. There may be periodic vegetation clearing for dam safety, access, and other purposes but these would not affect the largely transient occurrence of Canada lynx and would be conducted in accordance with the Section 4(d) rule for NLEB using the USFWS streamlined consultation process and would be extremely limited given how little land is located within the project boundary. In addition, vegetation removal within 250 ft of any waterway is regulated by the Maine Department of Environmental Protection Shoreland Zoning Act and much of the shoreline around the Brassua impoundment is protected by the SMP. As such, no negative effects are anticipated by this periodic activity.

Other state listed species of special concern have the potential to be present within the project boundary. However, as stated, routine operations would not be anticipated to affect these species and vegetation removal is regulated by the Maine Department of Environmental Protection Shoreland Zoning Act and special resource areas are protected under the Project SMP.

3.7 CULTURAL AND HISTORIC RESOURCES

The stated Low Impact Hydropower Institute goal for Criterion G – Cultural and Historic Resource Protection is "The facility does not unnecessarily impact cultural or historic resources that are associated with the facility's lands and waters, including resources important to local indigenous populations, such as Native Americans."

There are several sites eligible for listing on the NRHP and the Project operates under a FERC approved HPMP. The discussion of the effects of the Project on cultural and historic resources, and the applicable standards, are consistent within the Zones of Effect. As such, this resource is discussed by species collectively for all Zones of Effect.

Criterion	Standard	Supporting Information
G	2 The facility is in compliance with approved state, federal, and recognized tribal plans for protection, enhancement, or mitigation of impacts to cultural or historic resources affected by the facility.	Approved Plan: • Provide documentation of all approved state, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility. • Document that the facility is in compliance with all such plans.

According to the FERC EA, five Native American sites were determined to be eligible for listing in the National Register of Historic Placed (NRHP) under Criterion D (has yielded or is likely to yield information important to history or prehistory). These are Maine state site numbers 111.111, 117.138, 117.181, 117.182 and 111.184. These sites are variously subject to a degree of shoreline erosion. Two historic sites associated with timber harvesting and log driving in the area of Brassua Reservoir were determined to be eligible for listing in the NRHP under Criterion D. These are Maine state site numbers ME 525-002 and ME 887-001. Portions of the two eligible historic archaeology sites are within the APE for the Project, however the major

portions of these are outside the Project boundary and are not affected by Project operations. The Brassua Dam was determined eligible for the NRHP under Criterion A, for its association with the efforts to improve the water storage in the upper Kennebec River watershed and the flow of water in the Kennebec River for both water power and log driving purposes, under Criterion B, for its association with H. S. Ferguson, the Resident Engineer, who was responsible for other significant water power projects in Maine in the early twentieth century, and under Criterion C for its representative design.

To satisfy Section 106 responsibilities, the Commission executed a Programmatic Agreement (PA) with the Maine SHPO on October 17, 2011. The PA requires the licensees to implement the July 2010 HPMP for the term of the new license. Execution of the PA demonstrates the Commission's compliance with section 106 of the NHPA. Article 409 requires the licensees to implement the PA and HPMP, as discussed in Section 1.4.

The HPMP is a plan for considering and managing the effects of hydropower facility activities (such as construction, operation, and maintenance) on historic properties. Historic properties include properties listed in or eligible for listing in the NRHP. The HPMP establishes a decision-making process for considering the potential effects on historic properties and manages the effects of implementing the license over its entire term on historic properties.

While the HPMP for the Brassua Project outlines specific policies and procedures for the protection of historic properties, the SMP includes certain provisions for considering potential impacts to cultural resources located along the reservoir shoreline associated with shoreline development activities. All of the known archaeological sites will require an appropriate level of review and/or protection prior to future shoreline development. For instance, known archaeological sites will need to be reviewed for sensitivity to disturbance during the planning of any new development, and archaeological sites of significance (i.e., eligible for listing in the NRHP) may need to be either protected from development or mitigated for direct effects of development.

Stipulation I.B. of the PA and Section 5.3 of your approved HPMP requires that BWPH file an annual report by February 15 of each year with the SHPO and the Commission on activities undertaken at the project related to implementation of the HPMP. On February 16, 2021, BWPH filed the first annual report under the new license, and FERC determined this filing fulfilled the annual report filing requirement of your approved HPMP for 2021 by letter dated May 18, 2021.

3.8 RECREATIONAL RESOURCES

The stated Low Impact Hydropower Institute goal for Criterion H – Recreation Resources is "The facility accommodates recreation activities on lands and waters controlled by the facility and provides recreational access to its associated lands and waters without fee or charge."

The Brassua Project provides a variety of opportunities for public recreation. The area surrounding the Project is largely undeveloped and heavily forested, and because there are few roads, public access is limited. Logging roads provide informal access to the Project area, and both the reservoir and lower Moose River can be accessed by boaters coming from upstream or downstream. The Licensees provide public recreation access at several formal recreation sites

that provide opportunities for bank fishing and motorized and nonmotorized boating. The Project recreation areas consist of three recreational facilities owned and managed by the Licensees: bank fishing and angling access at the dam, a canoe portage trail, and Misery Cove Boat Launch - a boat launch located along Route 15 (see figures below). There are also four primitive campsites at the Project that are located and/or accessed via lands within the project boundary.

The 2009 Form 80 Report on Recreational Resources indicates that the Brassua Project supported 51,000 recreation days during 2008. Approximately 90 percent of this use was attributable to day use activities such as angling and boating; nearly 10 percent of total use was attributable to camping. None of the public recreation sites were reported to be at capacity, though the dam access area was reported to be at approximately 70 percent of capacity on non-holiday weekends. The Misery Cove Boat Launch was reported to be at approximately 25 percent capacity, on average, on non-holiday weekends, while the canoe portage was reported to be at about 15 percent of capacity, on average.

Existing recreation facilities are adequate to meet current recreational use and demand.

