

Brookfield

Renewable

November 12, 2020

Orono Project (FERC No. 2710)
Stillwater Project (FERC No. 2712)

Ms. Shannon Ames, Executive Director
Low Impact Hydropower Institute
329 Massachusetts Avenue, Suite 2
Lexington, MA 02420

Subject: Low Impact Hydropower Institute Application for the Orono Project (FERC No. 2710) and Stillwater Project (FERC No. 2712)

Dear Ms. Ames:

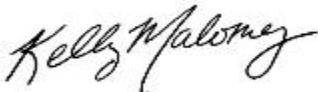
On behalf of Black Bear Hydro Partners, LLC, Black Bear Development Holdings, LLC, and Black Bear SO, LLC (collectively, "Black Bear"), owners and licensees of the Orono and Stillwater Hydroelectric Projects ("Projects") (FERC Nos. 2710 and 2712, respectively) and affiliates of Brookfield Renewable, please find attached a revised application for recertification of the Projects, which are located on the Stillwater Branch of the Penobscot River in Maine. Black Bear is requesting recertification of these facilities, which are currently certified through November 30, 2020 per LIHI correspondence dated June 1, 2020. Black Bear submitted an initial certification application to the Low Impact Hydropower Institute (LIHI) on July 6, 2020. LIHI completed the initial Intake Review on August 5, 2020.

The current application includes the following required submittals as revised in response to the LIHI Intake Review:

- Introduction
- Project Description and LIHI Table B-1
- Zones of Effect descriptions and overview maps and images
- Matrix of Alternative Standards for each Zone of Effect identified evaluating the LIHI certification standards for each requisite criterion, including water quality, fish passage and recreation
- Sworn Statement and Waiver Form
- Facility Contacts Form including pertinent NGOs, as appropriate.
- List of hyperlinks and supplemental documentation for pertinent FERC and regulatory documents for the Projects

Please call me at (207) 755-5606 or email me at Kelly.Maloney@brookfieldrenewable.com if you have any questions or need additional information regarding this submittal.

Sincerely,



Kelly Maloney
Manager, Compliance - Northeast

Cc: J. Cole, N. Stevens, S. Michaud, B. Brochu, A. Frechette, K. Bernier, E. DeLuca
Black Bear File: HSSE 4b/6/Penobscot

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**LOW IMPACT HYDROPOWER INSTITUTE
CERTIFICATION APPLICATION FOR THE
ORONO PROJECT (FERC No. 2710)
& STILLWATER PROJECT (FERC No. 2712)**

June 30, 2020

Brookfield

LOW IMPACT HYDROPOWER INSTITUTE
CERTIFICATION APPLICATION FOR THE
ORONO PROJECT (FERC No. 2710)
& STILLWATER PROJECT (FERC No. 2712)

Table of Contents

1.0	PROJECT DESCRIPTION	1
1.1	PROJECT FACILITIES.....	1
1.2	PROJECT OPERATIONS.....	20
1.2.1	ORONO PROJECT.....	20
1.2.2	STILLWATER PROJECT	22
1.3	PROJECT LOCATION	24
1.4	REGULATORY AND OTHER REQUIREMENTS AND COMPLIANCE STATUS	27
1.4.1	FERC LICENSE AND WATER QUALITY CERTIFICATION REQUIREMENTS AND COMPLIANCE STATUS	27
1.4.2	LIHI CERTIFICATION REQUIREMENTS AND COMPLIANCE STATUS.....	38
2.0	ZONES OF EFFECT	58
2.1	STILLWATER ZONES OF EFFECT	58
2.2	ORONO ZONES OF EFFECT.....	58
2.3	ZONE 1 – REGULATED RIVER REACH UPSTREAM	61
2.4	ZONE 2 –STILLWATER IMPOUNDMENT	62
2.5	ZONE 3 – STILLWATER DAM BYPASS REACH	64
2.6	ZONE 4 – STILLWATER POWERHOUSE B TAILRACE	66
2.7	ZONE 5 – STILLWATER POWERHOUSE A TAILRACE	68
2.8	ZONE 6 – ORONO IMPOUNDMENT	70
2.9	ZONE 7 – ORONO BYPASS REACH	72
2.10	ZONE 8 - ORONO PROJECT TAILRACE/DOWNSTREAM REGULATED RIVER REACH	74
3.0	LIHI CERTIFICATION CRITERION.....	77
3.1	ECOLOGICAL FLOWS	77
3.1.1	ZONE 1 – REGULATED UPSTREAM RIVER REACH	78
3.1.2	ZONE 2 – STILLWATER IMPOUNDMENT	79
3.1.3	ZONE 3 – STILLWATER DAM BYPASS REACH	80
3.1.4	ZONE 4 – STILLWATER POWERHOUSE B TAILRACE	83

3.1.5	ZONE 5 – STILLWATER POWERHOUSE A TAILRACE	84
3.1.6	ZONE 6 - ORONO IMPOUNDMENT	85
3.1.7	ZONE 7 - ORONO BYPASS REACH	87
3.1.8	ZONE 8 - ORONO PROJECT TAILRACE/DOWNSTREAM REGULATED RIVER REACH	89
3.2	WATER QUALITY	89
3.2.1	ZONE 1 – REGULATED RIVER REACH UPSTREAM	90
3.2.2	ZONE 2 - STILLWATER IMPOUNDMENT	91
3.2.3	ZONE 3 – STILLWATER DAM BYPASS REACH	92
3.2.4	ZONE 4 – STILLWATER POWERHOUSE B TAILRACE	93
3.2.5	ZONE 5 – STILLWATER POWERHOUSE A TAILRACE	94
3.2.6	ZONE 6 - ORONO IMPOUNDMENT	95
3.2.7	ZONE 7 - ORONO BYPASS REACH	96
3.2.8	ZONE 8 - ORONO PROJECT TAILRACE/DOWNSTREAM REGULATED RIVER REACH	97
3.3	UPSTREAM FISH PASSAGE	97
3.3.1	ZONE 1 – REGULATED RIVER REACH UPSTREAM	100
3.3.2	ZONE 2 – STILLWATER IMPOUNDMENT	101
3.3.3	ZONE 3 – STILLWATER DAM BYPASS REACH	102
3.3.4	ZONE 4 – STILLWATER POWERHOUSE B TAILRACE	103
3.3.5	ZONE 5 – STILLWATER POWERHOUSE A TAILRACE	104
3.3.6	ZONE 6 – ORONO IMPOUNDMENT	105
3.3.7	ZONE 7 – ORONO BYPASS REACH	106
3.3.8	ZONE 8 – ORONO TAILRACE.....	107
3.4	DOWNSTREAM FISH PASSAGE.....	108
3.4.1	ZONE 1 – REGULATED RIVER REACH UPSTREAM	114
3.4.2	ZONE 2 – STILLWATER IMPOUNDMENT	115
3.4.3	ZONE 3 – STILLWATER DAM BYPASS REACH	116
3.4.4	ZONE 4 – STILLWATER POWERHOUSE B TAILRACE	117
3.4.5	ZONE 5 – STILLWATER POWERHOUSE A TAILRACE	118
3.4.6	ZONE 6 – ORONO IMPOUNDMENT	119
3.4.7	ZONE 7 – ORONO BYPASS REACH	120
3.4.8	ZONE 8 – ORONO TAILRACE.....	121
3.5	SHORELINE AND WATERSHED PROTECTION	122
3.6	THREATENED AND ENDANGERED SPECIES.....	123

3.6.1	AQUATIC AND TERRESTRIAL STATE LISTED BOTANICAL SPECIES	124
3.6.2	FEDERALLY LISTED TERRESTRIAL SPECIES	125
3.6.3	FEDERALLY LISTED AQUATIC SPECIES	125
3.6.4	STATE LISTED TERRESTRIAL SPECIES	127
3.6.5	STATE LISTED AQUATIC SPECIES	128
3.7	CULTURAL AND HISTORIC RESOURCES	128
3.8	RECREATIONAL RESOURCES	129
3.8.1	ZONE 1 – REGULATED RIVER REACH UPSTREAM	130
3.8.2	ZONE 2 - STILLWATER IMPOUNDMENT	130
3.8.3	ZONE 3 – STILLWATER DAM BYPASS REACH	131
3.8.4	ZONE 4 – STILLWATER POWERHOUSE B TAILRACE	131
3.8.5	ZONE 5 – STILLWATER POWERHOUSE A TAILRACE	132
3.8.6	ZONE 6 - ORONO IMPOUNDMENT	132
3.8.7	ZONE 7 - ORONO BYPASS REACH	133
3.8.8	ZONE 8 - ORONO PROJECT TAILRACE/DOWNSTREAM REGULATED RIVER REACH	133
4.0	SWORN STATEMENT AND WAIVER FORM.....	134
5.0	CONTACTS FORM	135
5.1	APPLICANT RELATED CONTACTS	135
5.2	CURRENT AND RELEVANT STATE, FEDERAL, AND TRIBAL RESOURCE AGENCY CONTACTS WITH KNOWLEDGE OF THE FACILITY	136
5.3	CURRENT STAKEHOLDER CONTACTS THAT ARE ACTIVELY ENGAGED WITH THE FACILITY.....	138
6.0	FERC AND REGULATORY INFORMATION	139
6.1	FERC LICENSE AND AMENDMENT ORDERS.....	139
6.2	WATER QUALITY CERTIFICATION, AMENDMENTS, AND REPORTS	140
6.3	SETTLEMENT AND OTHER AGREEMENTS	140
6.4	PERMITS.....	140
6.5	COMPLIANCE PLANS AND MONITORING REPORTS.....	140
6.5.1	ECOLOGICAL FLOWS AND WATER QUALITY.....	141
6.5.2	SHORELINE AND WATERSHED PROTECTION	141
6.5.3	FISH PASSAGE.....	142
6.5.4	THREATENED AND ENDANGERED SPECIES.....	145
6.5.5	CULTURAL AND HISTORIC RESOURCES	146
6.5.6	RECREATIONAL RESOURCES	147

6.6	LICENSE AND CERTIFICATION COMPLIANCE	147
7.0	SUPPORTING DOCUMENTATION	148

Index of Tables

TABLE 1.	FACILITY INFORMATION	43
TABLE 2.	ZONE 1 – REGULATED RIVER REACH UPSTREAM MATRIX OF ALTERNATIVE STANDARDS	62
TABLE 3.	ZONE 2 – STILLWATER IMPOUNDMENT	64
TABLE 4.	ZONE 3 –STILLWATER DAM BYPASS REACH MATRIX OF ALTERNATIVE STANDARDS.....	66
TABLE 5.	ZONE 4 – STILLWATER POWERHOUSE B TAILRACE	68
TABLE 6.	ZONE 5 – STILLWATER POWERHOUSE A TAILRACE	69
TABLE 7.	ZONE 6 – ORONO IMPOUNDMENT MATRIX OF ALTERNATIVE STANDARDS	72
TABLE 8.	ZONE 7 – ORONO BYPASS REACH	74
TABLE 9.	ZONE 8 - ORONO PROJECT TAILRACE/DOWNSTREAM REGULATED RIVER REACH/DOWNSTREAM REGULATED RIVER REACH MATRIX OF ALTERNATIVE STANDARDS	76
TABLE 10.	SUMMARY OF LOWER PENOBSCOT FISHERIES DOWNSTREAM PASSAGE STUDIES ON THE STILLWATER BRANCH.....	111

Index of Figures

FIGURE 1.	PROJECT FACILITIES – ORONO PROJECT.....	3
FIGURE 2.	PROJECT BOUNDARY – ORONO PROJECT	4
FIGURE 3.	PROJECT FACILITIES – ORONO PROJECT (AERIAL PHOTO)	5
FIGURE 4.	PROJECT FISH PASSAGE FACILITIES – ORONO PROJECT (AERIAL PHOTO).....	5
FIGURE 5.	PROJECT SPILLWAY – ORONO PROJECT	6
FIGURE 6.	PROJECT POWERHOUSE A – ORONO PROJECT.....	7
FIGURE 7.	PROJECT POWERHOUSE B – ORONO PROJECT	8
FIGURE 8.	PROJECT FISH LIFT AND TRAP FACILITY – ORONO PROJECT	9
FIGURE 9.	PROJECT UPSTREAM EEL PASSAGE FACILITY – ORONO PROJECT	10
FIGURE 10.	PROJECT DOWNSTREAM FISH PASSAGE FACILITY – ORONO PROJECT	11
FIGURE 11.	PROJECT FACILITIES – STILLWATER PROJECT	13
FIGURE 12.	PROJECT BOUNDARY – STILLWATER PROJECT	14
FIGURE 13.	PROJECT FACILITIES AND FISH PASSAGE FACILITIES – STILLWATER PROJECT (AERIAL PHOTO).....	15
FIGURE 14.	PROJECT SPILLWAY – STILLWATER PROJECT	15
FIGURE 15.	PROJECT POWERHOUSE A AND DOWNSTREAM FISH PASSAGE FACILITY – STILLWATER PROJECT	16
FIGURE 16.	PROJECT POWERHOUSE B – STILLWATER PROJECT	17
FIGURE 17.	PROJECT DOWNSTREAM FISH PASSAGE FACILITY AT POWERHOUSE B – STILLWATER PROJECT.....	18
FIGURE 18.	PROJECT UPSTREAM EEL PASSAGE FACILITY – STILLWATER PROJECT	19
FIGURE 19.	PROJECT LOCATION – ORONO AND STILLWATER PROJECTS.....	25
FIGURE 20.	OVERVIEW MAP OF THE PENOBSCOT WATERSHED.....	26
FIGURE 21.	ZONES OF EFFECT – STILLWATER PROJECT	59
FIGURE 22.	ZONES OF EFFECT – ORONO PROJECT	60
FIGURE 23.	ZONE 1 – REGULATED RIVER REACH UPSTREAM.....	61
FIGURE 24.	ZONE 2 – STILLWATER IMPOUNDMENT	63
FIGURE 25.	ZONE 3 – STILLWATER DAM BYPASS REACH.....	65

FIGURE 26.	ZONE 4 – STILLWATER POWERHOUSE B TAILRACE	67
FIGURE 27.	ZONE 5 – STILLWATER POWERHOUSE A TAILRACE	69
FIGURE 28.	ZONE 6 – ORONO IMPOUNDMENT	71
FIGURE 29.	ZONE 7 – ORONO BYPASS REACH	73
FIGURE 30.	ZONE 8 - ORONO PROJECT TAILRACE/DOWNSTREAM REGULATED RIVER REACH/DOWNSTREAM REGULATED RIVER REACH	75

LOW IMPACT HYDROPOWER INSTITUTE
CERTIFICATION APPLICATION FOR THE
ORONO PROJECT (FERC No. 2710)
& STILLWATER PROJECT (FERC No. 2712)

1.0 PROJECT DESCRIPTION

1.1 PROJECT FACILITIES

The Projects are located on the Stillwater Branch of the Penobscot River in the town of Orono and the City of Old Town in Penobscot County, Maine. The Stillwater Branch is 10.5 miles (mi) long and serves as a channel of the Penobscot River as it flows around the western side of Orson and Marsh Islands. The Orono and the Stillwater Projects collectively consist of two dams and four powerhouses.

The Orono and Stillwater Projects are part of the Lower Penobscot River Multiparty Settlement Agreement (Settlement Agreement), the goal of which is to restore self-sustaining populations of 11 native species of sea-run fish to the Penobscot River in Maine. The Settlement Agreement involved the purchase and removal of the lower-most dams on the Penobscot River, Veazie (FERC No. 2403) and Great Works (FERC No. 2312), and the decommissioning of the Howland Dam (FERC No. 2721) on the Piscataquis River, a tributary of the Penobscot River. As part of the Settlement Agreement, the signatories agreed to support a series of generation increases at other hydroelectric projects, including at the Orono and Stillwater Projects, to offset the generation lost at the Veazie, Great Works, and Howland Projects. In 2013, the Projects were upgraded to include a second powerhouse at each. The Projects are licensed by the Federal Energy Regulatory Commission (FERC) to Black Bear Hydro Partners, LLC, Black Bear Development Holdings, LLC, and Black Bear SO, LLC (collectively “Black Bear”).

Orono Project:

Black Bear is the owner and operator of the existing 6.548 MW Orono Hydroelectric Project (FERC No. 2710). The Orono Project is described as follows (FERC, 2005; FERC, 2012; FERC, 2013; FERC, 2019): an existing 1,230-foot-long by 15-foot-high dam including a 320-foot-long spillway topped with 3-foot-high flashboards; an existing 2.0-mile-long reservoir, which has a surface area of 180 acres at the normal full pond elevation of 73 feet National Geodetic Vertical Datum (NGVD); one 866-foot-long, 20-foot-wide, 12-foot-high concrete penstock supplying water to Powerhouse A; one 292-foot-long, 25-foot-wide, 12-foot-high concrete penstock supplying water to Powerhouse B; Powerhouse A containing four generating units with a total installed generating capacity of 2,798 kW; Powerhouse B containing three generating units with a total installed capacity of 3,750 kW; transmission lines; upstream and downstream fish passage facilities; and appurtenant facilities.

The Project was not operational between 1996 and 2009. During 2002, the Licensee completed rehabilitation work on the Ambursen-design forebay wall and intake structure. The Orono Project was reactivated after completing rehabilitation work in 2008-2009 that included installation of a new 866-foot long concrete penstock (20 feet wide by 12 feet tall inside diameter) and surge tank to Powerhouse A. Rehabilitation work at the Project's Powerhouse A, also completed in 2009, included rehabilitating the four triple-runner horizontal turbines and the four generators and associated ancillary equipment in Powerhouse A; and replacing the generator controls and switchgear in Powerhouse A. The Powerhouse B intake and 292 foot-long 25-foot-wide by 12-foot-high concrete box penstock were completed in December 2013.

The Powerhouse A penstock delivers water to four turbine-generator units with a total authorized installed capacity of 2.798 MW. Powerhouse A has a hydraulic capacity range from 100 to 1,740 cfs. Powerhouse B contains three Canadian Hydro Components (CHC) 1,700 mm diameter vertical axial flow turbine-generating units having a total installed capacity of approximately 3.750 MW, a total hydraulic capacity of 2,082 cfs, and a minimum operating capacity of approximately 175 cfs.