FIGURE 12. RECREATION FACILITIES AT BRASSUA PROJECT

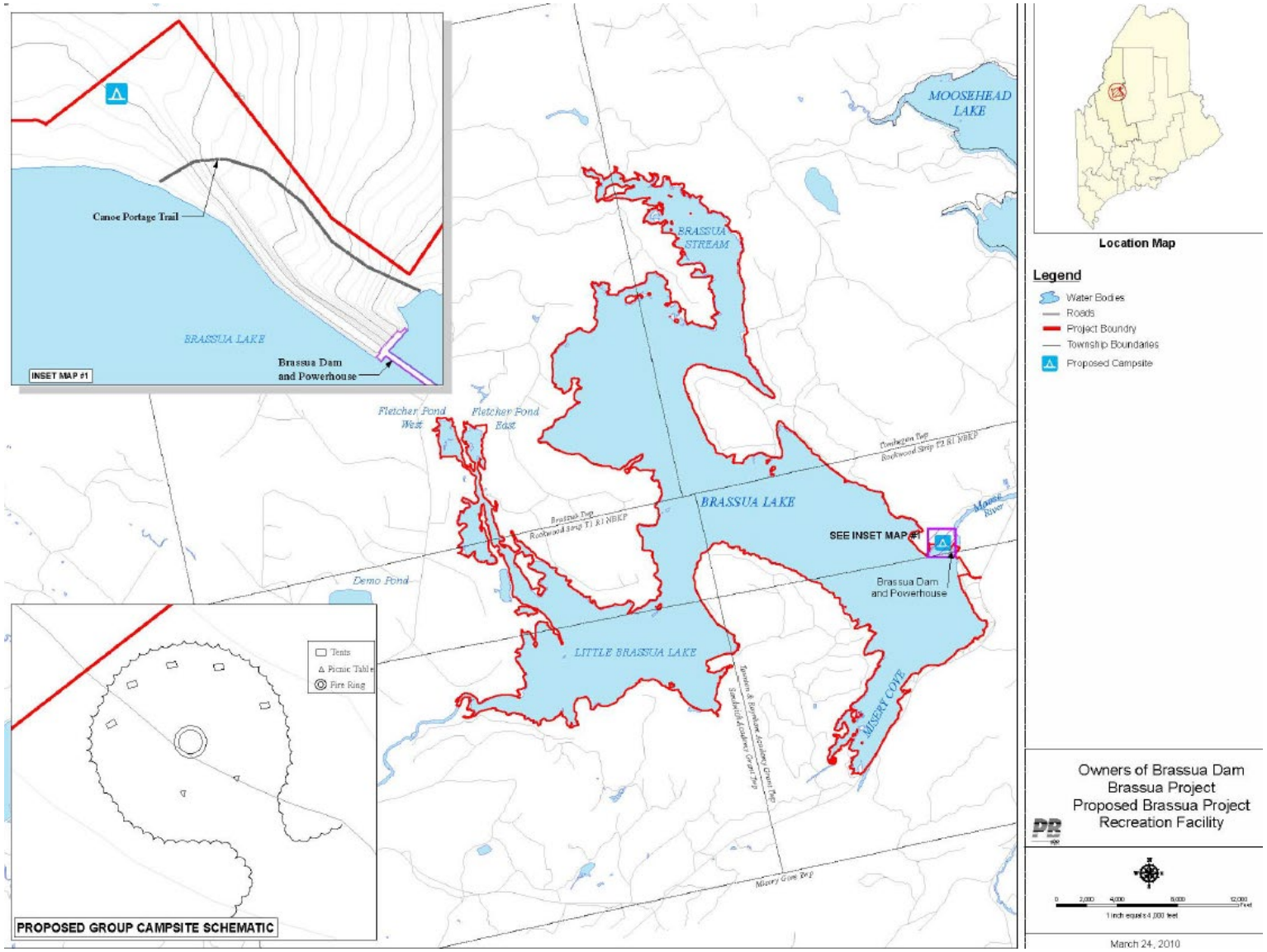
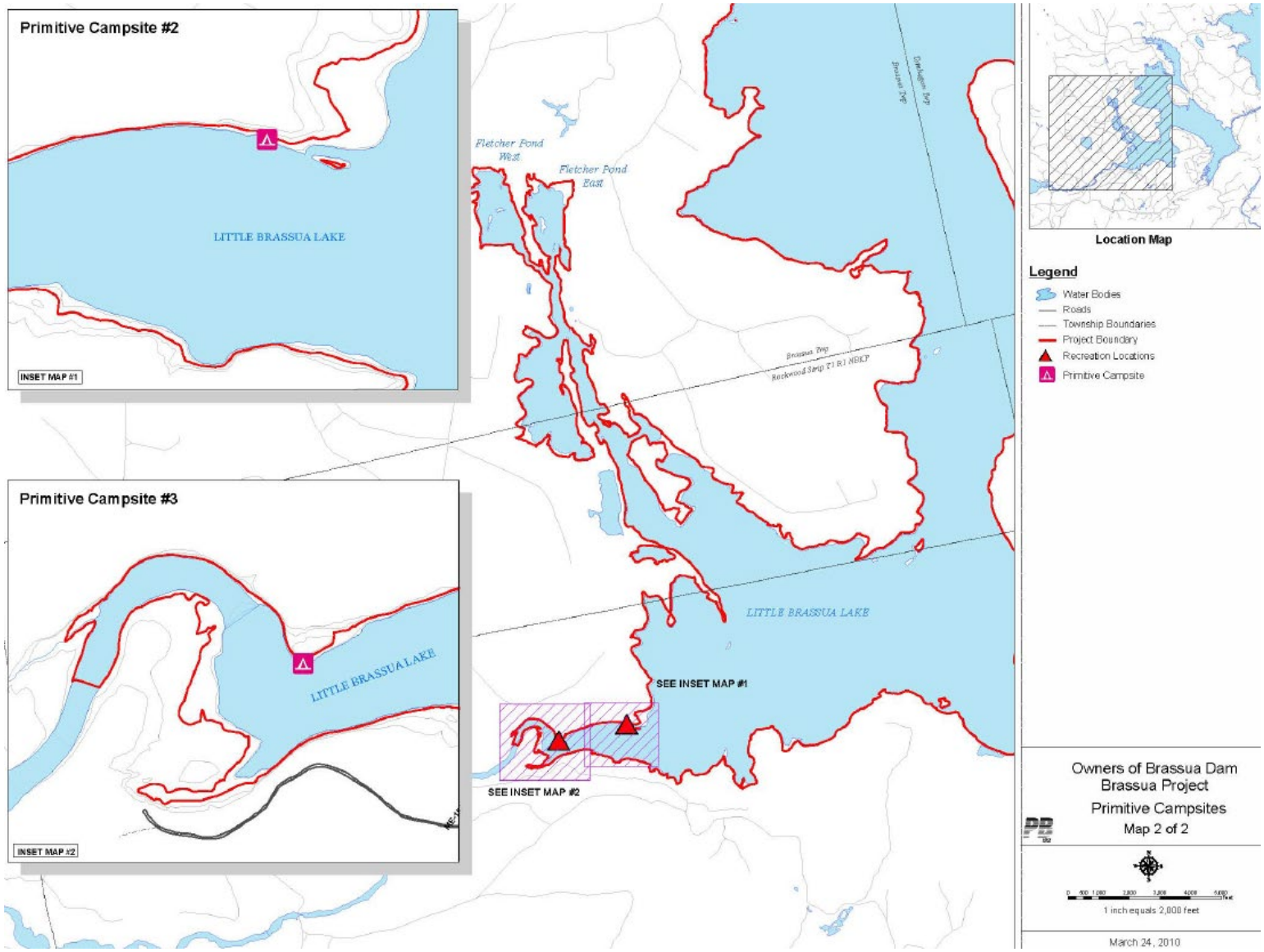


FIGURE 13. PRIMITIVE CAMPSITES AT BRASSUA PROJECT



The Project operates under a FERC approved Recreation Facilities Management Plan which requires BWPH to:

(a) monitor and conduct periodic excavation of the gravel bar at the Misery Cove Boat Launch to ensure that boating access is maintained at elevations of 1,067.0 feet msl or higher;

(b) conduct the proposed recreation use survey every five years instead of every six years;

(c) during the recreation use survey, conduct spot counts at each project recreation facility to determine site utilization and capacity on eight weekdays and five weekends, including one holiday weekend (Memorial Day, Independence Day, or Labor Day) between May 31 and October 1, and between the hours of 8 a.m. and 5 p.m.;

(d) continue to maintain a toll-free phone system that is updated daily at 6 p.m. from April to October to provide the anticipated elevation levels of Brassua Lake and river flow from dam for the following day;

(e) provide a public internet site that: (1) describes recreational access at the project; (2) describes the amenities available at each project recreation facility; (3) includes a map of the project recreation facilities; and (4) displays the telephone number for the toll-free phone system; and

(f) file with the Commission the results of the recreation use survey, including any comments received from interested parties about the survey, and any conclusions regarding the need for additional access areas or expansion of existing project recreation sites, by April 1 of each year following the recreation use survey.

As discussed above, the RFMP was filed for the Project on September 28, 2020 and a supplemental additional information filing was submitted on February 24, 2021.

3.8.1 ZONE 1 – IMPOUNDMENT

Criterion	Standard	Supporting Information
H	**2** The facility demonstrates compliance with resource agency recommendations for recreational access or accommodation (including recreational flow releases), or any enforceable recreation plan in place for the facility.	Agency Recommendation: • Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations. • Document that the facility is in compliance with all such recommendations and plans.

The Project reservoir and tailwater are used primarily for power boating and/or fishing and sightseeing. On the reservoir, fishing and power boating are the most frequent recreational activity, followed by paddling.

The Misery Cove Boat Launch, located on a gravel entrance road off of Route 15 west of Brassua Dam, provides a single lane concrete boat ramp, a turn-around, and a

parking lot for about 9 to 10 vehicles with trailers. Motorized boat launching is the primary recreational activity at the access area, which provides access to the impoundment.

The boat launch is useable when the reservoir is within approximately five feet of full pool level (el. 1,074'). The Misery Cove boat launch is located in a cove with relatively shallow water depth. When the reservoir is near full pool, the boat launch is fully functional and can be used to launch small to medium sized watercraft, of the type appropriate for a Maine lake of this size. However, as the reservoir water level declines in the late summer or fall the boat launch can become difficult or impossible to use though these conditions generally don't occur until October. The RFMP requires periodic monitoring and excavation of the Misery Cove Boat Launch, to ensure access at elevations of 1,067.0 ft is maintained.

FIGURE 14. MISERY COVE BOAT LAUNCH PARKING AREA

FIGURE 15. MISERY COVE BOAT LAUNCH RAMP

There are also four primitive campsites on Brassua Reservoir. These sites are not formal or maintained campgrounds but public use of these sites for camping has been generally allowed by the landowners. These campsites are either located partially within the project boundary or the access to these sites from the water crosses the Project boundary (i.e. the Project boundary generally follows elevation 1,076' (USGS) around the reservoir and normal full pond elevation is 1,074'. The Licensees own this land surrounding the reservoir between the normal full pond elevation of 1,074' up to the Project boundary at elevation 1,076'.

Site 1 is located on the northern shore near the inlet of Brassua Stream on private lands outside of the Project boundary and is the responsibility of the landowner (Weyerhaeuser Company). Although there is trail access to this campsite outside of the project boundary, water access to this campsite is across lands within the Project boundary.

Primitive campsites 2 and 3 are located partially within the Project boundary and on lands outside of the Project boundary owned by Weyerhaeuser Company and are located at the inlet of the upper Moose River as it enters Brassua Reservoir. These sites are water access only across lands within the Project boundary. BWPH maintains these two sites as identified in section 6.1 of the RFMP.