The current project boundary encloses the dam, the reservoir up to the 73.0 feet NGVD elevation, the powerhouses, and the penstocks (FERC, 2005). The project civil works are also surrounded by 8-foot-tall, chain-link perimeter fencing (FERC, 2006; FERC, 2009a).

The Project has a 1-inch clear space angled trashrack over a single intake structure to minimize fish entrainment that serves both Powerhouse A and Powerhouse B, and the downstream fish passage facility consisting of a combination of an opening in the flashboards on the spillway (for 2 weeks during the downstream Atlantic salmon smolt migration) and an 8-foot-wide entrance into a 20-foot-long by 12-foot-wide floor screen chamber with a 3-foot wide exit at the downstream end that is operated throughout the fish migration season. A lower level entrance consisting of a 4-ft square opening at the base of the trashrack, which outlets to the downstream end of the screen chamber, is also part of the downstream fish passage facility. The downstream fish passage facility is designed to pass a combined flow of approximately 150 cfs through the surface entrance and lower orifice.

The upstream fish lift and trapping facility is adjacent to and integral with the new downstream fish passage facility. Of the 150 cfs downstream attraction flow entering the screen chamber, approximately 130 cfs is passed through the floor screen and used for upstream attraction flow for the trapping facility, controlled by two submerged gates. The upstream fish lift and trapping facility consists of a fixed rail system, a blocking screen, and an elevating hopper to retrieve the trapped fish. Black Bear provides short distance trucking of trapped fish to a location upstream of the dam. A permanent, flow-through concrete upstream eel passage channel was installed in 2016 on the existing overflow dam. It is approximately 4 feet wide and 49 feet long, has a bristle-brush floor, and ends approximately 20 feet from the pier between the spillway and the overflow dam. A 1.5 cfs conveyance flow is provided at the upstream eel passage seasonally.

FIGURE 1. PROJECT FACILITIES – ORONO PROJECT

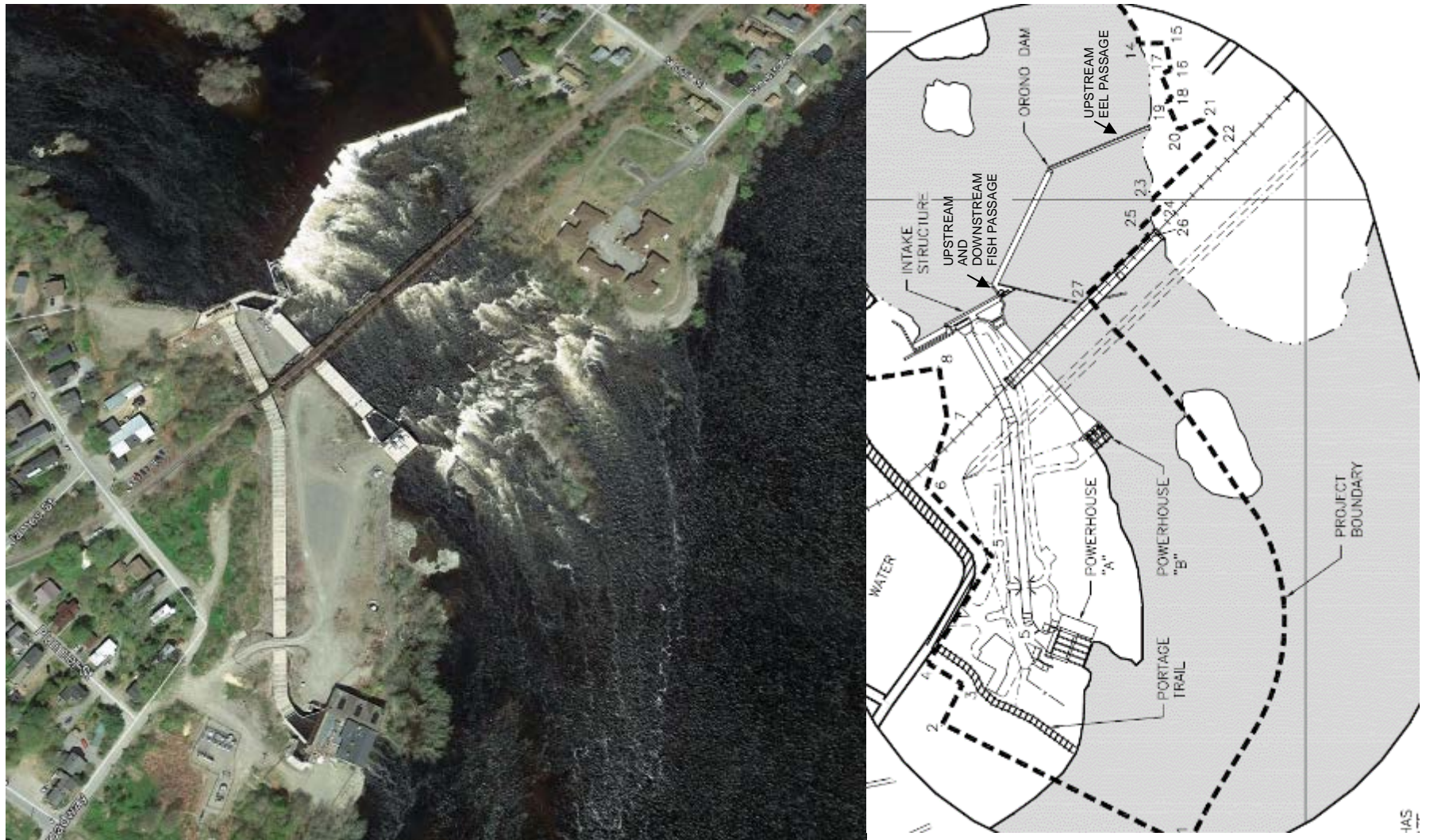


FIGURE 2. PROJECT BOUNDARY – ORONO PROJECT

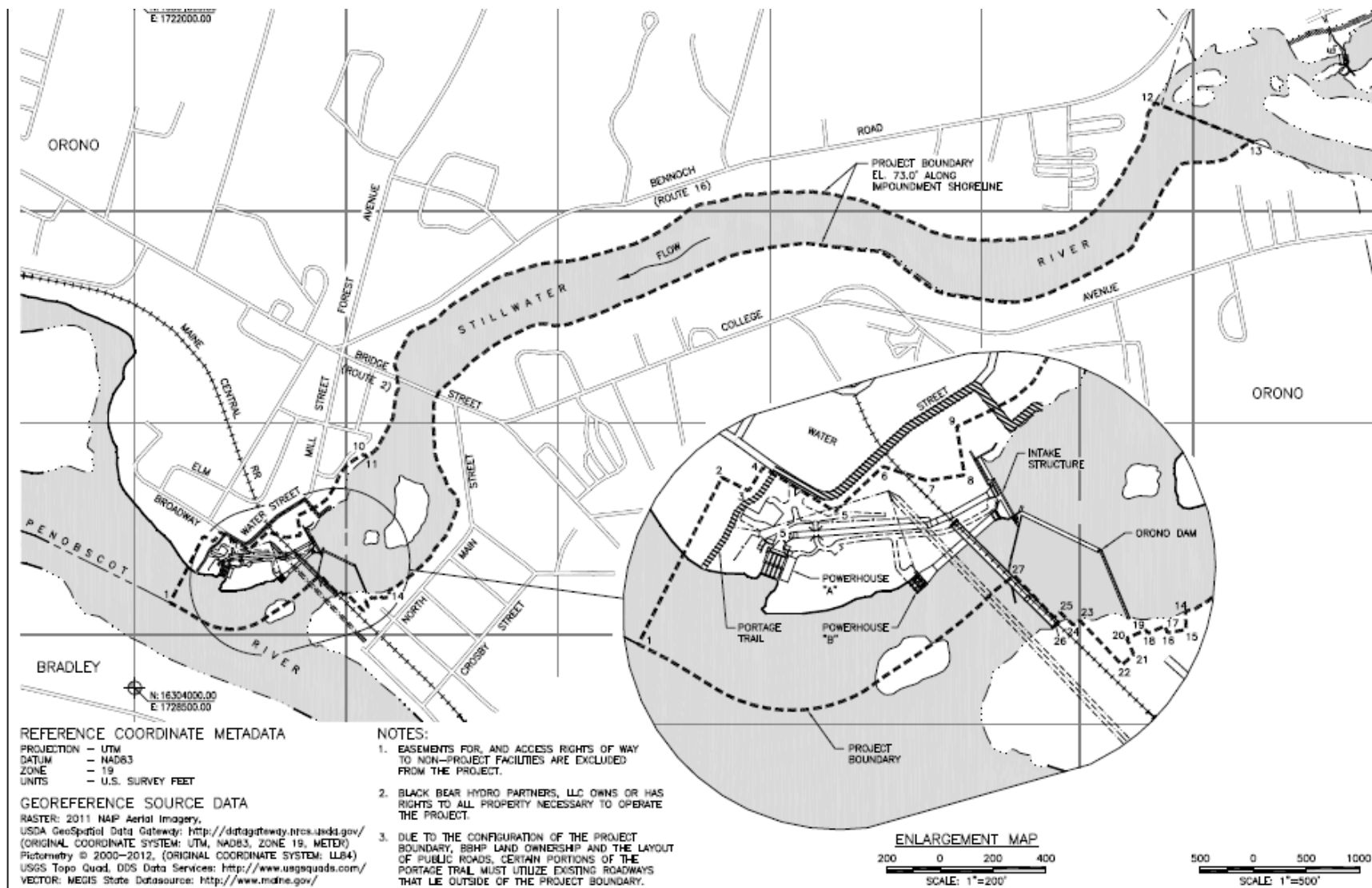


FIGURE 3. PROJECT FACILITIES – ORONO PROJECT (AERIAL PHOTO)



FIGURE 4. PROJECT FISH PASSAGE FACILITIES – ORONO PROJECT (AERIAL PHOTO)

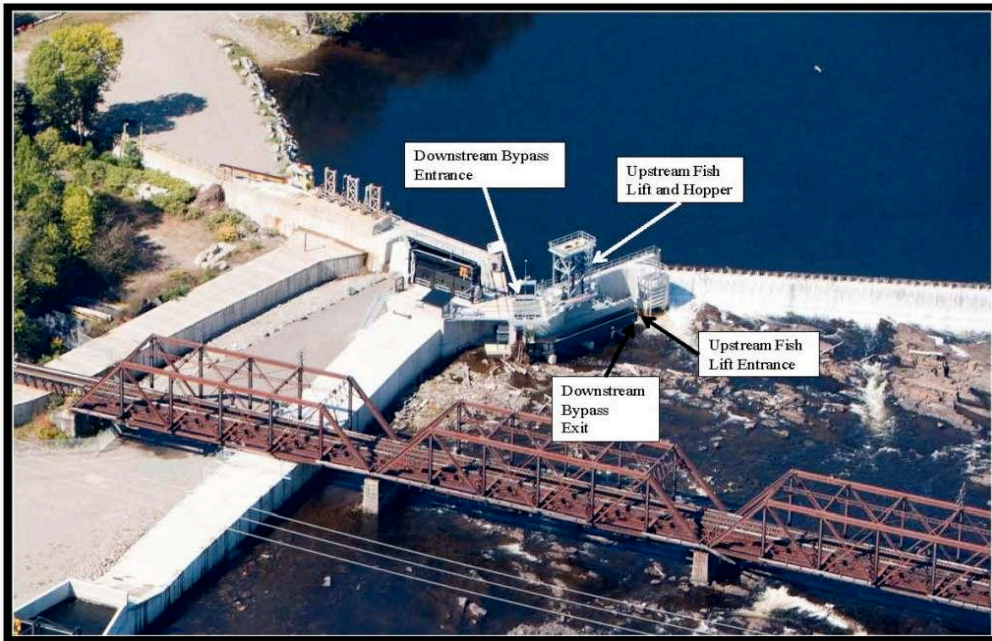


FIGURE 5. PROJECT SPILLWAY – ORONO PROJECT



FIGURE 6. PROJECT POWERHOUSE A – ORONO PROJECT



FIGURE 7. PROJECT POWERHOUSE B – ORONO PROJECT



FIGURE 8. PROJECT FISH LIFT AND TRAP FACILITY – ORONO PROJECT



FIGURE 9. PROJECT UPSTREAM EEL PASSAGE FACILITY – ORONO PROJECT



FIGURE 10. PROJECT DOWNSTREAM FISH PASSAGE FACILITY – ORONO PROJECT



Stillwater Project:

Black Bear is the owner and operator of the existing 4.179 MW Stillwater Hydroelectric Project (FERC No. 2712) (Project). Pursuant to FERC's April 18, 2005 and September 14, 2012 Orders Amending License, along with FERC's February 11, 2019 Order approving a revised Exhibit A and annual charges, the Stillwater Project consists of a main concrete gravity dam, totaling about 1,720 feet (ft) long, with a normal full pond elevation of 94.65 ft NGVD, consisting of 13 sections of various heights; a powerhouse containing four turbine-generator units with a total nameplate capacity of 1,929 kW; a powerhouse containing three turbine-generator units with a total nameplate capacity of 2,250 kW; a 191-acre (ac) reservoir; downstream fish passage facilities; transmission facilities and appurtenant facilities (FERC, 2005a; FERC, 2012).

Powerhouse A is equipped with four horizontal hydroelectric generating units totaling 1,929 kW. Powerhouse A has a hydraulic capacity range from 100 to 1,700 cfs. Powerhouse B contains three 1,700 mm vertical axial flow Canadian Hydro Components (CHC) turbine-generating units having a total installed capacity of approximately 2,250 kW and a total hydraulic capacity of approximately 1,758 cfs. The units have a minimum hydraulic capacity of 160 cfs.

The current project boundary encloses the dam and powerhouses and follows the reservoir up to the 94.65 ft NGVD elevation.

Powerhouse A has a downstream fish passage facility consisting of 1-inch (in) clear-spacing trashracks to minimize fish entrainment, an adjacent 2.83-ft-wide bypass flume, and a discharge chute (FERC, 2005b). Currently, 70 cfs is passed at the existing downstream fish bypass facility at Powerhouse A.

Powerhouse B has a 1-inch clear space angled trashrack to minimize fish entrainment, and a downstream fish passage facility consisting of a combination of an opening in the flashboards in the forebay near the trashracks (for 2 weeks during the downstream Atlantic salmon smolt migration) and a 4-ft-wide fish bypass opening in the forebay wall. A 4-ft square downstream eel passage facility is installed at the base of the trashracks, which outlets to a plunge pool to the tailrace of the powerhouse. The downstream fish passage facility at Powerhouse B is designed to pass a combined flow of 70 cfs. The double-regulated unit nearest the downstream fish passage facility at Powerhouse B is operated as first on and last off to provide attraction to the downstream fish passage.

There is no upstream fish passage facility at the Stillwater Project, as per the Settlement Agreement, all fish trapped at the downstream Orono Project's fish lift are trucked upstream of the Stillwater Project. The Stillwater Project has a permanent, flow-through concrete upstream eel passage channel that was installed in 2015, which is approximately 6-ft wide and 36-ft long with a bristle-brush floor and provides a 1.5 cfs conveyance flow seasonally.