These three sites collectively are traditional Maine Forest Service fire permit sites that have been available for public use for many years.

Primitive campsite 4 was constructed by the Northern Forest Canoe Trail (NFCT) on an island in Brassua Reservoir near Poplar Hill on private lands outside of the Project boundary. The NFCT runs down the Moose River and through Brassua Reservoir. The site is owned by a private landowner and maintained and operated by NFCT staff. This site is water access only across lands within the Project boundary. Facilities at this campsite include signage, a picnic table, privy, and a sign-in box.

Sites 1 and 4 are not within the Licensees' Project boundary nor on lands owned by the Licensees and are managed and maintained by other entities. While Sites 2 and 3 are partially within the Project boundary and would be maintained by BWPH, they are largely located on lands owned by others. The Licensees fully support these sites as informal and primitive. In addition to the annual inspections of Sites 2 and 3 as outlined in Section 6.1 of the RFMP, the Licensee and their consultants will visit the remaining primitive sites several times annually during other routine monitoring requirements and will use these opportunities to evaluate the status of these other primitive sites over time. Should a site become unusable for any reason such as erosion, blow-downs, or other natural occurrences, the Licensee will work with the landowner to have the site repaired or a new site delineated/developed as appropriate and desirable.

FIGURE 16. PRIMITIVE CAMPSITE NO. 1 AT BRASSUA STREAM

FIGURE 17. PRIMITIVE CAMPSITE NO. 2 NEAR INLET OF MOOSE RIVER INTO BRASSUA RESERVOIR

FIGURE 18. PRIMITIVE CAMPSITE NO. 3 NEAR INLET OF MOOSE RIVER INTO BRASSUA RESERVOIR

FIGURE 19. PRIMITIVE CAMPSITE NO. 4 ON ISLAND IN BRASSUA RESERVOIR

3.8.2 ZONE 2 – BYPASS REACH & ZONE 3 TAILRACE/DOWNSTREAM

Criterion	Standard	Supporting Information
H	**2** The facility demonstrates compliance with resource agency recommendations for recreational access or accommodation (including recreational flow releases), or any enforceable recreation plan in place for the facility.	Agency Recommendation: • Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations. • Document that the facility is in compliance with all such recommendations and plans.

The Brassua Dam and River Access Area, located at Brassua Dam on the gravel entrance road off of Route 15, provides a parking area, a portable toilet, and bank fishing accessible to pedestrian traffic for the south and north shores of the Moose River below Brassua Dam. Bank fishing and fishing by wading are the primary recreational activities but sightseers also use this site.

FIGURE 20. SIGN AND TRAILHEAD FOR BRASSUA DAM AND RIVER ACCESS AREA LOCATED ALONG THE SOUTH SHORE OF THE TAILRACE DOWNSTREAM OF THE DAM

FIGURE 21. BRASSUA DAM RIVER ACCESS AREA ANGLER TRAIL

The canoe portage trail can also be reached by pedestrian traffic from the access area. The canoe portage trail, located on the north side of Brassua Dam, allows access to the Moose River. The entire length of the trail is about 800 feet and the overall slope is approximately 5 percent. Usage by paddlers is the primary recreational activity, in addition to bank fishing, along the north shore river access. This canoe portage trail is included as part of the NFCT.

FIGURE 22. PARKING AREA FOR BRASSUA DAM AND RIVER ACCESS AREA AND BRASSUA DAM CANOE PORTAGE TRAIL

FIGURE 23. CANOE PORTAGE TAKE OUT

FIGURE 24. CANOE PORTAGE PUT IN

4.0 SWORN STATEMENT AND WAIVER FORM

All applications for LIHI Certification must include the following sworn statement before they can be reviewed by LIHI:

SWORN STATEMENT

As an Authorized Representative of Brookfield White Pine, *the Undersigned attests that the material presented in the application is true and complete.*

The Undersigned acknowledges that the primary goal of the Low Impact Hydropower Institute's certification program is public benefit, and that the LIHI Governing Board and its agents are not responsible for financial or other private consequences of its certification decisions.

The Undersigned further acknowledges that if LIHI Certification of the applying facility is granted, the LIHI Certification Mark License Agreement must be executed prior to marketing the electricity product as LIHI Certified®.

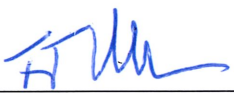
The Undersigned further agrees to hold the Low Impact Hydropower Institute, the Governing Board and its agents harmless for any decision rendered on this or other applications, from any consequences of disclosing or publishing any submitted certification application materials to the public, or on any other action pursuant to the Low Impact Hydropower Institute's certification program.

Company Name: Brookfield White Pine Hydro LLC

Authorized Representative:

Name: Thomas Uncher

Title: VP, Operations

Authorized Signature: 

Date: 12/13/21

5.0 CONTACTS FORM

5.1 APPLICANT RELATED CONTACTS

Facility Owner:	
Name and Title	Tom Uncher, Vice President
Company	Brookfield White Pine Hydro LLC
Phone	518-743-2018
Email Address	Tom.Uncher@brookfieldrenewable.com
Mailing Address	150 Main St. Lewiston, Maine 04240
Facility Operator (if different from Owner):	
Name and Title	Joel Rancourt, Senior Operations Manager
Company	Brookfield White Pine Hydro LLC
Phone	207-660-5461
Email Address	Joel.Rancourt@brookfieldrenewable.com
Mailing Address	28 Weston St. Skowhegan, Maine 04976
Consulting Firm / Agent for LIHI Program (if different from above):	
Name and Title	N/A
Company	
Phone	
Email Address	
Mailing Address	
Compliance Contact (responsible for LIHI Program requirements):	
Name and Title	Kelly Maloney; Manager, Compliance - Northeast
Company	Brookfield Renewable
Phone	(207)755-5606
Email Address	Kelly.Maloney@brookfieldrenewable.com
Mailing Address	150 Main Street, Lewiston, Maine 04240
Party responsible for accounts payable:	
Name and Title	Judith Charette Manger, Accounts Payable, Finance & Accounting
Company	Brookfield Renewable
Phone	819-561-8099
Email Address	Judith.Charette@brookfieldrenewable.com
Mailing Address	Mailing Address 41 Victoria, Gatineau, QC, Canada J8X2A1