FIGURE 11. PROJECT FACILITIES – STILLWATER PROJECT

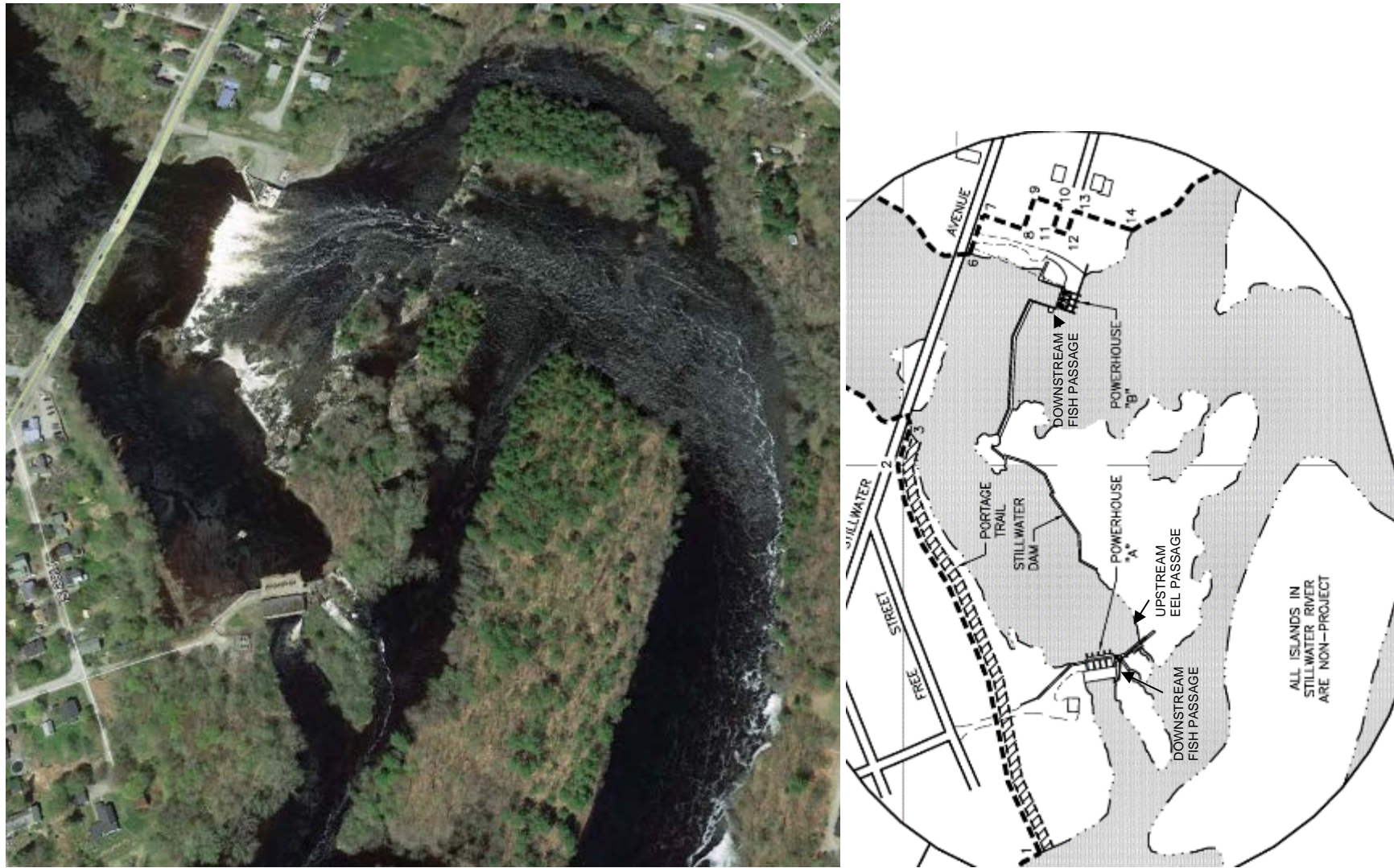


FIGURE 12. PROJECT BOUNDARY – STILLWATER PROJECT

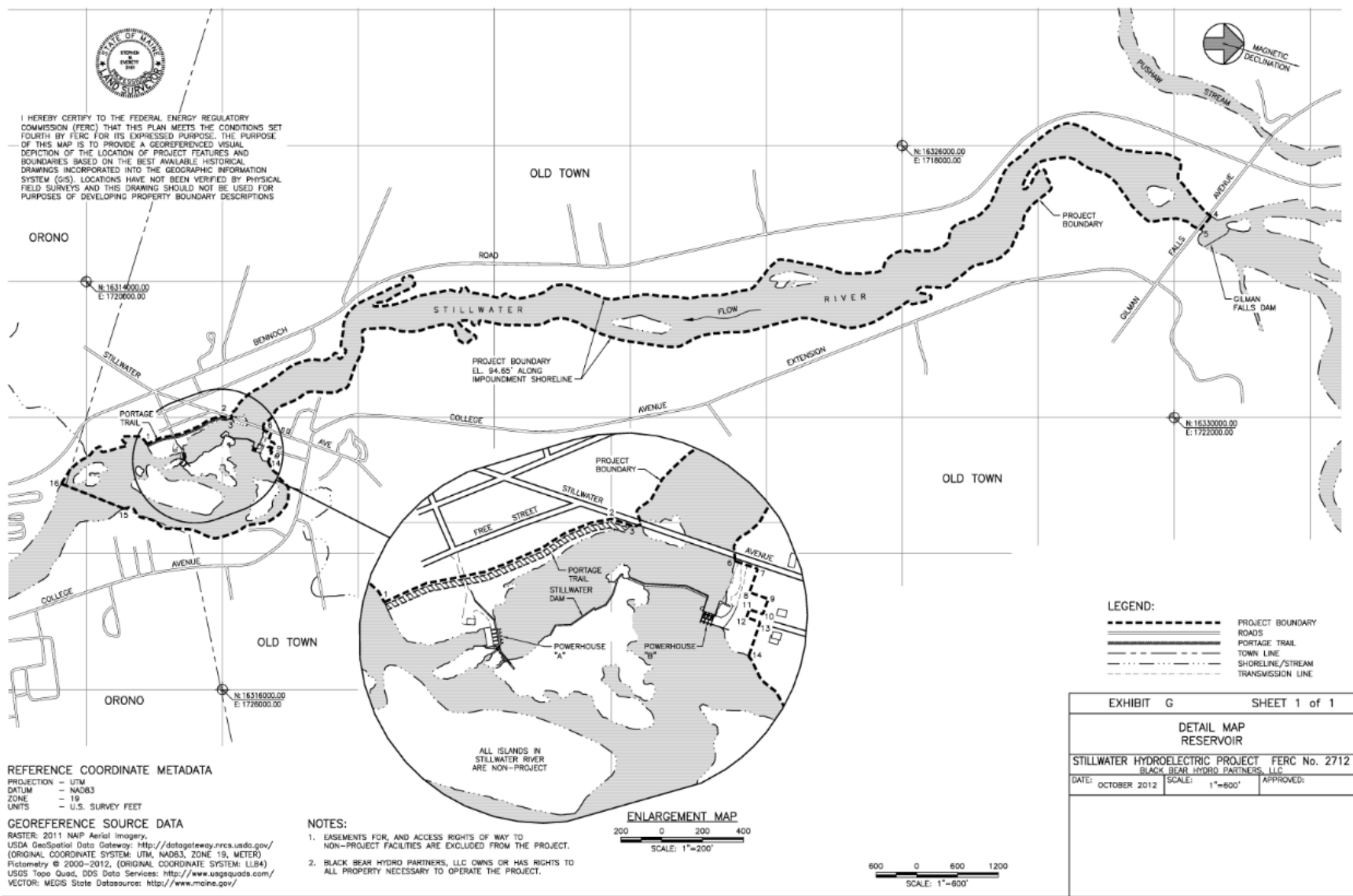


FIGURE 13. PROJECT FACILITIES AND FISH PASSAGE FACILITIES – STILLWATER PROJECT (AERIAL PHOTO)

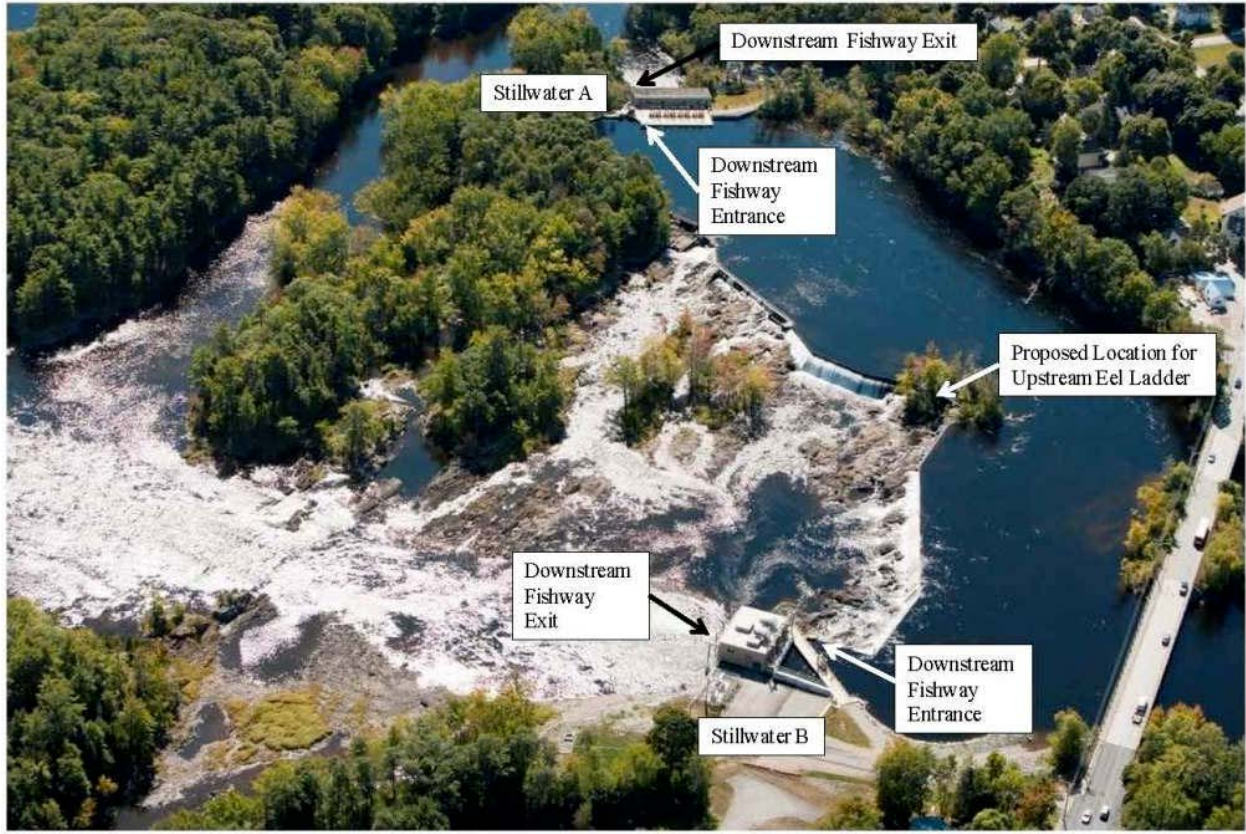


FIGURE 14. PROJECT SPILLWAY – STILLWATER PROJECT



FIGURE 15. PROJECT POWERHOUSE A AND DOWNSTREAM FISH PASSAGE FACILITY – STILLWATER PROJECT



FIGURE 16. PROJECT POWERHOUSE B – STILLWATER PROJECT



FIGURE 17. PROJECT DOWNSTREAM FISH PASSAGE FACILITY AT POWERHOUSE B – STILLWATER PROJECT



FIGURE 18. PROJECT UPSTREAM EEL PASSAGE FACILITY – STILLWATER PROJECT



1.2 PROJECT OPERATIONS

Black Bear operates the Projects in run-of-river mode with minimum flow requirements to the Project bypasses as described below.

1.2.1 ORONO PROJECT

The Orono Project is operated in run-of-river mode. The existing impoundment is approximately 2.0 miles long, with a surface area of about 180 acres at a normal headwater surface elevation of 73.0 ft NGVD. The Project has a gross storage capacity of 1,405 sq-ft, and the usable storage capacity is negligible, being a run-of-river project. The normal headwater surface elevation is maintained when river flows are at or below the hydraulic capacity of the turbines. The required minimum flow in the project bypass reach of 200 cfs is handled with about 150 cfs being routed through the upstream/downstream fish passage facility and approximately 50 cfs of leakage through the installed flashboards.

The September 14, 2012 Order Amending License (see Section 6.1) authorizing the construction also revised Article 401 of the Project license as follows:

Article 401. Operation and Flow Compliance Monitoring Plan. Within 9 months of issuance of this order, the licensee shall file, for Commission approval, a revised Operation and Flow Compliance Monitoring Plan to replace the existing approved plan. The Operation and Flow Compliance Monitoring Plan shall be developed in consultation with the National Marine Fisheries Service, U.S. Fish and Wildlife Service, Penobscot Indian Nation, Maine Department of Inland Fisheries and Wildlife, Maine Department of Marine Resources, and Maine Department of Environmental Protection.

The plan shall include the following: (1) a detailed description of how the impoundment level, minimum flows, generation flows, and inflows will be measured or calculated in order to comply with the requirements of the license; (2) a maintenance plan to ensure that the methods remain accurate over time; (3) a provision to make flow and impoundment elevation data publicly available; (4) a description of how minimum flows will be maintained at all times and at all impoundment elevations; (5) a description of how fish passage flows will be provided during the passage seasons and at all impoundment elevations; (6) a list and description of maintenance activities which may result in the temporary modification of run-of-river operation, including estimates for the timing, frequency and duration that these activities occur; (7) a provision to notify the Commission, resource agencies, and Penobscot Indian Nation when deviations from license requirements occur; and (8) a provision to provide reports and data to the resource agencies and the Penobscot Indian Nation, the level of detail and timing/frequency of reporting to be determined in consultation with these entities.

Following the development of the plan in consultation with the resource agencies and Penobscot Indian Nation, the licensee shall provide a copy of the proposed plan to these entities and allow them a minimum of 30 days to review and comment on the plan. The final plan filed with the Commission shall include documentation of consultation including copies of any comments received. The licensee shall address all comments and recommendations in its filing. If the licensee does not adopt a recommendation from the resource agencies or Penobscot Indian Nation, the licensee shall include its reasons based on project-specific information. The

Commission reserves the right to make changes to the plan in order to ensure compliance with license requirements and protect environmental resources.

The licensee shall continue to implement the approved Operation and Flow Compliance Monitoring Plan until the revised plan is approved by the Commission.

Condition 1.A. of the Project's Water Quality Certification (WQC) was modified by the Maine Department of Environmental Protection's (DEP's) August 23, 2011 WQC Amendment for the Project (see Section 6.2 and 7.0); the WQC now reads as follows:

CONDITION 1. WATER LEVELS AND FLOWS

A. Except as temporarily modified by (1) approved maintenance activities, (2) extreme hydrologic conditions, as defined below, or (3) emergency electrical system conditions, as defined below, or (4) agreement between the applicant, appropriate state and/or federal agencies, and the Penobscot Indian Nation, beginning within 60 days of FERC approval of the flow and water level monitoring plan described in Condition I (E) below, or upon such other schedule as established by FERC, the Orono Project shall be operated in a run of river mode, with outflow approximately equal to inflow on an instantaneous basis except for flashboard failure or replacement, and impoundment levels maintained within one foot of full pond (elevation 73.0 feet msl). During times of flashboard failure, the applicant will maintain water levels at or above the spillway crest. During those times when flashboards are being replaced, the applicant will maintain water levels within one foot of the spillway crest.

Conditions 1.B – E of the Project's December 14, 2004 WQC (see Section 6.2 and 7.0) states:

CONDITION 1. WATER LEVELS AND FLOWS

B. Except as temporarily modified by (1) approved maintenance activities, (2) extreme hydrologic conditions, as defined below, or (3) emergency electrical system conditions, as defined below, or (4) agreement between the applicant and appropriate state and/or federal agencies, a minimum flow of 200 cfs to the bypass reach shall be maintained.

C. "Extreme Hydrologic Conditions" means the occurrence of events beyond the Licensee's control, such as, but not limited to, abnormal precipitation, extreme runoff, flood conditions, ice conditions or other hydrologic conditions such that the operational restrictions and requirements contained herein are impossible to achieve or are inconsistent with the safe operation of the project.

D. "Emergency Electrical System Conditions" means operating emergencies beyond Licensee's control which require changes in flow regimes to eliminate such emergencies which may in some circumstances include but are not limited to equipment failure or other abnormal temporary operating condition, generating unit operation or third-party mandated interruptions under power supply emergencies; and orders from local, state or federal law enforcement or public safety authorities.

E. The applicant shall, within 6 months of issuance of a New License for the project by FERC or upon such other schedule as established by FERC, submit plans for providing and monitoring the water levels and flows required by this condition. These plans shall be developed in consultation with U.S. Fish and Wildlife Service (USFWS), Maine Department of Inland Fisheries and Wildlife (MDIFW), Maine Atlantic Salmon Commission (MASC), Maine Department of Marine Resources (MDMR), Penobscot Indian Nation (PIN), and DEP. These plans shall be reviewed by and must receive the approval of the DEP Bureau of Land and Water Quality.

1.2.2 STILLWATER PROJECT

The Stillwater Project is operated in run-of-river mode. The existing impoundment is approximately 3 mi long, with a surface area of about 191 ac at a normal headwater surface elevation of about 94.65 ft NGVD. The Project has a gross storage capacity of approximately 1,910 ac-ft, and the usable storage capacity is negligible, being a run-of-river project. The normal headwater surface elevation is maintained when river flows are at or below the hydraulic capacity of the turbines (FERC, 2004; FERC, 2005). The Project has a minimum flow of 70 cfs, currently provided into the east bypass channel¹.

The September 14, 2012 Order Amending License (see Section 6.1) authorizing the construction of Powerhouse B includes a revised Article 401 of the Project license as follows:

Within 9 months of issuance of this order, the licensee shall file, for Commission approval, an Operation and Flow Compliance Monitoring Plan to replace the approved Water Level Monitoring Plan. The Operation and Flow Compliance Monitoring Plan shall be developed in consultation with the National Marine Fisheries Service, U.S. Fish and Wildlife Service, Penobscot Indian Nation, Maine Department of Inland Fisheries and Wildlife, Maine Department of Marine Resources, and Maine Department of Environmental Protection.

The plan shall include the following: (1) a detailed description of how the impoundment level, minimum flows, generation flows, and inflows will be measured or calculated in order to comply with the requirements of Articles 401, 402, and 406; (2) a maintenance plan to ensure that the methods remain accurate over time; (3) a provision to make flow and impoundment elevation data publicly available; (4) a provision to provide minimum flows at all times and impoundment elevations; (5) a description of how fish passage flows will be provided during the passage seasons defined in Articles 406, 407, and 416 and at all impoundment elevations; (6) a description of how the licensee will minimize the level of impoundment fluctuation as required by Article 401; (7) a list and description of the "approved maintenance activities" mentioned in Article 401 (which allow for the temporary modification of run-of-river operation) including estimates for the frequency and duration that these activities occur; (8) a provision to notify the Commission, resource agencies, and Penobscot Indian Nation when deviations from license

¹ When the Powerhouse B was brought online in 2013, the minimum flow of 70 cfs was provided as 20 cfs into the west channel and 50 cfs through the downstream fish passage/Powerhouse B. An application for amendment of license to relocate the 20 cfs west bypass channel flows to the east bypass channel was submitted to the FERC on November 8, 2019, and approved on June 8, 2020. The amended WQC authorizing this relocation was issued by the MDEP on October 28, 2019. This relocation was proposed through agency consultation to improve upstream eel passage at the Project, for which these minimum flows are causing disruption (through false attraction of eels to the 20 cfs west channel flow).

requirements occur; and (9) a provision to provide reports and data to the resource agencies and the Penobscot Indian Nation, the level of detail and timing/frequency of reporting to be determined in consultation with these entities.

Following the development of the plan in consultation with the resource agencies and Penobscot Indian Nation, the licensee shall provide a copy of the proposed plan to these entities and allow them a minimum of 30 days to review and comment on the plan. The final plan filed with the Commission shall include documentation of consultation including copies of any comments received. The licensee shall address all comments and recommendations in its filing. If the licensee does not adopt a recommendation from the resource agencies or Penobscot Indian Nation, the licensee shall include its reasons based on project-specific information. The Commission reserves the right to make changes to the plan in order to ensure compliance with license requirements and protect environmental resources. The licensee shall continue to implement the Water Level Monitoring Plan until the Operation and Flow Compliance Monitoring Plan is approved by the Commission.

Article 402 of the Stillwater Project license was amended by FERC on April 18, 2005 and on June 8, 2020 (see Section 6.1) to read:

The Licensee shall release from the Stillwater Project a permanent minimum flow of 70 cfs into the bypassed channel, or inflow to the project reservoir, whichever is less, for the protection and enhancement of fish and wildlife resources, water quality, and recreation opportunities on the Stillwater Branch of the Penobscot River.

This flow may be temporarily modified if required by operating emergencies beyond the control of the Licensee, and for short periods upon mutual agreement between the Licensee and the Maine Department of Environmental Protection. If the flow is so modified, the Licensee shall notify the Commission as soon as possible, but no later than 10 days after each such incident.

Condition 1 of the January 13, 2005 WQC (see Section 6.2 and 7.0) for the Stillwater Project, as revised on October 28, 2019, states:

I. MINIMUM FLOWS

A. Except as temporarily modified by (1) approved maintenance activities, (2) extreme hydrologic conditions, as defined below, (3) emergency electrical system conditions, as defined below, or (4) agreement between the applicant and appropriate state and/or federal agencies, the project shall be operated as run-of-river (outflow equals inflow) while passing a minimum flow of 70 cfs into the bypass area below the Stillwater Dam..

B. "Extreme Hydrologic Conditions" means the occurrence of events beyond the Licensee's control, such as, but not limited to, abnormal precipitation, extreme runoff, flood conditions, ice conditions or other hydrologic conditions such that the operational restrictions and requirements contained herein are impossible to achieve or are inconsistent with the safe operation of the project.

C. "Emergency Electrical System Conditions" means operating emergencies beyond Licensee's control which require changes in flow regimes to eliminate such emergencies which

may in some circumstances include but are not limited to equipment failure or other abnormal temporary operating condition, generating unit operation or third-party mandated interruptions under power supply emergencies; and orders from local, state or federal law enforcement or public safety authorities.

Condition 3 of the January 13, 2005 WQC (see Section 6.2 and 7.0) for the Stillwater Project states:

3. WATER LEVELS

A. Except as temporarily modified by (1) approved maintenance activities, (2) extreme hydrologic conditions, as defined below, (3) emergency electrical system conditions, as defined below, or (4) agreement between the applicant, appropriate state and/or federal agencies, and the Penobscot Indian Nation, water levels in the Stillwater project impoundment shall be maintained within one foot of full pond elevation of 94.65 feet msl when flashboards are in place. During times of flashboard failure, the applicant will maintain water levels at or above the spillway crest. During those times when flashboards are being replaced, the applicant will maintain water levels within one foot of the spillway crest.

B. "Extreme Hydrologic Conditions" means the occurrence of events beyond the Licensee's control, such as, but not limited to, abnormal precipitation, extreme runoff, flood conditions, ice conditions or other hydrologic conditions such that the operational restrictions and requirements contained herein are impossible to achieve or are inconsistent with the safe operation of the project.

C. "Emergency Electrical System Conditions" means operating emergencies beyond Licensee's control which require changes in flow regimes to eliminate such emergencies which may in some circumstances include but are not limited to equipment failure or other abnormal temporary operating condition, generating unit operation or third-party mandated interruptions under power supply emergencies; and orders from local, state or federal law enforcement or public safety authorities.

1.3 PROJECT LOCATION

The Orono and Stillwater Projects are located on the Stillwater Branch of the Penobscot River and are the only hydroelectric facilities on this reach. The next upstream dam from the Stillwater Project is the Gilman Falls Dam (which is part of the Milford Project), located approximately 3 miles upstream. There are no dams downstream of the Orono Project and below the confluence of the Stillwater Branch and the mainstem of the Penobscot River.

FIGURE 19. PROJECT LOCATION – ORONO AND STILLWATER PROJECTS

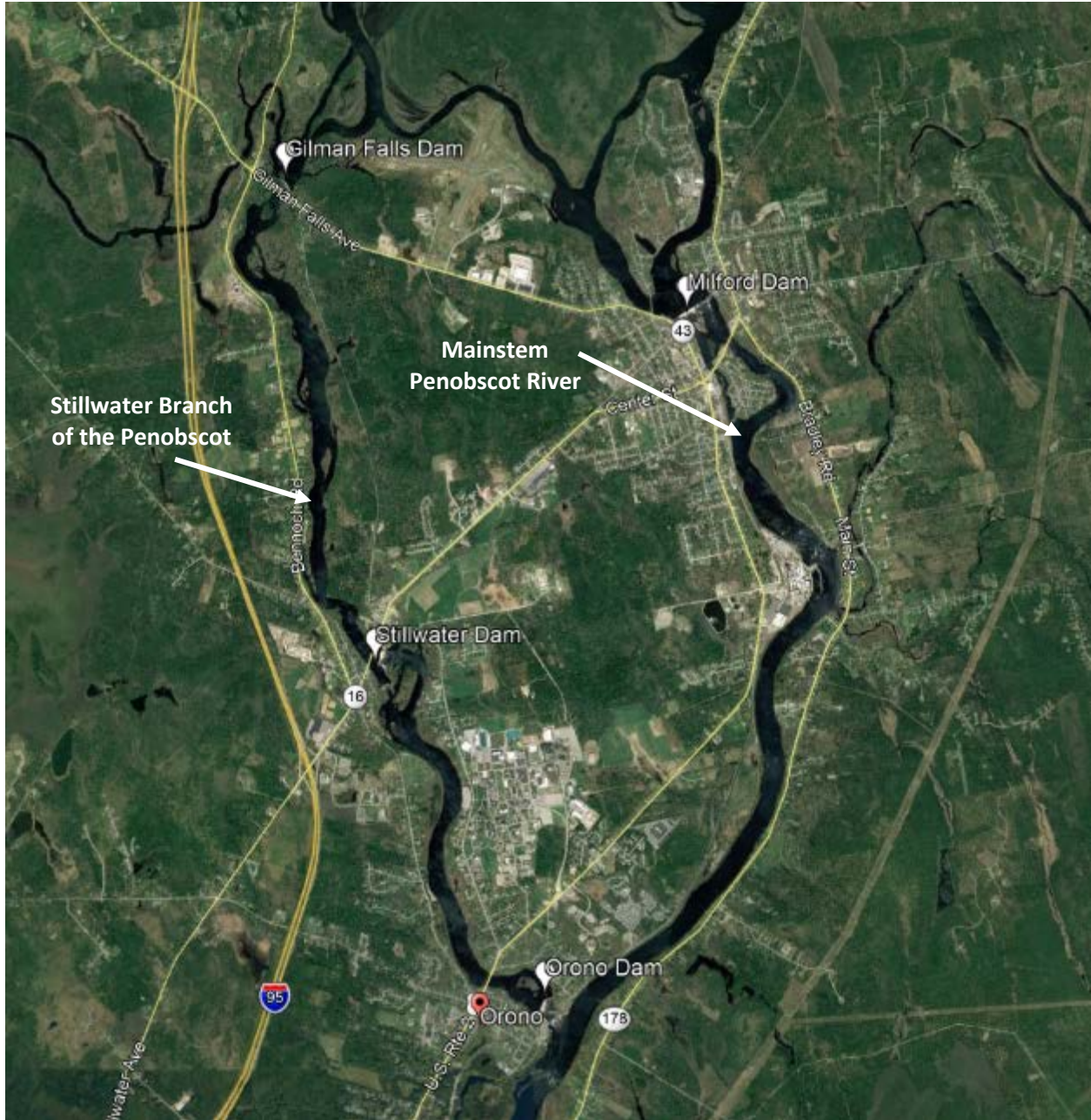
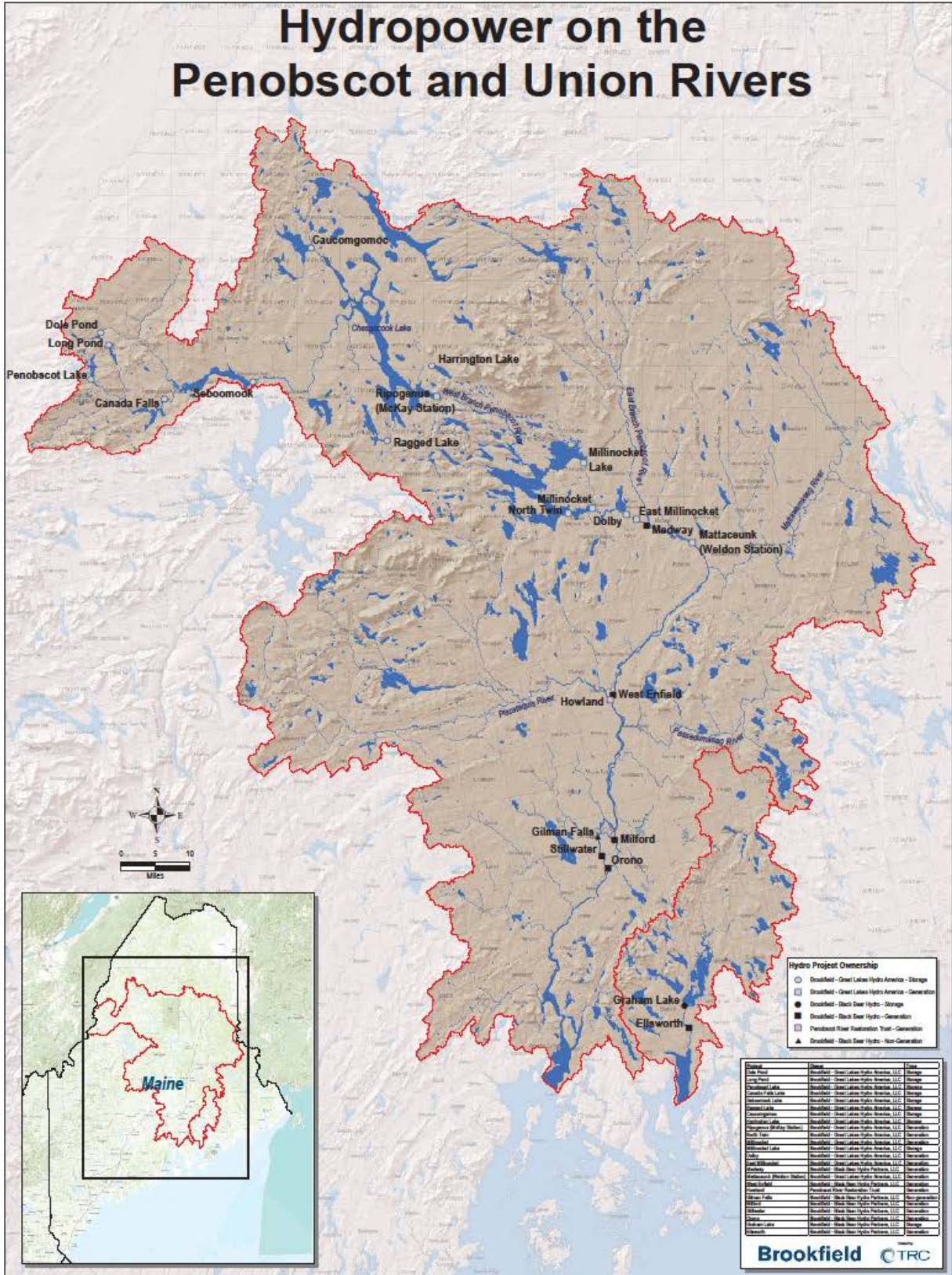


FIGURE 20. OVERVIEW MAP OF THE PENOBSCOT WATERSHED



1.4 REGULATORY AND OTHER REQUIREMENTS AND COMPLIANCE STATUS

1.4.1 FERC LICENSE AND WATER QUALITY CERTIFICATION REQUIREMENTS AND COMPLIANCE STATUS

Orono Project

The Orono Project received a new license from the FERC on December 8, 2005 for the rehabilitation and operation of Powerhouse A. A WQC was issued for the Orono Project, associated with the new license, on December 15, 2004. The license was amended on September 14, 2012 to accommodate the construction of the Powerhouse B and to incorporate the provisions for fish passage pursuant to the Settlement Agreement. The WQC was amended pursuant to the Settlement Agreement on August 23, 2011 and incorporated into the September 14, 2012 amended license. The Orono Powerhouse B was completed and commissioned on November 22, 2013.

Pursuant to an environmental inspection of the project conducted on July 9, 2018 which identified a discrepancy between the authorized and installed capacities, an Order revising the authorized installed capacity listed for the Project was issued by the FERC on February 11, 2019.

See Section 6.1 FERC License and Amendment Orders; Section 6.2 Water Quality Certification, Amendments, and Reports; and Section 7.0 Supporting Documentation.

Stillwater Project

A new license was issued for the Stillwater Project by FERC on April 20, 1998. A WQC was initially issued for the Project, associated with the new license, on December 29, 1992. The FERC approved an amendment of the license for the Stillwater Project on April 18, 2005 to increase the reservoir elevation by one foot, reduce the required minimum flows in both the east and west bypassed channels, and extend deadlines relating to the installation of upstream and downstream fish passage facilities. The WQC was amended on January 13, 2005 when the Licensee applied for the operational modifications specified above for the April 18, 2005 Order Amending License. On September 14, 2012, FERC issued an Order Amending License to authorize the construction of Powerhouse B and incorporate the provisions for fish passage pursuant to the Settlement Agreement. The WQC was amended again pursuant to the Settlement Agreement on August 23, 2011 and incorporated into the September 14, 2012 amended license. The Stillwater Powerhouse B was completed and commissioned on September 21, 2013.

Pursuant to an environmental inspection of the project conducted on July 9, 2018 which identified a discrepancy between the authorized and installed capacities, an Order revising the authorized installed capacity listed for the Project was issued by the FERC on February 11, 2019. Following MDEP's October 28, 2019 revision of the WQC, FERC issued a license amendment for the Stillwater Project on June 8, 2020 approving the discontinuation of the 20 cfs west channel minimum flow in favor of the total 70 cfs minimum flow being discharged into the east channel.

See Section 6.1 FERC License and Amendment Orders; Section 6.2 Water Quality Certification, Amendments, and Reports; and Section 7.0 Supporting Documentation.

Operational Requirements

The Orono and Stillwater Projects are both operated in a run-of-river mode, pursuant to Articles 401 of the respective Project licenses and various conditions of the Project WQCs (see Section 1.1 and Section 6.2 and 7.0). Article 401 of each license also requires the filing of Operation and Flow Compliance Monitoring Plans for the Projects. The Operation and Flow Compliance Monitoring Plans were filed on June 14, 2013 for both Projects (see Section 6.5).

Modifications to run-of-river and minimum flows that have occurred at the Orono and Stillwater Projects over the past 5 years have been permitted by the FERC licenses, i.e., they were either operating emergencies beyond the control of Black Bear, or they were planned in consultation with resource agencies (see Section 6.5).

On May 31, 2017, Black Bear filed a request for a temporary minimum flow variance at the Stillwater Project, pursuant to the FERC Order Approving Operations and Flow Monitoring Plan Pursuant to Article 401, in order to reduce and redirect flashboard leakage during upstream eel passage studies; this variance was granted by FERC on June 13, 2017. This was ultimately pursued as a permanent modification to project operations as discussed above (i.e. FERC's June 8, 2020 Order Amending Minimum Flows Pursuant to Article 402 for the Stillwater Project) (see Section 6.1 FERC License and Amendment Orders; Section 6.2 Water Quality Certification, Amendments, and Reports; and Section 7.0 Supporting Documentation). In compliance with the amended FERC Order, Black Bear filed, on August 10, 2020, a revised Operations and Flow Monitoring Plan to address the relocated minimum flow; this revised Plan was approved by the Commission on September 10, 2020 (see Section 6.5).

Black Bear has not experienced a flow or water level excursion, nor received any notice of a violation of license from FERC, in the last 5 years for either Project.

Water Quality

As discussed elsewhere, the Projects operate under the terms of various WQCs as issued and amended. Dissolved oxygen (DO) monitoring following construction of the Powerhouse B facilities was required pursuant to Article 408 of the Orono 2012 Amended License and Article 415 of the Stillwater 2012 Amended License (see Section 6.1). These articles read as follows:

Orono Project - Article 408. Dissolved Oxygen Monitoring Plan. Within 1 year of issuance of this order, the licensee shall file, for Commission approval, a Dissolved Oxygen Monitoring Plan. The licensee shall develop the plan in consultation and cooperation with the National Marine Fisheries Service, U.S. Fish and Wildlife Service, Penobscot Indian Nation, Maine Department of Inland Fisheries and Wildlife, Maine Department of Marine Resources, and Maine Department of Environmental Protection. The plan shall include, but is not limited to, the following: (1) a provision to monitor dissolved oxygen concentrations downstream of the Orono Project from June 1 through September 30 for at least the first year of operation of the new powerhouse; (2) a description of the monitoring location(s) and equipment to be used; and (3) a schedule for providing the data and a report to the resource agencies and the Commission. If the monitoring results indicate that dissolved oxygen standards are not being met, the report shall include measures for addressing low dissolved oxygen conditions. Following the development of

the plan in consultation with the resource agencies and Penobscot Indian Nation, the licensee shall provide a copy of the proposed plan to these entities and allow them a minimum of 30 days to review and comment on the plan. The final plan filed with the Commission shall include documentation of consultation including copies of any comments received. The licensee shall address all comments and recommendations in its filing. If the licensee does not adopt a recommendation from the resource agencies or Penobscot Indian Nation, the licensee shall include its reasons based on project-specific information. The Commission reserves the right to make changes to the plan in order to ensure compliance with license requirements and to protect environmental resources.

Stillwater Project - Article 415. Dissolved Oxygen Monitoring Plan. Within 1 year of issuance of this order, the licensee shall file, for Commission approval, a Dissolved Oxygen Monitoring Plan. The licensee shall develop the plan in consultation and cooperation with the National Marine Fisheries Service, U.S. Fish and Wildlife Service, Penobscot Indian Nation, Maine Department of Inland Fisheries and Wildlife, Maine Department of Marine Resources, and Maine Department of Environmental Protection. The plan shall include, but is not limited to, the following: (1) a provision to monitor dissolved oxygen concentrations downstream of the Stillwater Project from June 1 through September 30 for at least the first year of operation of the new powerhouse; (2) a description of the monitoring location(s) and equipment to be used; and (3) a schedule for providing the data and a report to the resource agencies and the Commission. If the monitoring results indicate that dissolved oxygen standards are not being met, the report shall include measures for addressing low dissolved oxygen conditions. Following the development of the plan in consultation with the resource agencies and Penobscot Indian Nation, the licensee shall provide a copy of the proposed plan to these entities and allow them a minimum of 30 days to review and comment on the plan. The final plan filed with the Commission shall include documentation of consultation including copies of any comments received. The licensee shall address all comments and recommendations in its filing. If the licensee does not adopt a recommendation from the resource agencies or Penobscot Indian Nation, the licensee shall include its reasons based on project-specific information. The Commission reserves the right to make changes to the plan in order to ensure compliance with license requirements and to protect environmental resources.