5.2 CURRENT AND RELEVANT STATE, FEDERAL, AND TRIBAL RESOURCE AGENCY CONTACTS WITH KNOWLEDGE OF THE FACILITY

Agency Contact (Check areas of responsibility: Flows__, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources _X_, Recreation __):	
Agency Name	Advisory Council on Historic Preservation
Name and Title	John M Fowler, Executive Director
Phone	202-517-0200
Email address	Jfowler@achp.gov
Mailing Address	401 F Street N.W. Suite 308 Washington, DISTRICT OF COLUMBIA 20001-2637
Agency Contact (Check areas of responsibility: Flows__, Water Quality _X_, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	Maine Department of Environmental Protection
Name and Title	Nick Livesay, Director
Phone	207-530-0965
Email address	Nick.Livesay@maine.gov
Mailing Address	Central Maine Regional Office, 17 State House Station, Augusta, Maine 04333
Agency Contact (Check areas of responsibility: Flows__, Water Quality __, Fish/Wildlife Resources __, Watersheds _X_, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	U. S. National Park Service
Name and Title	Kevin Mendik, ESQ. NPS Hydro Program Coordinator
Phone	617-223-5299
Email address	Kevin_Mendik@NPS.gov
Mailing Address	15 State Street 10th floor, Boston, Massachusetts 02109
Agency Contact (Check areas of responsibility: Flows__, Water Quality __, Fish/Wildlife Resources _X_, Watersheds __, T/E Spp. _X_, Cultural/Historic Resources __, Recreation __):	
Agency Name	Maine Department of Inland Fisheries and Wildlife
Name and Title	John Perry, Environmental Review Coordinator
Phone	207-287-5254
Email address	John.Perry@maine.gov
Mailing Address	284 State Street, 41 SHS Augusta, Maine 04333-0041
Agency Contact (Check areas of responsibility: Flows__, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation _X_):	
Agency Name	Maine Dept. of Agriculture, Conservation and Forestry, Bureau of Parks and Lands
Name and Title	Amanda Beal
Phone	207-287-3419
Email address	Amanda.Beal@maine.gov
Mailing Address	22 State House Station, Augusta, ME 04333

Agency Contact (Check areas of responsibility: Flows__, Water Quality _X_, Fish/Wildlife Resources _X_, Watersheds _X_, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	Maine Department of Environmental Protection
Name and Title	Kathy Davis Howatt, Hydropower Coordinator
Phone	207-446-2642
Email address	kathy.howatt@maine.gov
Mailing Address	Central Maine Regional Office, 17 State House Station, Augusta, Maine 04333
Agency Contact (Check areas of responsibility: Flows__, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources _X_, Recreation __):	
Agency Name	Maine Historic Preservation Commission
Name and Title	Kirk Mohney; Director
Phone	207287-3811
Email address	Kirk.Mohney@maine.gov
Mailing Address	55 Capitol Street, 65 State House Station, Augusta, Maine 04333
Agency Contact (Check areas of responsibility: Flows__, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	United States Fish and Wildlife Service
Name and Title	Julianne Rosset
Phone	603-309-4842
Email address	julianne_rosset@maine.gov
Mailing Address	306 Hatchery Road, East Orland, Maine 04431
Agency Contact (Check areas of responsibility: Flows__, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. _X_, Cultural/Historic Resources __, Recreation __):	
Agency Name	
Name and Title	
Phone	
Email address	
Mailing Address	
Agency Contact (Check areas of responsibility: Flows__, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	
Name and Title	
Phone	
Email address	
Mailing Address	
Agency Contact (Check areas of responsibility: Flows__, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	
Name and Title	
Phone	
Email address	
Mailing Address	

5.3 CURRENT STAKEHOLDER CONTACTS THAT ARE ACTIVELY ENGAGED WITH THE FACILITY

Stakeholder Contact (Check areas of interest: Flows__, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Stakeholder Organization	
Name and Title	
Phone	
Email address	
Mailing Address	
Stakeholder Contact (Check areas of interest: Flows__, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Stakeholder Organization	
Name and Title	
Phone	
Email address	
Mailing Address	
Stakeholder Contact (Check areas of interest: Flows__, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Stakeholder Organization	
Name and Title	
Phone	
Email address	
Mailing Address	
Stakeholder Contact (Check areas of interest: Flows__, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Stakeholder Organization	
Name and Title	
Phone	
Email address	
Mailing Address	
Stakeholder Contact (Check areas of interest: Flows__, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Stakeholder Organization	
Name and Title	
Phone	
Email address	
Mailing Address	

6.0 FERC AND REGULATORY INFORMATION

6.1 FERC LICENSE AND AMENDMENT ORDERS

- 20100331 License Application Volume 1 of 5 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=12306410
- 20100331 License Application Volume 2 of 5 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=12306411
- 20100331 License Application Volume 3 of 5 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=12306412
- 20110914 Notice of availability of final environmental assessment https://elibrary.ferc.gov/eLibrary/filedownload?fileid=12763868
- 20200415 Order Issuing New License https://elibrary.ferc.gov/eLibrary/filedownload?fileid=15510243

6.2 WATER QUALITY CERTIFICATION, AMENDMENTS, AND REPORTS

- 20180430 Brookfield Submittal of Brassua WQC Consultation Record Request https://elibrary.ferc.gov/eLibrary/filedownload?fileid=14902003
- 20180405 FERC Letter Requesting Additional Information on Water Quality Certification https://elibrary.ferc.gov/eLibrary/filedownload?fileid=14864138

6.3 SETTLEMENT AND OTHER AGREEMENTS

- Programmatic Agreement https://elibrary.ferc.gov/eLibrary/filedownload?fileid=12906388