The water quality standards downstream of both Projects require DO to be at least 7 milligrams per liter (mg/L) and 75 percent of saturation. Pursuant to Articles 408 and 415, Black Bear monitored DO during 2014 to document DO concentrations immediately downstream of the Orono and Stillwater powerhouses. DO in the Orono tailrace ranged from 7.49 mg/L and 92.2 percent saturation to 10.1 mg/L and 102.9 percent saturation during the monitoring period. DO in the Stillwater tailrace ranged from 7.56 mg/L and 91.0 percent saturation to 10.2 mg/L and 103.6 percent saturation during the monitoring period. Since the DO concentrations and percent saturation immediately downstream of the Orono and Stillwater powerhouses exceeded Maine's water quality standards during the entire 2014 monitoring period, no further monitoring was required. DO monitoring reports and FERC acceptance are provided in Section 6.5.1).

Fish Passage

There are diadromous fish species in the lower Penobscot River and the Stillwater Branch; therefore, fish passage facilities for migratory species are required and have been

installed, as prescribed for both Projects and as dictated by the Settlement Agreement. These requirements were incorporated into the September 14, 2012 Orders Amending License for both the Orono and Stillwater Projects (see Section 6.1) as follows.

Orono Project

Article 409. Fish Passage Design. The licensee shall construct and operate a new downstream fishway integrated into the new combined intake for the two powerhouses. The licensee shall operate the fishway during the migration seasons defined in the section 18 fishway prescriptions incorporated into the license by ordering paragraph (E) of the December 8, 2005 license order. The licensee shall construct the trap-and-truck facility, required by the section 18 fishway prescriptions and water quality certificate concurrently with the new powerhouse such that both fishways are operational beginning the first passage season following commencement of operation of Powerhouse B. The licensee shall prepare the design and operations and maintenance plan of the new downstream fishway and the trap-and-truck facility in consultation and cooperation with the National Marine Fisheries Service, U.S. Fish and Wildlife Service, Penobscot Indian Nation, Maine Department of Inland Fisheries and Wildlife, and Maine Department of Marine Resources. Within 30 days of issuance of this order, the licensee shall provide a report on the computational fluid dynamics modeling to the consulted entities and the Commission. The licensee's final fish passage designs shall take into consideration the results of the modeling and consider alternative measures to improve flow velocities and attraction to the downstream bypass as recommended by the National Marine Fisheries Service and Maine Department of Marine Resources. Within 4 months of issuance of this order, the licensee shall file, for Commission approval: (1) detailed design drawings for the downstream fishway and trap-and-truck facility; (2) a schedule for installing the facilities so that they are operational during the first passage season that the new powerhouse is operational; and (3) procedures for operating and maintaining the facilities. The licensee shall consult with the entities identified above at the 30, 60, and 90 percent design phases. After developing the design, schedule, and operations and maintenance procedures in consultation with the resource agencies and Penobscot Indian Nation, the licensee shall provide a copy of the final design, schedule, and operations and maintenance procedures to these entities and allow a minimum of 30 days to review and comment. The final design drawings, schedule, and operations and maintenance procedures filed with the Commission shall include documentation of consultation including the modeling report and copies of any comments received. The licensee shall address all comments and recommendations in its filing. If the licensee does not adopt a recommendation from the resource agencies or Penobscot Indian Nation, the licensee shall include its reasons based on project-specific information. The Commission reserves the right to make changes to the proposed facilities and schedule in order to ensure compliance with license requirements and protect environmental resources. The licensee shall not commence construction of the fish passage facilities until the designs have been approved by the Commission. The licensee shall make any modification to constructed facilities required by the approved designs.

Article 410. Species Protection Plan. Within 1 year of issuance of this order, the licensee shall file, for Commission approval, a revised Species Protection Plan, including the Atlantic Salmon Passage Study Plan. The revised plan shall incorporate the terms and conditions of the National Marine Fisheries Service's Biological Opinion and include a schedule for providing data and reports to the consulted entities. The plan shall be revised in consultation with the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, the Penobscot Indian Nation, the

Maine Department of Inland Fisheries and Wildlife, and the Maine Department of Marine Resources. Following the revision of the plan in consultation with the resource agencies and Penobscot Indian Nation, the licensee shall provide a copy of the proposed plan to these entities and allow them a minimum of 30 days to review and comment on the plan. The final plan filed with the Commission shall include documentation of consultation including copies of any comments received. The licensee shall address all comments and recommendations in its filing. If the licensee does not adopt a recommendation from the resource agencies or Penobscot Indian Nation, the licensee shall include its reasons based on project-specific information. The Commission reserves its authority to require the licensee to modify the plan, project structures, or operations in order to protect and enhance aquatic resources.

Article 411. Fish Passage Effectiveness Plan. Within 1 year of issuance of this order, the licensee shall file, for Commission approval, a plan to monitor and evaluate the effectiveness of the fish passage facilities and flows required by Article 409 for the following species: American shad, alewife, blueback herring, and American eel. The results of these monitoring studies shall provide a basis for recommending future structural or operational changes at the project. The plan shall be developed in consultation and cooperation with the U.S. Fish and Wildlife Service, National Marine Fisheries Service, the Penobscot Indian Nation, Maine Department of Inland Fisheries and Wildlife, and Maine Department of Marine Resources. The plan shall include, but not be limited to: (1) the methods, locations, and equipment used for the monitoring; (2) how effectiveness will be quantified and evaluation criteria for determining if passage is adequate; (3) a provision to provide the data and a report to the consulted entities and a schedule for consultation regarding the results; and (4) a schedule for implementing the plan. Following the development of the plan in consultation with the resource agencies and Penobscot Indian Nation, the licensee shall provide a copy of the proposed plan to these entities and allow them a minimum of 30 days to review and comment on the plan. The final plan filed with the Commission shall include documentation of consultation including copies of any comments received. The licensee shall address all comments and recommendations in its filing. If the licensee does not adopt a recommendation from the resource agencies or Penobscot Indian Nation, the licensee shall include its reasons based on project-specific information. The Commission reserves the right to make changes to the plan in order to ensure compliance with license requirements and protect environmental resources. If the results of the monitoring indicate that changes in project structures or operations, including alternative flow releases, are necessary to protect fish resources, the licensee shall first consult with the entities listed above to develop recommended measures, and then file its proposal with the Commission, for approval. The Commission reserves its authority to require the licensee to modify project structures or operations to protect and enhance aquatic resources.

Article 412. Upstream American Eel Passage. Within 1 year of issuance of this order, the licensee shall file, for Commission approval, an Eel Passage Location Study Plan to assess the appropriate location for the siting of the upstream eel fishway. The plan shall be developed in consultation with the U.S. Fish and Wildlife Service, National Marine Fisheries Service, Penobscot Indian Nation, Maine Department of Inland Fisheries and Wildlife, and Maine Department of Marine Resources. The plan shall include, but not be limited to: methods for monitoring the river reach immediately below the project for congregating American eel during at least one full upstream migration season following commencement of Powerhouse B operation; and a provision for reporting the results to the consulted entities within 60 days of completing the study. Within 6 months of completion of the location study, the licensee shall file, for

Commission approval, a Fishway Plan. The Fishway Plan shall include but not be limited to: (1) the location and design specifications of the passage facility based on results of the location monitoring study; (2) a schedule for installing the facility so that it is operational as soon as possible, but no later than prior to the third upstream migration season following commencement of operation of the new powerhouse; and (3) procedures for operating and maintaining the facility. No construction of the upstream American eel fish passage facilities shall begin until the licensee is notified by the Commission that the plan is approved. Within 90 days of a Commission order approving the Fishway Plan the licensee shall file, for Commission approval, a revised American eel Upstream Assessment Plan, to include a provision to monitor and evaluate the effectiveness of the relocated upstream American eel passage facility. Following the development of the Eel Passage Study Location Plan, Fishway Plan, and revised American eel Upstream Assessment Plan in consultation with the resource agencies and Penobscot Indian Nation, the licensee shall provide a copy of the proposed plans to these entities and allow them a minimum of 30 days to review and comment on the plan. The final plans filed with the Commission shall include documentation of consultation including copies of any comments received. The licensee shall address all comments and recommendations in its filings. If the licensee does not adopt a recommendation from the resource agencies or Penobscot Indian Nation, the licensee shall include its reasons based on project-specific information. The Commission reserves the right to make changes to the plans in order to ensure compliance with license requirements and protect environmental resources.

Both the upstream fish lift/trap and truck facility and the downstream fish passage facility were constructed at the Orono Project concurrent with Powerhouse B, and both became operational for the 2014 fish passage season. The requirements for fish passage at the Project were derived pursuant to the Penobscot River Settlement Agreement (see Section 6.3).

The Orono Project fish passage facilities are operated pursuant to the August 31, 2012 National Marine Fisheries Service Biological Opinion (see Section 6.5.4). Included in the Biological Opinion is an adaptive management plan that provides iterative measures that Black Bear is required to undertake should passage effectiveness studies indicate that the required performance standards for Atlantic salmon are not being met (96% survival within a 75% confidence interval with passage within 24 hours for downstream migrants). Beginning with the 2016 downstream passage season, an iterative adaptive management measure of 20% to 50% of station inflows provided as spill was implemented at the Orono Project. Effectiveness testing for downstream passage at the Orono Project has not yet demonstrated the 96% survival performance standard in three consecutive years (as required by the 2012 Biological Opinion), even in spite of the provision of spill during the downstream migration period. However, recent discussions with NMFS indicate concerns with the statistical validity of the standard as currently written (i.e. consecutive years of study increase the likelihood of non-attainment). Black Bear is currently working with the NMFS on the potential to reinstate consultation on this issue ahead of the 2023 deadline for take anticipated with standard achievement. Fish passage effectiveness testing reports have been previously submitted to LIHI and are provided in Section 6.5.3 and 6.5.4).

The upstream fish passage effectiveness of the Orono Project has not been tested and there is no performance standard for upstream fish passage. This is because the 2012 Biological Opinion assumed that the majority of Atlantic salmon would traverse the mainstem of the Penobscot and Atlantic salmon would only be incidentally attracted to the Stillwater Branch

under high flow/spill conditions. Studies conducted in 2014 confirmed that there is no delay experienced by upstream migrating adult Atlantic salmon that are incidentally attracted to the Stillwater Branch during high flow conditions. Fish passage effectiveness testing reports have been previously submitted to LIHI, and those conducted in the last 5 years are provided in Section 6.5.3 and 6.5.4).

Effectiveness testing for other anadromous species has been completed and/or is ongoing. In accordance with a letter issued by the FERC on March 6, 2020, Black Bear is coordinating with the resource agencies and the Penobscot Indian Nation (PIN) on issues concerning (1) migratory delay; (2) operational conditions; and (3) development of passage performance standards (effectiveness criteria). Two meetings – one on June 3, 2020 and one on September 9, 2020 – have been held with the agencies and PIN to address the topics outlined in FERC's letter (see Section 6.5.3 and 6.5.4).

Stillwater Project

Article 416. Downstream Fish Passage at Powerhouse B. The licensee shall construct and operate a downstream fishway at Powerhouse B. The licensee shall operate the fishway during the migration seasons defined in Article 406 beginning the first downstream passage season following commencement of operation of Powerhouse B. Within 4 months of the date of this order the licensee shall file, for Commission approval: (1) detailed final design drawings for the downstream fishway; (2) a schedule for installing the facilities so that they are operational during the first passage season that the new powerhouse is operational; and (3) procedures for operating and maintaining the facilities. The licensee shall prepare the designs, schedule, and operations and maintenance procedures of the new downstream fishway for Powerhouse B in consultation and cooperation with the National Marine Fisheries Service, U.S. Fish and Wildlife Service, Penobscot Indian Nation, Maine Department of Inland Fisheries and Wildlife, and Maine Department of Marine Resources. The licensee shall consult with these entities at the 30, 60, and 90 percent design phases. After developing the design, schedule, and operations and maintenance procedures in consultation with the resource agencies and Penobscot Indian Nation, the licensee shall provide a copy of the final design, schedule, and operations and maintenance procedures to these entities and allow a minimum of 30 days to review and comment. The final design drawings, schedule, and operations and maintenance procedures filed with the Commission shall include documentation of consultation including copies of any comments received. The licensee shall address all comments and recommendations in its filing. If the licensee does not adopt a recommendation from the resource agencies or Penobscot Indian Nation, the licensee shall include its reasons based on project-specific information. The Commission reserves the right to make changes to the proposed facilities and schedule in order to ensure compliance with license requirements and protect environmental resources. The licensee shall not commence construction of the fish passage facilities until the design has been approved by the Commission. The licensee shall make any modification to constructed facilities required by the approved design.

Article 417. Species Protection Plan. Within 1 year of issuance of this order, the licensee shall file, for Commission approval, a revised Species Protection Plan, including the Atlantic Salmon Passage Study Plan. The revised plan shall incorporate the terms and conditions of the National Marine Fisheries Service's Biological Opinion and include a schedule for providing data and reports to the consulted entities. The plan shall be revised in consultation with the National

Marine Fisheries Service, the U.S. Fish and Wildlife Service, the Penobscot Indian Nation, the Maine Department of Inland Fisheries and Wildlife, and the Maine Department of Marine Resources. Following the revision of the plan in consultation with the resource agencies and Penobscot Indian Nation, the licensee shall provide a copy of the proposed plan to these entities and allow them a minimum of 30 days to review and comment on the plan. The final plan filed with the Commission shall include documentation of consultation including copies of any comments received. The licensee shall address all comments and recommendations in its filing. If the licensee does not adopt a recommendation from the resource agencies or Penobscot Indian Nation, the licensee shall include its reasons based on project-specific information. The Commission reserves its authority to require the licensee to modify the plan, project structures, or operations in order to protect and enhance aquatic resources.

A new downstream fish passage facility was constructed at the Stillwater Project concurrent with the Powerhouse B construction, and both the Powerhouse A and Powerhouse B downstream fishways became operational for the 2014 fish passage season. The requirements for fish passage at the Project were derived pursuant to the Penobscot River Settlement Agreement (see Section 6.3).

The Stillwater Project fish passage facilities are operated pursuant to the August 31, 2012 National Marine Fisheries Service Biological Opinion (see Section 6.5.4). Included in the Biological Opinion is an adaptive management plan that provides iterative measures that Black Bear is required to undertake should passage effectiveness studies indicate that the required performance standard for Atlantic salmon is not being met (96% survival within a 75% confidence interval with passage within 24 hours for downstream migrants). Beginning with the 2016 downstream passage season, an iterative adaptive management measure of 20% to 50% of station inflows provided as spill was implemented at the Stillwater Project. Effectiveness testing for downstream passage at the Stillwater Project has not yet demonstrated the 96% survival performance standard in three consecutive years (as required by the 2012 Biological Opinion) even in spite of the provision of spill during the downstream migration period. However, recent discussions with NMFS indicate concerns with the statistical validity of the standard as currently written (i.e. consecutive years of study increase the likelihood of non-attainment). Black Bear is currently working with the NMFS on the potential to reinstate consultation on this issue ahead of the 2023 deadline for take associated with standard achievement. Fish passage effectiveness testing reports have been previously submitted to LIHI and are provided in Section 6.5.3 and 6.5.4).

Effectiveness testing for other anadromous species has been completed and/or is ongoing. In accordance with a letter issued by the FERC on March 6, 2020, Black Bear is coordinating with the resource agencies and PIN on issues concerning (1) migratory delay; (2) operational conditions; and (3) development of passage performance standards (effectiveness criteria). Two meetings – one on June 3, 2020 and one on September 9, 2020 – have been held with the agencies to address the topics outlined in FERC's letter (see Section 6.5.3 and 6.5.4).

Land Management

Lands within the FERC boundaries of these Projects are generally limited to those necessary for operation and maintenance of the Projects and for other Project purposes. Neither Project has an abundance of shoreline lands, with the project boundary following the

normal full pond elevation at both Projects. Neither Project has a requirement for a Shoreline Management Plan (SMP), and both Projects must comply with FERC's Standard Land Use article for lands owned by the licensees.

Recreational Resources

Orono Project

Article 404 of the Orono Project license (see Section 6.1) requires Black Bear to implement its recreation plan and file documentation with FERC that the plan has been implemented. The specific language of Article 404 is:

Article 404. Recreation Plan. Within three months of license issuance, the licensee shall implement its recreation plan and file documentation with the Commission that the plan has been implemented.

The only Project recreational facility at the Orono Project is the canoe portage trail. The canoe portage trail was completed in 2006, and documentation of its completion was filed with FERC. There are several trails and sites providing views of and access to the Orono impoundment that are outside of the project boundary and managed by others. There are no specific recreation monitoring requirements at the Orono Project. Recreation monitoring reports, pursuant to the previous FERC Form 80 requirements, are provided in Section 6.5.6.

Stillwater Project

Article 410 of the Stillwater Project FERC license (see Section 6.1) requires Black Bear to construct and maintain recreation facilities at the Project. The specific language of Article 410 is as follows:

Article 410. Within one year of license issuance, the Licensee shall construct and provide for the operation and maintenance of the following recreational facilities:

- (1) provide fencing around the parking area on the east bank of the Stillwater dam and signs warning against launching canoes and walking out on to the dam;*
- (2) provide gravel fill to the University of Maine to be used to create parking areas and one hand-carry boat and canoe access site;*
- (3) provide surfacing materials for handicapped access to the northern cove in the University Forest adjacent to the Stillwater impoundment; and*
- (4) designate a visitor parking area at the Stillwater powerhouse and continue to provide and maintain the portage trail around Stillwater dam, providing safety booms and hazard warning signs near the Stillwater dam, and assess the demand for additional recreational opportunities in conjunction with FERC Form 80 surveys.*

The Licensee shall construct these facilities after consultation with the Maine Department of Conservation and the Maine Department of Environmental Protection Bureau Land Quality Control. These facilities shall be shown on the as-built drawings filed pursuant to this license. The Licensee shall file a report with the as-built drawings, which shall include the entity responsible for operation and maintenance of the facilities, documentation of

consultation, copies of comments and recommendations on the report after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the report. The Licensee shall allow a minimum of 30 days for the agencies to comment before filing the report with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The only Project recreation facility is the canoe portage trail. The University of Maine's DeMerritt Forest provides boating access to and shoreline views of the Project impoundment. Article 411 requires recreation monitoring at the Stillwater Project.