6.4 COMPLIANCE PLANS, EXHIBITS AND MONITORING REPORTS

- 20201104 Brookfield submittal of Exhibit G drawings https://elibrary.ferc.gov/eLibrary/filedownload?fileid=15653959
- 20201204 Order Approving Operation Compliance Monitoring Plan Pursuant to Article 402 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=15672621
- 20200930 Operation Compliance Monitoring Plan for FERC approval pursuant to License Article 402 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=15631640

6.4.1 ECOLOGICAL FLOWS AND WATER QUALITY

- 20200918 Brassua Lake Excursion Report https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020A061A-66E2-5005-8110-C31FAFC91712
- 20201021 Brassua Lake Excursion Report https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020A5AD8-66E2-5005-8110-C31FAFC91712
- Brookfield Renewable Energy Group submits Lake Level Excursion Report for Brassua Project under P-2615.20210805 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=15841283
- Brookfield Renewable Energy Group submits notice of the completion of the south embankment slope remediation and the return of the reservoir normal operation

elevation and minimum flow releases for the Brassua Project https://elibrary.ferc.gov/eLibrary/filedownload?fileid=97D7D89E-CA50-C7A9-9C12-7D2993E00000

- 20170824 Brassua Temporary Variance of Fall Flows https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01EDCDE8-66E2-5005-8110-C31FAFC91712
- Letter to Brookfield White Pine Hydro, LLC et al re the 8/24/17 request for a variance in the flow release schedule required by Article 405 for the Brassua Project under P-2615. https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01EDE2BB-66E2-5005-8110-C31FAFC91712
- 20180815 Brassua Temporary Variance of Fall Flows https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01F8632E-66E2-5005-8110-C31FAFC91712
- 20190830 Brassua Temporary Variance of Fall Flows https://elibrary.ferc.gov/eLibrary/filedownload?fileid=02033941-66E2-5005-8110-C31FAFC91712
- Letter order to Brookfield White Pine Hydro LLC et al accepting the 08/30/2019 request for a variance in the flow release schedule required by Article 405 of the license for the Brassua Hydroelectric Project under P-2615. https://elibrary.ferc.gov/eLibrary/filedownload?fileid=02037B03-66E2-5005-8110-C31FAFC91712
- 20210226 Brassua Temporary Variance Request https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020BF854-66E2-5005-8110-C31FAFC91712
- Order Granting Temporary Variance of Article 401 re Brookfield White Pine Hydro, LLC et al under P-2615. https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020D5BB5-66E2-5005-8110-C31FAFC91712
- Letter informing Brookfield White Pine Hydro, LLC et al that the deviations from the reservoir elevation requirements from September 3 to 15, 2020 et al will not be considered violations of Article 401 for the Brassua Project under P-2615 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020AB0B9-66E2-5005-8110-C31FAFC91712
- Letter informing Brookfield White Pine Hydro LLC et al that the deviation from the required reservoir level and fish attraction flows will not be considered a violation of the license for the Brassua Hydroelectric Project under P-2615. https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01E6026D-66E2-5005-8110-C31FAFC91712
- Brookfield Renewable Energy Group submits the Annual Report on Unplanned Deviation from Minimum Flow and Reservoir Elevation Requirements for the Brassua Project under P-2615. https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020B5EF5-66E2-5005-8110-C31FAFC91712
- Letter to Brookfield White Pine Hydro, LLC et al discussing the 2020 annual report of unplanned deviations lasting 3 hours or less for the Brassua Hydroelectric Project under P-2615. https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020CAB5E-66E2-5005-8110-C31FAFC91712

- Letter informing Brookfield White Pine Hydro, LLC et al that the deviation from the reservoir elevation requirements that occurred on 07/31/2021 will not be considered a violation of Article 401 for Brassua https://elibrary.ferc.gov/eLibrary/filedownload?fileid=E4EEF45C-16EC-C716-97EB-7D2419600000

6.4.2 SHORELINE AND WATERSHED PROTECTION

- 20200928 Article 408 Brookfield Submittal of Shoreline Management Plan for FERC approval https://elibrary.ferc.gov/eLibrary/filedownload?fileid=15630585

6.4.3 FISH PASSAGE

NA

6.4.4 THREATENED AND ENDANGERED SPECIES

- See Section 7.0 for Maine Natural Areas Programs and Maine Department of Inland Fisheries & Wildlife correspondence
- 20190927 FERC Issuance of USFWS IPac report https://elibrary.ferc.gov/eLibrary/filedownload?fileid=15363376
- 20200324 FERC Issuance of USFWS IPac report https://elibrary.ferc.gov/eLibrary/filedownload?fileid=15490436
- 20200221 FERC Issuance of ESA Concurrence Letter – Canada Lynx https://elibrary.ferc.gov/eLibrary/filedownload?fileid=15468243
- 20200325 USFWS Submittal – Canada Lynx Concurrence Letter https://elibrary.ferc.gov/eLibrary/filedownload?fileid=15493012

6.4.5 CULTURAL AND HISTORIC RESOURCES

- 20180613 Archaeological Report https://elibrary.ferc.gov/eLibrary/filedownload?fileid=14945090
- 20170214 Archaeological Report https://elibrary.ferc.gov/eLibrary/filedownload?fileid=14492308

6.4.6 RECREATIONAL RESOURCES

- 20210224 Brookfield submittal of Additional Information Request on Recreation Facility Management Plan https://elibrary.ferc.gov/eLibrary/filedownload?fileid=15722134
- 20210210 FERC Request for Additional Information to process application Recreation Facilities Management Plan https://elibrary.ferc.gov/eLibrary/filedownload?fileid=15714293
- 20200928 Article 407 Brookfield submittal of Recreation Facilities Management Plan for FERC approval https://elibrary.ferc.gov/eLibrary/filedownload?fileid=15630562
- Brookfield White Pine Hydro LLC submits a follow up update re facility improvements outlined in the Recreation Facilities Management Plan for the Brassua Project under P-2615.