Article 411. The Licensee, after consultation with the Town of Orono, National Park Service, Penobscot Indian Nation, Maine Department of Environmental Protection, and Maine Department of Conservation, shall monitor recreation and Indian cultural use of the project area to determine whether existing recreation facilities are meeting recreation and Indian cultural use needs. Monitoring studies shall begin within six years of the issuance date of this license. Monitoring studies, at a minimum, shall include collection of annual recreation use data.

Every six years during the term of the license, the Licensee shall file a report with the Commission on the monitoring results. This report shall include:

- (1) annual recreation and Indian cultural use figures;*
- (2) a discussion of the adequacy of the Licensee's recreation facilities at the project site to meet recreation demand;*
- (3) a description of the methodology used to collect all study data;*
- (4) if there is need for additional facilities, the licensee's design of recreational facilities and how such design takes into account the national standards established by the Architectural and Transportation Barriers Compliance Board pursuant to the Americans with Disabilities Act of 1990;*
- (5) documentation of agency consultation and agency comments on the report after it has been prepared and provided to the agencies; and*
- (6) specific descriptions of how the agency comments are accommodated by the report.*

The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations prior to filing the report with the Commission.

The most recent recreation report was filed with FERC on December 1, 2016 (see Section 6.5.6). The next Recreation Report is due to be filed with FERC by April 1, 2022.

Cultural Resources

Orono Project

Article 405 of the December 8, 2005 Amended License Order (see Section 6.1) dictates the treatment of cultural resources at the Orono Project as follows:

Article 405. Cultural Resources. The licensee, before starting any land-clearing or land-disturbing activities within the project boundaries, other than those specifically authorized in this

license, including recreation developments at the project, shall consult with the Maine State Historic Preservation Officer (SHPO) and the Penobscot Tribal Historic Preservation Officer (THPO). If the licensee discovers previously unidentified archeological or historic resources during the course of constructing or developing project works or other facilities at the project, the licensee shall stop all land-clearing and land-disturbing activities in the vicinity of the resources and consult with the SHPO and THPO. In either instance, the licensee shall file for Commission approval a historic properties management plan (plan) prepared by a qualified cultural resource specialist after having consulted with the SHPO and THPO. The plan shall include the following items: (1) a description of each identified or discovered resource indicating whether it is listed on or eligible to be listed on the National Register of Historic Places (NRHP); (2) an evaluation of each identified or discovered resource not listed on the NRHP with respect to its eligibility for such listing (historic property); (3) a description of the potential effects on any historic properties; (4) proposed measures for avoiding or mitigating any adverse effects on historic properties; (5) documentation of the nature and extent of consultation; and (6) a schedule for implementing any proposed mitigation measures and conducting additional studies. The licensee shall not begin land-clearing or land-disturbing activities, other than those specifically authorized in this license, or resume such activities in the vicinity of a resource discovered during construction, until informed by the Commission that the requirements of this article have been fulfilled. The Commission reserves the right to require changes to the plan.

There is no requirement in the Project license for a Programmatic Agreement or Cultural Resource Management Plan (CRMP).

Stillwater Project

Article 412 of the Stillwater license (see Section 6.1) required the Licensee to implement the Programmatic Agreement for the managing of historic properties executed on August 8, 1997. Article 412 states:

Article 412. The Licensee shall implement the "Programmatic Agreement Among the Federal Energy Regulatory Commission, the Advisory Council on Historic Preservation, and the Maine State Historic Preservation Officer, for Managing Historic Properties That May Be Affected By A License Issuing To Bangor Hydro-Electric Company To Continue Operating The Stillwater Hydroelectric Project In Maine", executed on August 8, 1997, including but not limited to the Cultural Resources Management Plan for the Project. In the event that the Programmatic Agreement is terminated, the Licensee shall implement the provisions of its approved Cultural Resources Management Plan. The Commission reserves the authority to require changes to the Cultural Resources Management Plan at any time during the term of the license. If the Programmatic Agreement is terminated prior to Commission approval of the Cultural Resources Management Plan, the Licensee shall obtain Commission approval before engaging in any ground disturbing activities or taking any other action that may affect any historic properties within the Project's area of potential effect.

Section II.D of the Programmatic Agreement for the Stillwater Project, executed on August 8, 1997 and implemented pursuant to Article 412 of the Project license, requires the licensee to file an annual report by the Project license anniversary (April 20th) on activities conducted under the applicable CRMP with the FERC, Maine State Historic Preservation Office (SHPO), Penobscot Indian Nation (PIN), and the U.S. Department of the Interior Bureau of Indian

Affairs (BIA). The Stillwater Project CRMP was filed on May 27, 1999 and approved by FERC on November 29, 1999.

Extensive field surveys have identified no historic properties at the Stillwater Project, and no properties have been uncovered (see Section 6.5.5). Black Bear will take appropriate measures as defined in the CRMP should new properties be discovered at the Stillwater Project during the term of its license. Specifically, the CRMP for the Stillwater Project contains a discovery provision (Section III) similar to the Orono Project's Article 405.

Although no cultural resources have been previously identified in the vicinity of Projects, the potential does exist for the discovery of cultural resources during operation and maintenance activities. If a previously undiscovered cultural resource site is identified during operation, and/or maintenance of the facilities, Black Bear, in accordance with the license requirements identified above, will immediately cease all work at the site and follow the provisions set forth in Article 405 of the Orono Project license and in the discovery section of the CRMP for the Stillwater Project.

1.4.2 LIHI CERTIFICATION REQUIREMENTS AND COMPLIANCE STATUS

The following provides a summary of compliance activities for the current LIHI Certifications for the Orono and Stillwater Projects.

Orono Project

Condition 1. The Owner shall notify LIHI within 30 days of receipt of USFWS certification of the upstream and downstream anadromous fish and eel passage facilities as required by the Lower Penobscot River Multiparty Settlement Agreement. This certification requires affirmation that: a) the facilities were designed and installed as prescribed, b) the facilities are ready for routine operation as evidenced by approved Operating Manuals and electronic data collection systems, and c) one year of testing and any required "fine tuning" has been completed. It is assumed that certification of the fish lift indicates that the capacity concerns have been resolved. If such USFWS certification is not received by the end of 2017, the Owner shall provide LIHI documentation as to why the certification has not been received and the plan and schedule to remedy deficiencies identified by USFWS preventing such certification.

By letter dated September 11, 2018, the USFWS certified the fish passage facilities of the Orono Project. The certification letter was distributed to LIHI on September 11, 2018 to satisfy Condition 1 for the Project.

Condition 2. If the requirement for re-initiation of quantitative studies of downstream passage of juvenile and adult alosine species occurs within this LIHI certification period, the Owner shall notify LIHI within 60 days of receipt of such study re-initiation. This notification shall include the study schedule including the expected report issuance date. A copy of the final report, along with agency statement as to whether the testing results prove that safe downstream passage has been demonstrated, shall be provided to LIHI within 60 days of issuance of the final report.

Consultation with the agencies regarding quantitative studies of downstream passage of juvenile and adult alosines has been continuous. Most recently, Black Bear filed the “*Study Plan for the Evaluation of Downstream Passage of Juvenile River Herring at the Milford, Stillwater and Orono Projects*” with the FERC on April 15, 2020, a copy of which is provided herein (see Section 6.5.3). As discussed above, Black Bear is currently in discussions with the resources agencies and PIN regarding: (1) migratory delay; (2) operational conditions; and (3) development of passage performance standards (effectiveness criteria); as requested by the FERC in its March 6, 2020 letter.

Black Bear filed the “*Study Plan for the Evaluation of Downstream Passage of Adult River Herring at the Milford, Stillwater and Orono Projects and Adult American Shad at the Milford Project, Penobscot River*” with the FERC on March 16, 2018 (and to LIHI via email on April 12, 2018) for the evaluation of downstream passage of adult alosines at the Orono, Stillwater and Milford Projects. Black Bear provided the agency-reviewed and final 2018 Diadromous Fish Passage Report for Alosines and American Eels for the lower Penobscot Projects (including Orono) to LIHI via email on April 15, 2019, as part of the Milford Project Recertification Application, which included the downstream passage of adult river herring study at the Milford, Stillwater, and Orono Projects (see Section 6.5.3).

Condition 3. The Owner shall notify LIHI within 60 days of receipt of USFWS, NMFS and MDMR acknowledgement that the standards specified in the Biological Opinion for safe downstream passage of Atlantic salmon have been met. Currently, effectiveness testing could be completed by 2018 based on the three-year testing requirement, unless advancement to a higher enhancement sequence is found to be necessary. Should this occur, the Owner shall notify LIHI in the annual compliance report as to the new date by which such continuing testing to meet passage standards is expected to be completed.

Black Bear completed a radio telemetry study field effort in spring 2018 to evaluate downstream passage effectiveness and survival for Atlantic salmon smolts on the lower Penobscot River (including at the Orono Project), following the Adaptive Management Plan outlined in the Project’s Species Protection Plan. The 2018 Annual Report for the Atlantic Salmon Species Protection Plan for the Orono, Stillwater, Milford, West Enfield, and Medway Projects was provided to LIHI on April 15, 2019. The 2018 study resulted in an adjusted project survival point estimate for the Orono Project of 99.2%. However, the Orono Project has not accomplished the performance standard of 96% in three consecutive years, as required by the Biological Opinion (see Section 6.5.3 and 6.5.4). As discussed above, Black Bear is consulting with NMFS regarding the statistical validity of the standard as currently written (i.e. consecutive years of study increase the likelihood of non-attainment).

Because the incidental take limit associated with performance standard achievement ends in 2023, Black Bear will continue to consult with the agencies on the results of this testing, the applicability of the performance standard (including the statistical validity of the testing approach as discussed above), and the determination of the need for future testing, and will provide updates to LIHI as part of the annual Condition Compliance Statements for the Orono Project.

Condition 4. The Owner shall provide LIHI with a summary of the results of the 2016 quantitative downstream effectiveness study for American eel, along with any comments

received from USFWS, NMFS and Maine Department of Marine Resources (MDMR) as to whether the testing results prove that safe downstream passage for American eel has been demonstrated. Also, the Owner shall provide a summary of the annual American eel upstream passage results, along with confirmation that any changes to the passage facilities recommended by the resource agencies have been, or are scheduled for implementation. The noted upstream and downstream passage results shall be provided within 60 days of report finalization.

On April 12, 2018, Black Bear provided to LIHI via email the final report summarizing the 2017 studies of upstream eel passage at the Orono Project, which included agency comments. Downstream eel passage testing at the Project using radio telemetry methods was completed in 2016, and the final report on the testing, which included agency comments, was provided to LIHI on May 31, 2017 (see Section 6.5.3). Upstream-migrating eels are not counted at the Orono Project, and therefore, annual upstream passage results are not compiled for the Project.

As discussed above, Black Bear is currently in discussions with the resources agencies and PIN regarding: (1) migratory delay; (2) operational conditions; and (3) development of passage performance standards (effectiveness criteria); as requested by the FERC in its March 6, 2020 letter.

Condition 5. The Owner shall provide LIHI a summary of the results the 2017 survey for Hyssop leaved fleabane, a state-listed species of Special Concern, as required by the Sensitive Species Protection Plan. This summary shall be provided within 60 days of its finalization, following review and comment by the Maine Natural Areas Program and New England Wild Flower Society.

The Sensitive Plan Survey Report for the Orono and Stillwater Projects was submitted to LIHI via email on June 1, 2018. This April 8, 2018 report summarizes surveys conducted in 2017 as follow-up to construction of new powerhouses at Orono and Stillwater, and as required by FERC's 2012 license amendments for these Projects (which authorized construction of the new powerhouses). The report was provided to the New England Wild Flower Society and the Maine Natural Areas Program (MNAP) on April 9, 2018; other than MNAP requesting GPS coordinates from the plant surveys for their database, neither organization provided comments on the report (see Section 6.5.4).

Stillwater Project

Condition 1. The Owner shall notify LIHI within 30 days of receipt of USFWS certification of the upstream and downstream anadromous fish and eel passage facilities as required by the Lower Penobscot River Multiparty Settlement Agreement. This certification requires affirmation that: a) the facilities were designed and installed as prescribed, b) the facilities are ready for routine operation as evidenced by approved Operating Manuals and electronic data collection systems, and c) one year of testing and any required "fine tuning" has been completed. It is assumed that certification of the fish lift indicates that the capacity concerns have been resolved. If such USFWS certification is not received by the end of 2017, the Owner shall provide LIHI documentation as to why the certification has not been received and the plan and schedule to remedy deficiencies identified by USFWS preventing such certification.

By letter dated September 11, 2018, the USFWS certified the fish passage facilities of the Stillwater Project. The certification letter was distributed to LIHI on September 11, 2018 to satisfy Condition 1 for the Project.

Condition 2. If the requirement for re-initiation of quantitative studies of downstream passage of juvenile and adult alosine species occurs within this LIHI certification period, the Owner shall notify LIHI within 60 days of receipt of such study re-initiation. This notification shall include the study schedule including the expected report issuance date. A copy of the final report, along with agency statement as to whether the testing results prove that safe downstream passage has been demonstrated, shall be provided to LIHI within 60 days of issuance of the final report.

See Response to Orono Condition 2 above.

Condition 3. The Owner shall notify LIHI within 60 days of receipt of USFWS, NMFS and MDMR acknowledgement that the standards specified in the Biological Opinion for safe downstream passage of Atlantic salmon have been met. Currently, effectiveness testing should be completed by 2018 based on the three-year testing requirement, unless advancement to the third level flow enhancement sequence is found to be necessary. Should this occur, the Owner shall notify LIHI in the annual compliance report as to the new date by which such continuing testing to meet passage standards is expected to be completed.

Concurrent with the effort at the Orono Project, Black Bear completed a radio telemetry study field effort to evaluate downstream passage effectiveness and survival for Atlantic salmon smolts at the Stillwater Project in the spring of 2018, following the Adaptive Management Plan outlined in the Project's Species Protection Plan. The 2018 Annual Report for the Atlantic Salmon Species Protection Plan for the Orono, Stillwater, Milford, West Enfield, and Medway Projects was provided to LIHI on April 15, 2019. The 2018 study resulted in an adjusted project survival point estimate for the Stillwater Project of 91.7% with a 75% confidence interval upper limit of 94.5%. The Stillwater Project has not accomplished the performance standard of 96% in three consecutive years, as required by the Biological Opinion (see Section 6.5.3 and 6.5.4). As discussed above, Black Bear is consulting with NMFS regarding the statistical validity of the standard as currently written (i.e. consecutive years of study increase the likelihood of non-attainment).

Because the incidental take limit associated with performance standard achievement ends in 2023, Black Bear will continue to consult with the agencies on the results of this testing, the applicability of the performance standard (including the statistical validity of the testing approach as discussed above), and the determination of the need for future testing, and will provide updates to LIHI as part of the annual Condition Compliance Statements for the Stillwater Project.

Condition 4. The Owner shall provide LIHI a summary of the results of the 2016 quantitative downstream effectiveness study for American eel, along with comments received from USFWS, NMFS and MDMR as to whether or not the testing results prove that safe downstream passage for American eel has been demonstrated. Also, the Owner shall provide a summary of the annual American eel upstream passage results, along with confirmation that any changes to the passage facilities recommended by the resource agencies have been

implemented or are scheduled for implementation. The noted upstream and downstream passage results shall be provided within 60 days of report finalization.

On April 12, 2018, Black Bear provided to LIHI the final report summarizing the 2017 studies of upstream eel passage at Stillwater which included agency comments. Downstream eel passage study results, including agency comments, were previously provided to LIHI on May 31, 2017, as for the Orono Project, (see Section 6.5.3). Upstream-migrating eels are not counted at the Stillwater Project, and therefore, annual upstream passage results are not compiled for the Project.

As discussed above, Black Bear is currently in discussions with the resources agencies and PIN regarding: (1) migratory delay; (2) operational conditions; and (3) development of passage performance standards (effectiveness criteria); as requested by the FERC in its March 6, 2020 letter.