https://elibrary.ferc.gov/eLibrary/filedownload?fileid=6867EB4E-9BDC-C149-9EBD-7CE6EFA00000

- Brookfield White Pine Hydro LLC et. al. submits notice of partial completion of recreation facilities and submit a request for an extension of time to complete the access trail improvements for the Brassua Project under P-2615. https://elibrary.ferc.gov/eLibrary/filedownload?fileid=2F955D14-8762-C8DF-9CAB-7BACA7300000
- Order Modifying Schedule for Filing Recreation Monitoring Report re Brookfield White Pine Hydro, LLC et al under P-2615. https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020D3955-66E2-5005-8110-C31FAFC91712
- Brookfield Renewable Energy Group submits Request for Extension of Time to Conduct Recreation Monitoring Due to Covid19 Outbreak for Brassua Project under P-2615. https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020C7A60-66E2-5005-8110-C31FAFC91712
- Order Modifying and Approving Recreation Facilities Management Plan Pursuant to Article 407 re Brookfield White Pine Hydro, LLC et al under P-2615 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020C694A-66E2-5005-8110-C31FAFC91712
- Brookfield Renewable Energy Group submits the Brassua Recreation Facility Management Plan for the Brassua Project under P-2615. https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020BE933-66E2-5005-8110-C31FAFC91712
- Response to FERC April 15, 2020 Order Issuing New License Article 407 Requirement for Submitting Revised Recreation Facilities Management Plan for Agency Consultation and FERC Review and Approval of Brookfield White Pine Hydro LLC under P-2615. https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020A2236-66E2-5005-8110-C31FAFC91712

6.5 LICENSE AND CERTIFICATION COMPLIANCE

- See documentation by resource area above.

7.0 SUPPORTING DOCUMENTATION

- MDIFW RTE Species Information
- MNAP RTE Species Information

From:	Settele, Rebecca
To:	Frechette, Allison
Cc:	Perry, John
Subject:	RE: LIHI certification of Brookfield Renewables Existing Brassua Hydroelectric Project, Rockwood, Maine
Date:	Thursday, February 04, 2021 3:48:06 PM

Hi Allison,

The following state-listed Endangered, Threatened, and Special Concern species have been documented in the general vicinity of the Brassua Hydroelectric Project Area. Note that this list should not be considered all-inclusive:

Rusty Blackbird (Special Concern)

Note: Bald eagles have been documented in the Project area. Until recently, bald eagles were listed as a Species of Special Concern in Maine. However, eagles continue to be protected under the federal Bald Eagle and Golden Eagle Protection Act ("Eagle Act") as well as other federal laws.

In addition, while a comprehensive statewide inventory for bats has not been completed it is likely that several of species of bats occur within the project area during migration and/or the breeding season.

Little brown bat (State Endangered)
Northern long-eared bat (State Endangered)
Eastern small-footed bat (State Threatened)
Big brown bat (Special Concern)
Red bat (Special Concern)
Hoary bat (Special Concern)
Silver-haired bat (Special Concern)
Tri-colored bat (Special Concern)

Finally, please note that this list does not include any listed species of migratory birds that are likely found in the area during spring and fall migrations.

It is not known what effects, if any, the operations of the project may have on any of the species listed above.

Please let us know if you need additional information.

Thanks,

Becca Settele
Wildlife Biologist
Maine Dept of Inland Fisheries & Wildlife
Wildlife Division
650 State St

Bangor ME 04401
Office (207)941-4438
Cell (207) 592-3846
mefishwildlife.com | facebook | twitter

From: Perry, John <John.Perry@maine.gov>
Sent: Wednesday, February 03, 2021 5:54 AM
To: Perry, John <John.Perry@maine.gov>
Subject: LIHI certification of Brookfield Renewables Existing Brassua Hydroelectric Project, Rockwood, Maine

---

From: Frechette, Allison <Allison.Frechette@brookfieldrenewable.com>
Sent: Tuesday, February 02, 2021 12:24 PM
To: Perry, John <John.Perry@maine.gov>
Subject: Request for State listed threatened or endangered species: LIHI certification of Brookfield Renewables Existing Brassua Hydroelectric Project, Rockwood, Maine

Hello John,
Similar to the request I had for the Bonny Eagle Project in December, I am reaching out to request data on known or possible state listed species at the Brassua Hydro Project in Rockwood, ME. This data is being complied for an application for Low Impact Hydropower Institute (LIHI) Certification of an existing Hydroelectric project, there will be no changes to water flows above or below the dam. Let me know if you require anything further for this request. Below is a link to our Exhibit G Maps (project boundary maps) through the FERC elibrary and attached is an approximate project boundary google kmz file.

Exhibit G maps link:
https://elibrary.ferc.gov/eLibrary/filedownload?fileid=15653959

Warm & safe regards,
Allison Frechette
Compliance Specialist

T 800.371.7774
C 207.320.1440
allison.frechette@brookfieldrenewable.com
www.brookfieldrenewableUS.com

Brookfield
Renewable U.S.

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
177 STATE HOUSE STATION
AUGUSTA, MAINE 04333

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

February 9, 2021

Allison Frechette
Brookfield Renewable
150 Main Street
Lewiston, ME 04240

Via email: allison.frechette@brookfieldrenewable.com

Re: Rare and exemplary botanical features in proximity to: Brassua Hydro Project, LIHI Certification, Brassua Twp, Tomhegan Twp, Rockwood Strip T1 R1 NBKP, Rockwood Strip T2 R1 NBKP, Sandwich Academy Grant Twp, and Taunton & Raynam Academy Grant, Maine

Dear Ms. Frechette:

I have searched the Maine Natural Areas Program's Biological and Conservation Data System files in response to your request received February 2, 2021 for information on the presence of rare or unique botanical features documented from the vicinity of the Brassua Hydro LIHI Certification project in Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project site. The list may include information on features that have been known to occur historically in the area as well as recently field-verified information. While historic records have not been documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area, and it should be considered if you choose to conduct field surveys.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

MOLLY DOCHERTY, DIRECTOR
MAINE NATURAL AREAS PROGRAM
BLOSSOM LANE, DEERING BUILDING

DEPARTMENT OF Agriculture Conservation & Forestry

PHONE: (207) 287-804490
WWW.MAINE.GOV/DACF/MNAP

The Maine Natural Areas Program (MNAP) is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. MNAP welcomes coordination with individuals or organizations proposing environmental alteration or conducting environmental assessments. If, however, data provided by MNAP are to be published in any form, the Program should be informed at the outset and credited as the source.

The Maine Natural Areas Program has instituted a fee structure of $75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for $150.00 for two hours of our services.

Thank you for using MNAP in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

Lisa St. Hilaire

Lisa St. Hilaire | Information Manager | Maine Natural Areas Program
207-287-8044 | lisa.st.hilaire@maine.gov

Rare and Exemplary Botanical Features within 4 miles of

Project: FERC No. 2615, Brassua Hydro LIHI recertification, Brassua Twp, Tomhegan Twp, Rockwood Strip T1 and T2 R1 NBKP, Sandwich Academy Grant Twp, Taunton & Raynam Academy Grant, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
Acidic Cliff						
	<null>	S4	GNR	1996-06-27	1	Rocky summits and outcrops (non-forested, upland)
Beaked Sedge						
	SC	S2	G5	2014-06-24	22	<null>
Canada Burnet						
	T	S1	G5	1933	1	Conifer forest (forest, upland),Non-tidal rivershore (non-forested, seasonally wet)
Long-leaved Bluet						
	SC	S2S3	G5TNR	ND	6	Non-tidal rivershore (non-forested, seasonally wet)
Lower-elevation Spruce - Fir Forest						
	<null>	S5	GNR	2009-03-03	35	Conifer forest (forest, upland)
Orono Sedge						
	T	S3	G3	1989-06-28	50	Old field/roadside (non-forested, wetland or upland)
	T	S3	G3	1989-06-28	47	Old field/roadside (non-forested, wetland or upland)
Patterned Fen Ecosystem						
	<null>	S3	GNR	2018	8	Open wetland, not coastal nor rivershore (non-forested, wetland),Forested wetland
Slender Rush						
	E	S1	G5?	1937-08-31	5	Non-tidal rivershore (non-forested, seasonally wet),Open wetland, not coastal nor rivershore (non-forested, wetland)
Spruce - Northern Hardwoods Forest						
	<null>	S5	GNR	2006-10-19	20	Hardwood to mixed forest (forest, upland)
Swamp Birch						
	SC	S2S3	G5	2009-06-04	5	Forested wetland,Open wetland, not coastal nor rivershore

Rare and Exemplary Botanical Features within 4 miles of

Project: FERC No. 2615, Brassua Hydro LIHI recertification, Brassua Twp, Tomhegan Twp, Rockwood Strip T1 and T2 R1 NBKP, Sandwich Academy Grant Twp, Taunton & Raynam Academy Grant, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
						(non-forested, wetland)

STATE RARITY RANKS

S1 Critically imperiled in Maine because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.

S2 Imperiled in Maine because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.

S3 Rare in Maine (20-100 occurrences).

S4 Apparently secure in Maine.

S5 Demonstrably secure in Maine.

SU Under consideration for assigning rarity status; more information needed on threats or distribution.

SNR Not yet ranked.

SNA Rank not applicable.

S#? Current occurrence data suggests assigned rank, but lack of survey effort along with amount of potential habitat create uncertainty (e.g. S3?).

Note: **State Rarity Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines State Rarity Ranks for animals.

GLOBAL RARITY RANKS

G1 Critically imperiled globally because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extinction.

G2 Globally imperiled because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.

G3 Globally rare (20-100 occurrences).

G4 Apparently secure globally.

G5 Demonstrably secure globally.

GNR Not yet ranked.

Note: **Global Ranks** are determined by NatureServe.

STATE LEGAL STATUS

Note: State legal status is according to 5 M.R.S.A. § 13076-13079, which mandates the Department of Conservation to produce and biennially update the official list of Maine's **Endangered** and **Threatened** plants. The list is derived by a technical advisory committee of botanists who use data in the Natural Areas Program's database to recommend status changes to the Department of Conservation.

E ENDANGERED; Rare and in danger of being lost from the state in the foreseeable future; or federally listed as Endangered.

T THREATENED; Rare and, with further decline, could become endangered; or federally listed as Threatened.

NON-LEGAL STATUS

SC SPECIAL CONCERN; Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.

PE Potentially Extirpated; Species has not been documented in Maine in past 20 years or loss of last known occurrence has been documented.

ELEMENT OCCURRENCE RANKS - EO RANKS

Element Occurrence ranks are used to describe the quality of a rare plant population or natural community based on three factors:

- **Size**: Size of community or population relative to other known examples in Maine. Community or population's viability, capability to maintain itself.
- **Condition**: For communities, condition includes presence of representative species, maturity of species, and evidence of human-caused disturbance. For plants, factors include species vigor and evidence of human-caused disturbance.
- **Landscape context**: Land uses and/or condition of natural communities surrounding the observed area. Ability of the observed community or population to be protected from effects of adjacent land uses.

These three factors are combined into an overall ranking of the feature of **A**, **B**, **C**, or **D**, where **A** indicates an **excellent** example of the community or population and **D** indicates a **poor** example of the community or population. A rank of **E** indicates that the community or population is **extant** but there is not enough data to assign a quality rank. The Maine Natural Areas Program tracks all occurrences of rare (S1-S3) plants and natural communities as well as A and B ranked common (S4-S5) natural communities.

Note: **Element Occurrence Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines Element Occurrence ranks for animals.

Visit our website for more information on rare, threatened, and endangered species!
http://www.maine.gov/dacf/mnap