TABLE 1. 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)	Orono Project (FERC No. 2710) Stillwater Project (FERC No. 2712)
Reason for applying for LIHI certification	1. To participate in state RPS program (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) River name (USGS proper name)	1. Yes. MA Class II RPS program. 100% of the Medway facility output is qualified, estimated to be 29,732 MWh in 2020. 2. Possibly as a secondary channel for participating in REC markets. 3. Yes, for Orono only. For Stillwater, possibly, if a buyer offers a better price than MA RECs. 4. Possibly, but participating in the MA RPS program is the primary driver. 5. Yes, but participating in the MA RPS program is currently the primary reason.
	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	100% of the total generation
Location	River name (USGS proper name)	Penobscot 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)	01020005 - Lower Penobscot River
	Nearest town(s), county(ies), and state(s) to dam	Orono Project: Town of Orono, Penobscot County, Maine Stillwater Project: City of Old Town, Penobscot County, Maine
	River mile of dam above mouth	Orono Project: RM 0.15 Stillwater Project: RM 2.41 <i>as measured from the confluence of the Stillwater and Mainstem Branches of the Penobscot River</i>
	Geographic latitude of dam	Orono Project: 44°53'1.59"N Stillwater Project: 44°54'40.40"N
	Geographic longitude of dam	Orono Project: 68°39'52.26"W Stillwater Project: 68°41'1.71"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 date of the change.	Brookfield Renewable Partners LP Kelly Maloney, Compliance Manager, Northeast Region Ownership has not changed since last certification
	FERC licensee company name (if different from owner)	Black Bear Hydro Partners, LLC; Black Bear Development Holdings, LLC; and Black Bear SO, LLC
Regulatory Status	FERC Project Number (e.g., P-xxxxx), issuance and expiration dates, or date of exemption	<p><u>Orono Project</u> Orono FERC No. 2710 Issued December 8, 2005 Expires March 31, 2048 Amendments: February 11, 2019 – correcting Authorized Installed Capacity September 14, 2012 – authorizing construction of Powerhouse B and extending license term</p> <p><u>Stillwater Project</u> Stillwater FERC No. 2712 Issued April 20, 1998 Expires March 31, 2048 Amendments: June 8, 2020 – relocating 20 cfs west channel minimum flow February 11, 2019 – correcting Authorized Installed Capacity September 14, 2012 – authorizing construction of Powerhouse B and extending license term April 18, 2005 – authorizing 1 ft increase in reservoir</p> <p>License Orders and amendments provided in Section 6.1</p>
	FERC license type (major, minor, exemption) or special classification (e.g., "qualified conduit", "non-jurisdictional")	Hydropower license for Major Project; Federal Power Act

Item	Information Requested	Response (include references to further details)
	<p>Water Quality Certificate identifier, issuance date, and issuing agency name. Include information on amendments. Include links or copies.</p>	<p><u>Orono Project:</u> December 14, 2004 #L-21917-33-A-N August 23, 2011 #L-21917-33-H-N</p> <p><u>Stillwater Project:</u> December 29, 1992 #L-16773-33-A-N June 18, 2001 #L-16773-33-E-M January 14, 2005 #L-16773-33-F-M August 23, 2011 #L-16773-33 October 28, 2019 #L-16773-33-O-M</p> <p>Water Quality Certifications provided in Section 7.0</p>
	<p>Hyperlinks to key electronic records on FERC e-library website or other publicly accessible data repositories</p>	<p>See Sections 6.0 and 7.0 for hyperlinks to or documentation of relevant records including FERC License and Amendment Orders; Section 401 Water Quality Certification; FERC and regulatory filings; and other key documents.</p>
Powerhouse	<p>Date of initial operation (past or future for pre-operational applications)</p>	<p>Orono: 1950 Stillwater: 1902</p>
	<p>Total installed capacity (MW) For recertifications: Indicate if installed capacity has changed since last certification</p>	<p>Orono: 6.548 MW Stillwater: 4.179 MW Installed capacity was corrected by FERC Orders Amending License dated February 11, 2019 for both Projects</p>
	<p>Average annual generation (MWh) and period of record used For recertifications: Indicate if average annual generation has changed since last certification</p>	<p>Orono: MWh (Period of Record: 2014 to 2019)</p> <p>Stillwater: MWh (Period of Record: 2014 to 2019)</p> <p>There have been no changes to annual generation</p>
	<p><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</p>	<p>Run-of-river with 200 cfs minimum bypass reach flows at the Orono Project and 70 cfs minimum bypass reach flows at the Stillwater Project. These modes of operation have not changed since the last certification.</p>

Item	Information Requested	Response (include references to further details)																																																						
	Number, type, and size of turbines, including maximum and minimum hydraulic capacity of each unit	<p><u>Orono:</u> 7 Turbine-Generators – 4 Francis, 2 Vertical Propeller, 1 Kaplan</p> <table border="1"> <thead> <tr> <th>Unit</th> <th>Max Hydraulic Capacity (cfs)</th> <th>Unit Authorized Installed Capacity (MW)</th> </tr> </thead> <tbody> <tr><td>1A</td><td>370</td><td>542</td></tr> <tr><td>2A</td><td>370</td><td>576</td></tr> <tr><td>3A</td><td>500</td><td>840</td></tr> <tr><td>4A</td><td>500</td><td>840</td></tr> <tr><td>1B</td><td>694</td><td>1,250</td></tr> <tr><td>2B</td><td>694</td><td>1,250</td></tr> <tr><td>3B</td><td>694</td><td>1,250</td></tr> <tr><td>TOTAL</td><td>3,822</td><td>6,548</td></tr> </tbody> </table> <p><u>Stillwater:</u> 7 Turbine-Generators - 4 Francis, 3 Vertical Propeller</p> <table border="1"> <thead> <tr> <th>Unit</th> <th>Max Hydraulic Capacity (cfs)</th> <th>Unit Authorized Installed Capacity (MW)</th> </tr> </thead> <tbody> <tr><td>1A</td><td>380</td><td>443</td></tr> <tr><td>2A</td><td>380</td><td>443</td></tr> <tr><td>3A</td><td>380</td><td>443</td></tr> <tr><td>4A</td><td>560</td><td>600</td></tr> <tr><td>1B</td><td>586</td><td>750</td></tr> <tr><td>2B</td><td>586</td><td>750</td></tr> <tr><td>3B</td><td>586</td><td>750</td></tr> <tr><td>TOTAL</td><td>3,458</td><td>4,179</td></tr> </tbody> </table>	Unit	Max Hydraulic Capacity (cfs)	Unit Authorized Installed Capacity (MW)	1A	370	542	2A	370	576	3A	500	840	4A	500	840	1B	694	1,250	2B	694	1,250	3B	694	1,250	TOTAL	3,822	6,548	Unit	Max Hydraulic Capacity (cfs)	Unit Authorized Installed Capacity (MW)	1A	380	443	2A	380	443	3A	380	443	4A	560	600	1B	586	750	2B	586	750	3B	586	750	TOTAL	3,458	4,179
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TOTAL	3,458	4,179																																																						
	Trashrack clear spacing (inches), for each trashrack	<p><u>Orono:</u> Powerhouse A and B: 1 inch clear space</p> <p><u>Stillwater:</u> Powerhouse A: 1 inch clear space Powerhouse B: 1 inch clear space</p>																																																						
	Dates and types of major equipment upgrades For recertifications: Indicate only those since last certification	No major equipment upgrades for either Project since last certification																																																						

Item	Information Requested	Response (include references to further details)
	<p>Dates, purpose, and type of any recent operational changes</p> <p>For recertifications: Indicate only those since last certification</p>	<p>A 2-week period of 20 – 50% spill is provided each May at the Projects to enhance downstream passage of Atlantic salmon smolts.</p>
	<p>Plans, authorization, and regulatory activities for any facility upgrades or license or exemption amendments</p>	<p>No facility upgrades or license amendments are planned or anticipated for the recertification period, outside of current regulatory compliance requirements</p>
Dam or Diversion	<p>Date of original construction and description and dates of subsequent dam or diversion structure modifications</p>	<p><u>Orono Project:</u></p> <p>The Project was originally a pulp mill owned and operated by the Webster Paper Company in 1898. Originally consisting of a timber crib dam and penstocks that provided hydro-mechanical power to the mill, between 1917 and 1925 the timber crib dam was replaced with a concrete dam with intake works constructed. In 1949-1950, Bangor Hydro Electric Company acquired the Orono Project and added three E-5-174 generators to three existing, unused turbines. The entire concrete dam structure was replaced in 1960. One of the three penstocks collapsed in 1994. The Orono Project was not operational between 1996, when the remaining two penstocks collapsed during a maintenance dewatering operation, and 2008. In 2008, the Project was re-powered, and the collapsed penstocks were replaced with a single concrete penstock and intake. In 2013, construction was completed on both a new powerhouse (Powerhouse B) and a singular intake and trashrack structure serving both Powerhouse A and B. An upstream fish lift and associated trap and truck facility, downstream fish passage, and upstream eel passage were also constructed and began operations in 2014 (fish lift; downstream fishway) and 2016 (upstream eel ladder).</p>

Item	Information Requested	Response (include references to further details)
		<p><u>Stillwater Project:</u> The Stillwater Project is located at a former logging and milling site, near the City of Old Town. The site was occupied in 1902 by the Orono Pulp and Paper Company and developed into an operating hydroelectric facility that same year (FERC, 1978). The Stillwater Project began commercial operation as a hydroelectric facility providing consumer electricity in 1913 (LIHI, 2010) and has been operated as such since then. A second powerhouse was constructed on the south side of the dam in 1932, and by 1942, the original powerhouse was abandoned, with the remains still visible on the southeast portion of the dam. In 2013, construction was completed on the second powerhouse (Powerhouse B), as well as a new downstream fish passage facility and upstream eel ladder that began operations in 2014 and 2016, respectively.</p>
	<p>Dam or diversion structure height including separately, the height of any flashboards, inflatable dams, etc.</p>	<p><u>Orono Project:</u> The Orono Project includes a 1,230-foot-long by 15-foot-high dam, originally reconstructed in 1960, that includes a 320-foot-long spillway consisting of the following sections (PPL, 2009):</p> <ol style="list-style-type: none"> 1) left abutment which is a concrete gravity structure approximately 168 feet long with an average height of approximately 20 feet and a top elevation of 80.1 feet NGVD; 2) auxiliary spillway, which is a concrete gravity structure, 297 feet long and approximately 13 feet high with a permanent crest at elevation 73.2 feet NGVD; 3) main spillway, which is a concrete gravity structure 320 feet long and approximately 10 feet high (average) with a permanent crest at elevation 70.0 feet NGVD topped with 3-foot-high flashboards (at elevation 73.0 feet NGVD);

Item	Information Requested	Response (include references to further details)
		<p>4) forebay wall, constructed of concrete, 79 feet long, integral with the upstream fishway structure with a top elevation of 78.3 feet NGVD;</p> <p>5) an intake structure for Powerhouse B constructed of concrete, approximately 95 feet long and approximately 20 feet high with a top elevation of 78.3 feet NGVD and integral to the existing Powerhouse A intake via a singular trashrack measuring approximately 165 feet long by 20 feet high;</p> <p>6) an intake structure for Powerhouse A constructed of concrete, 75 feet long and approximately 23 feet high with a top elevation of 82.9 feet NGVD; and</p> <p>7) the right abutment constructed of concrete, 196 feet long and approximately 18 feet high with a top elevation of 77.9 feet NGVD (which has been backfilled).</p> <p><u>Stillwater Project:</u> Main concrete gravity dam in 13 sections, totaling approximately 1,720 ft long, with a normal full pond elevation of 94.65 ft.: (1) a non-overflow section, totaling 63 ft long, which serves as an abutment and wingwall, containing a 6-ft-wide unused stoplog sluice gate (Section A and B); (2) a 317~ft-long primary spillway section, with a maximum height of 22 ft at a crest elevation of 91.65 ft NGVD, topped with 3-ft-high pin-supported flashboards (Section C) abutting Powerhouse B; (3) an 85-ft-long by 2-ft-wide by 2.5-ft-high leveling concrete course topped with 1.67 ft-high pin-supported flashboards (Section D); (4) a 43-ft-long concrete sill section on top of a ledge island topped with 0.65-ft-high pin-supported flashboards (Section E); (5) a 174 ft-long ogee section, with varying heights from 4 to 20 ft, topped with 3-ft-high pin-supported flashboards (Section F);</p>

Item	Information Requested	Response (include references to further details)
		<p>(6) a 52-ft-long ogee section, with a maximum height of 9 ft, topped with a concrete curb, 15 inches wide by 25 inches high, topped with 1.80-ft-high pin-supported flashboards (Section G);</p> <p>(7) an 89-ft-long spillway section, with an average height of 6 ft topped with 1.05-ft-high pin-supported flashboards (Section H);</p> <p>(8) a 42-ft-long spillway section, with a maximum height of 8 ft, topped with 0.85- to 3.8-ft high pin-supported flashboards (Section I);</p> <p>(9) an 89.5-ft-long abutment section, with an average height of 4 ft topped with 0.85-ft-high pin-supported flashboards (Section J)</p>
	Spillway elevation and hydraulic capacity	<p><u>Orono Project</u> The spillway is 320 ft long with a crest elevation of 70.0 ft NGVD, topped with 3.0 ft flashboards (normal full pond elevation at 73.0 ft NGVD) and a total capacity of 44,000 cfs.</p> <p><u>Stillwater Project</u> The spillway is 1,520 ft long with varying crest elevations (see above), topped with flashboards of varying heights (see above) with a normal full pond elevation at the top of boards of 94.65 ft NGVD and a total capacity of 48,250 cfs.</p>
	Tailwater elevation (provide normal range if available)	<p><u>Orono</u> Tailwater elevation of 44 ft at normal operating maximum powerhouse hydraulic capacity of 3,822 cfs</p> <p><u>Stillwater</u> Tailwater elevation of 73.65 ft for Powerhouse A at normal operating maximum powerhouse hydraulic capacity of 1,700 cfs and 74.79 ft for Powerhouse B at normal maximum powerhouse hydraulic capacity of 1,758 cfs.</p>

Item	Information Requested	Response (include references to further details)
	Length and type of all penstocks and water conveyance structures between the impoundment and powerhouse	<p><u>Orono</u> One 866-foot-long, 20-foot-wide, 12-foot-high concrete penstock supplying water to Powerhouse A; one 292-foot-long, 25-foot-wide, 12-foot-high concrete penstock supplying water to Powerhouse B</p> <p><u>Stillwater</u> Powerhouses A and B: The powerhouse intakes are integral to the dam.</p>
	Dates and types of major infrastructure changes	<p><u>Orono</u> See “Date of original construction and description and dates of subsequent dam or diversion structure modifications” section above.</p> <p><u>Stillwater</u> See “Date of original construction and description and dates of subsequent dam or diversion structure modifications” section above.</p>
	Designated facility purposes (e.g., power, navigation, flood control, water supply, etc.)	Power
	Source water	Stillwater Branch of the Penobscot River
	Receiving water and location of discharge	<p><u>Orono</u> Mainstem of the Penobscot River at confluence with the Stillwater Branch</p> <p><u>Stillwater</u> Stillwater Branch of the Penobscot River</p>
Conduit	Date of conduit construction and primary purpose of conduit	N/A

Item	Information Requested	Response (include references to further details)
Impoundment and Watershed	Authorized maximum and minimum impoundment water surface elevations For recertifications: Indicate if these values have changed since last certification	<p><u>Orono</u> 73.0 ft normal full pond elevation; run of river operation allows 1 ft variation from full pond for operational flexibility; flashboard failure at 2 ft of overtopping</p> <p><u>Stillwater</u> 94.65 ft normal full pond elevation; run of river operations allows 1 ft variation from full pond for operational flexibility; flashboard failure at 2 ft of overtopping</p> <p>No authorized impoundment elevation changes since last certification for either Project.</p>
	Normal operating elevations and normal fluctuation range For recertifications: Indicate if these values have changed since last certification	<p><u>Orono</u> See above.</p> <p><u>Stillwater</u> See above.</p> <p>No changes in normal operation elevations since last certification for either Project.</p>
	Gross storage volume and surface area at full pool For recertifications: Indicate if these values have changed since last certification	<p><u>Orono</u> Gross Storage Volume: 180-acre-ft at normal full pond of 73.0 ft with flashboards) Surface Area: 1,405 acres at normal full pond (73.0 ft with flashboards)</p> <p><u>Stillwater</u> Gross Storage Volume: 191-acre-ft (at normal full pond of 94.65 ft with flashboards) Surface Area: 1,900 acres at normal full pond (94.65 ft with flashboards)</p> <p>No changes in storage volume or surface area since last certification for either Project.</p>

Item	Information Requested	Response (include references to further details)
	<p>Usable storage volume and surface area For recertifications: Indicate if these values have changed since last certification</p>	<p><u>Orono</u> Negligible; run-of-river operation</p> <p><u>Stillwater</u> Negligible; run-of-river operation</p> <p>No changes in storage volume or surface area since last certification for either Project.</p>
	<p>Describe requirements related to impoundment inflow and outflow, elevation restrictions (e.g. fluctuation limits, seasonality) up/down ramping and refill rate restrictions.</p>	<p><u>Orono</u> Operated in a run-of-river mode where inflow equals outflow with a minimum flow of 200 cfs in the bypass reach. Flows in excess of station hydraulic capacity are spilled over the spillway. No ramping or refill rate restrictions at the Orono Project.</p> <p><u>Stillwater</u> Operated in a run-of-river mode where inflow equals outflow with a minimum flow of 70 cfs in the bypass reach. Flows in excess of station hydraulic capacity are spilled over the dam spillway. There are no ramping rate or refill requirements at the Stillwater Project.</p>
	<p>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.</p>	<p><u>Orono</u> Stillwater Project (FERC No. 2712) – Project has downstream fish passage</p> <p><u>Stillwater</u> Gilman Falls Dam, Milford Project (FERC No. 2534); Black Bear Hydro Partners, LLC – Gilman Falls Dam has no powerhouse facilities and allows free flow through gates and over the spillway</p>

Item	Information Requested	Response (include references to further details)																								
	Downstream dams by name, ownership, river mile and FERC number if FERC licensed or exempt. Indicate which downstream dams have upstream fish passage	<p><u>Orono</u> None (There are no downstream dams on the Stillwater Branch nor the mainstem Penobscot River)</p> <p><u>Stillwater</u> Orono Project (FERC No. 2710) – Project has upstream fish passage, but migratory fish are trapped trucked from the fish passage and not released into the headpond</p>																								
	Operating agreements with upstream or downstream facilities that affect water availability and facility operation	Black Bear owns and operates all facilities in the Stillwater Branch of the Penobscot River drainage, and flows to the Stillwater Branch are dictated by the Settlement Agreement and Milford Project FERC license.																								
	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.	<p><u>Orono</u> Water: 1,405 acres Land: 12.6 acres</p> <p><u>Stillwater</u> Water: 1,900 acres Land: 4.7 acres</p>																								
Hydrologic Setting	Average annual flow at the dam, and period of record used	<p><u>Stillwater Branch</u> Period of Record June 2010-2018</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Average Flow (cfs)</th> </tr> </thead> <tbody> <tr> <td>2010</td> <td>6,889</td> </tr> <tr> <td>2011</td> <td>6,521</td> </tr> <tr> <td>2012</td> <td>7,287</td> </tr> <tr> <td>2013</td> <td>5,771</td> </tr> <tr> <td>2014</td> <td>6,324</td> </tr> <tr> <td>2015</td> <td>7,001</td> </tr> <tr> <td>2016</td> <td>5,801</td> </tr> <tr> <td>2017</td> <td>4,762</td> </tr> <tr> <td>2018</td> <td>5,976</td> </tr> <tr> <td>2019</td> <td>5,906</td> </tr> <tr> <td>Average</td> <td>6,310</td> </tr> </tbody> </table>	Year	Average Flow (cfs)	2010	6,889	2011	6,521	2012	7,287	2013	5,771	2014	6,324	2015	7,001	2016	5,801	2017	4,762	2018	5,976	2019	5,906	Average	6,310
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	<p>Location and name of closest stream gauging stations above and below the facility</p>	<p>Upstream: USGS 01034500 Penobscot River at West Enfield, Maine Downstream: USGS 01036390 Penobscot River at Eddington, Maine</p>																										
	<p>Watershed area at the dam (in square miles). Identify if this value is prorated and provide the basis for proration.</p>	<p><u>Orono</u> 7,602 sq. miles</p> <p><u>Stillwater</u> 7,602 sq. miles</p> <p>Average annual flow in the Stillwater Branch was pro-rated from the USGS Gage No. 01034500 at West Enfield, approximately 21.5 river miles (RM) upstream of the divergence of the Stillwater Branch on the mainstem of the lower Penobscot River.</p>																										
Designated Zones of Effect	<p>Number of zones of effect</p>	<p>7</p>																										

Item	Information Requested	Response (include references to further details)
	Upstream and downstream locations by river miles	<p>Zone 1: Regulated Upstream River Reach; RM 6.18 to 6.00 (from the discharge of the Milford Project, Gilman Falls Dam to the upstream limit of the Stillwater impoundment)</p> <p>Zone 2: Stillwater Impoundment; RM 6.00 to 2.96 (from the upstream limit of the Stillwater impoundment to Stillwater Dam)</p> <p>Zone 3: Stillwater Dam Bypass Reach; RM 2.96 to 2.94 (from the Stillwater Dam spillway to the zone of mixing with the Powerhouse B tailrace)</p> <p>Zone 4: Stillwater Powerhouse B Tailrace; RM 2.96 to 1.96 (from the discharge point of Powerhouse B to the confluence of the Powerhouse A tailrace including the flows from the confluence of the bypass reach)</p> <p>Zone 5: Stillwater Powerhouse A Tailrace; RM 2.30 to 1.96 (from the discharge point of Powerhouse A to the upstream limit of the Orono impoundment including the flows from the Powerhouse B tailrace)</p> <p>Zone 6: Orono Impoundment; RM 1.96 to 0.15 (from the upstream limit of the Orono impoundment to Orono dam)</p> <p>Zone 7: Orono Bypass Reach; RM 0.15 to 0.05 (from the Orono Dam spillway to the zone of mixing with the Powerhouse B tailrace)</p> <p>Zone 8: Orono Project Tailrace; RM 0.05 to 0 (from the discharge point of Powerhouse B to the confluence with the mainstem Penobscot River, including the flows from Powerhouse A)</p>
Pre-Operational Facilities		
Expected operational date	Date generation is expected to begin	N/A

Item	Information Requested	Response (include references to further details)
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 Projects are located on the Stillwater Branch of the Penobscot River. Water from the Milford Project's Gilman Falls Dam provides flows into the Stillwater Branch of the Penobscot River, pursuant to the Settlement Agreement and Milford FERC license. The Projects and Zones of Effects are discussed in order from upstream (at the discharge point of the Gilman Falls Dam to the Stillwater Branch) to downstream (the confluence of the Stillwater Branch with the mainstem Penobscot River).

2.1 STILLWATER ZONES OF EFFECT

The section from Gilman Falls Dam to the upstream extent of the Stillwater impoundment is the Regulated River Reach Upstream. The Stillwater Project includes an Impoundment, Bypass, and two Tailrace Zones of Effect.

2.2 ORONO ZONES OF EFFECT

The Orono Project Impoundment Zone of Effect backwaters to the confluence of the Stillwater Powerhouse A and Powerhouse B tailraces. The Orono Project also includes a Bypass and Tailrace Zones of Effect. The tailraces of Powerhouse A and Powerhouse B discharge at the confluence of the Stillwater Branch and the mainstem of the Penobscot River, the latter of which constitutes the Regulated River Reach Downstream for the Orono Project.

FIGURE 21. ZONES OF EFFECT – STILLWATER PROJECT

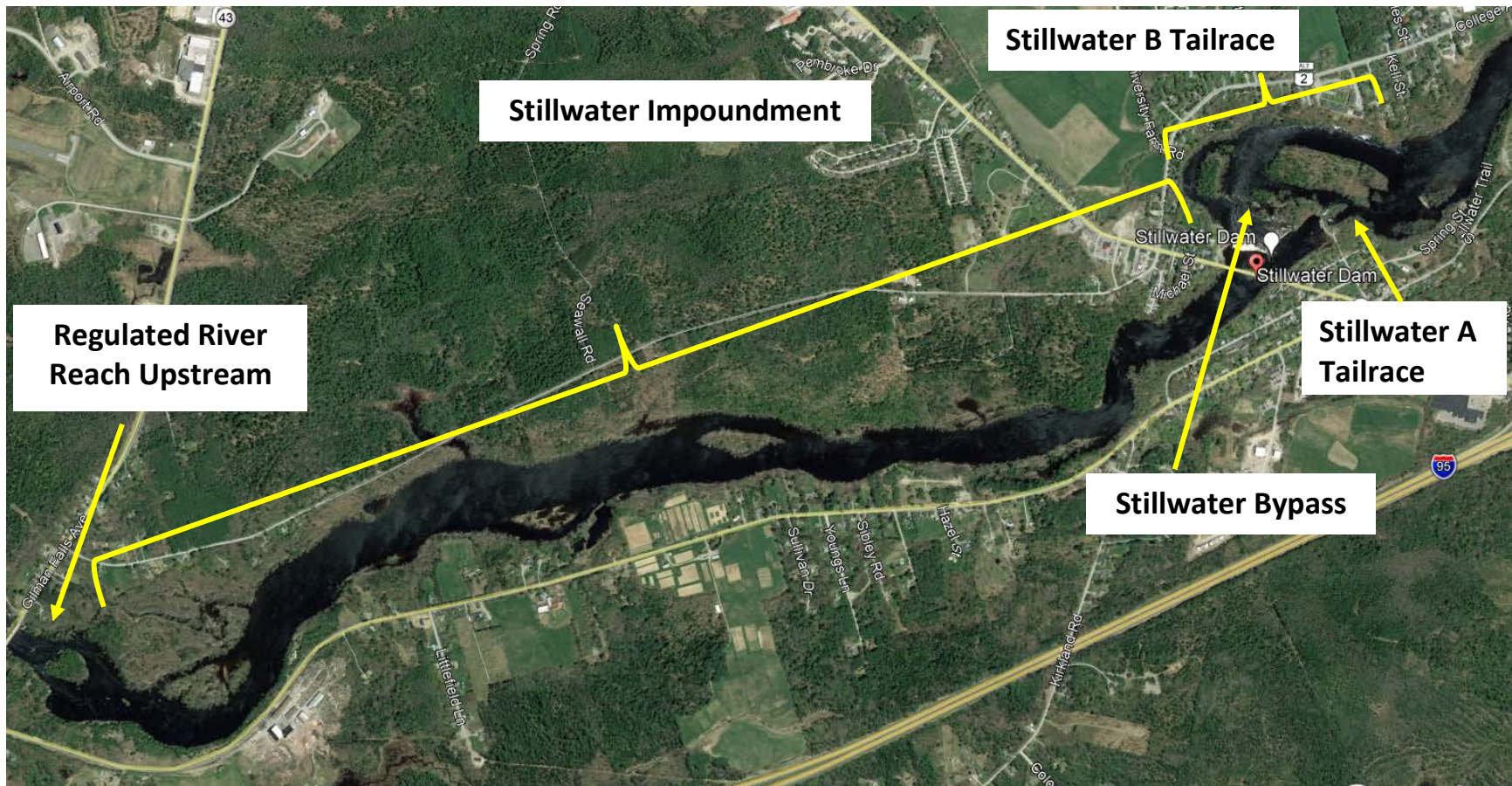
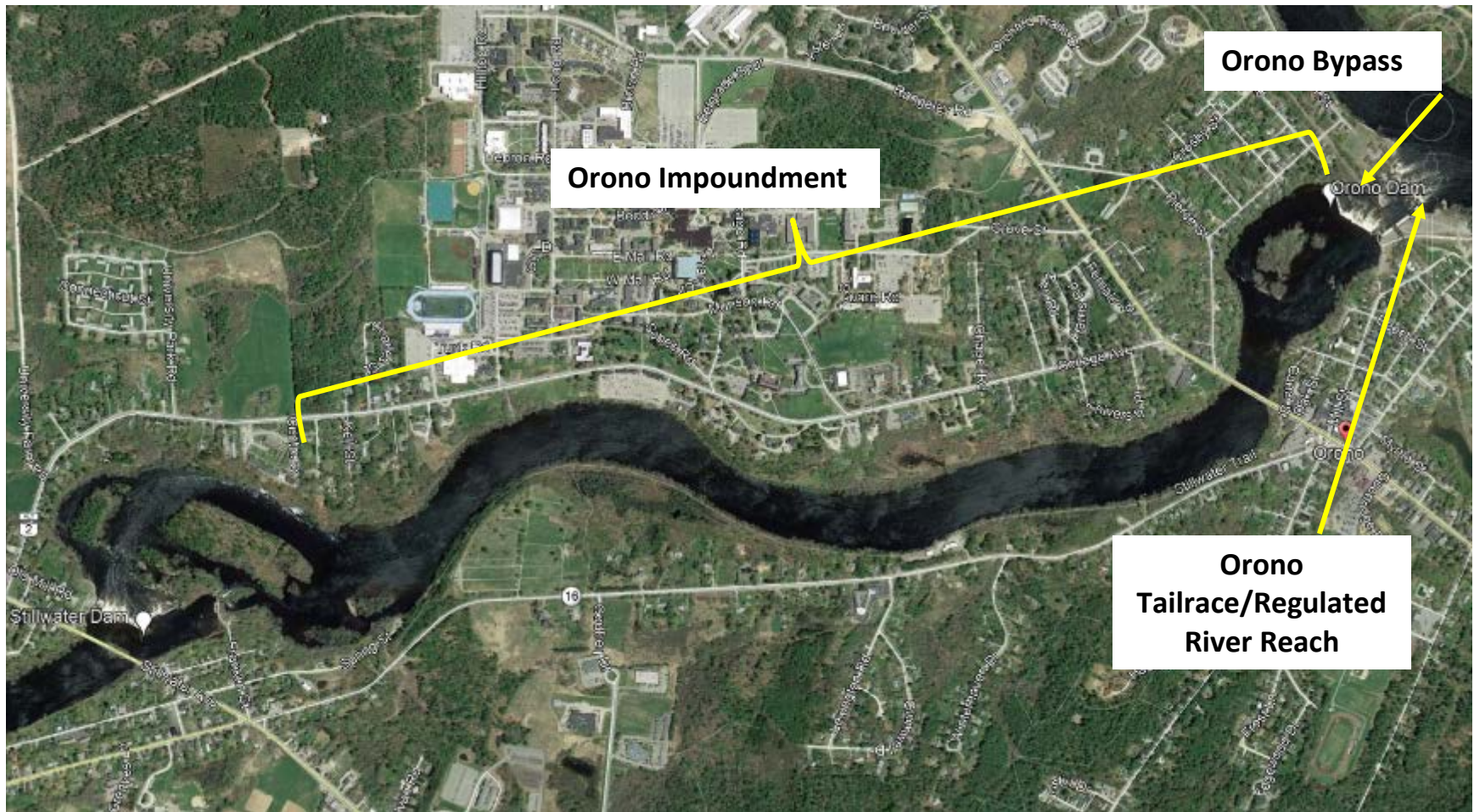


FIGURE 22. ZONES OF EFFECT – ORONO PROJECT



2.3 ZONE 1 – REGULATED RIVER REACH UPSTREAM

The regulated river reach upstream of the Stillwater Project is identified as Zone of Effect #1 and is located approximately at river miles 6.18 to 6.0 of the Stillwater Branch of the Penobscot River, as measured from the outlet of the Milford Project's Gilman Falls Dam.

FIGURE 23. ZONE 1 – REGULATED RIVER REACH UPSTREAM

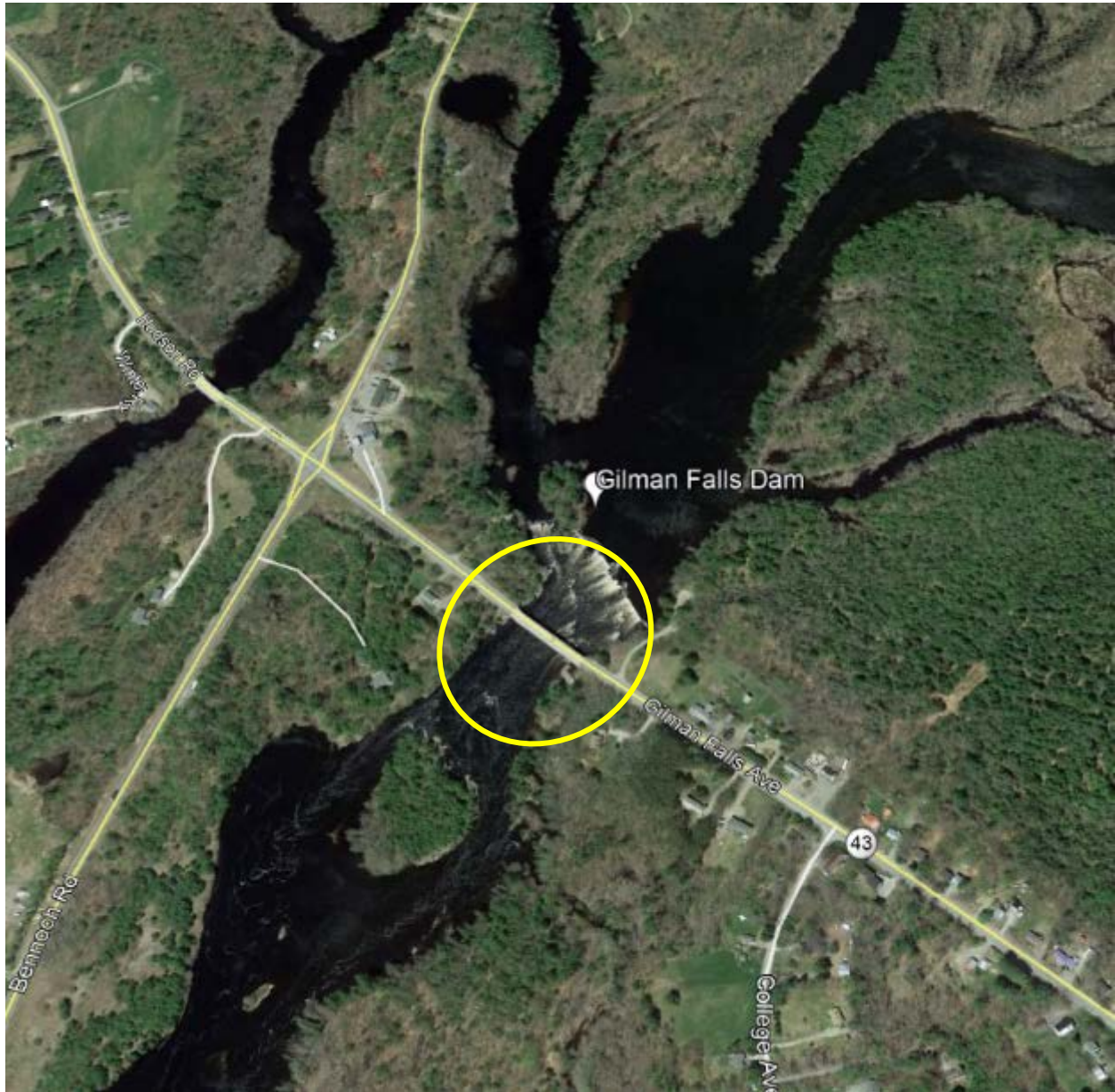


TABLE 2. ZONE 1 – REGULATED RIVER REACH UPSTREAM MATRIX OF ALTERNATIVE STANDARDS

Facility Name: Stillwater Project Zone of Effect: 1 – Regulated River Reach Upstream

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	X		
G	Cultural and Historic Resources Protection	X				
H	Recreational Resources	X				

This reach receives flows from the Milford Project and is upstream and outside of the project area for the Stillwater Project. The backwater extent of the Stillwater Project ends at the normal full pond elevation approximately 6.0 miles (Stillwater Impoundment ZOE) and does not otherwise influence this reach. As such, the water quality of this reach, which is classified as Class B, is not affected by Stillwater Project operations, as it is upstream of any backwater effect from the Project impoundment. There are no formal upstream or downstream fish passage facilities for migratory species in the Stillwater Branch of the Penobscot River at Gilman Falls Dam, though this dam is not powered and allows free swim for all species.

No aspects of the Stillwater Project affect lands adjacent to this reach. Five species are listed as federally or state Endangered/Threatened in the project area, Atlantic salmon, Yellow lampmussel, and Northern long-eared, little brown bat, and Eastern small-footed bat) but they are not affected within this Zone of Effect, as it is outside of the influence of project operations for the Stillwater Project. There are no prehistoric archaeological sites covered by the Stillwater Project’s Cultural Resources Management Plan (CRMP) in this Zone of Effect. An access site known as the Stillwater River Recreation Facility is located in this Zone of Effect and provides fishing/recreation access to this reach of the Stillwater Branch (and also to the Stillwater impoundment downstream).

2.4 ZONE 2 –STILLWATER IMPOUNDMENT

The existing impoundment is approximately 3 mi long, with a surface area of about 191 ac at a normal headwater surface elevation of about 94.65 ft NGVD. The Project has a gross storage capacity of approximately 1,910 ac-ft, and the usable storage capacity is negligible, with the Stillwater Project being a run-of-river project. This Zone of Effect extends from RM 2.96 to RM 6.0.

FIGURE 24. ZONE 2 – STILLWATER IMPOUNDMENT



TABLE 3. ZONE 2 – STILLWATER IMPOUNDMENT

Facility Name: Stillwater Project

Zone of Effect: 2 –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	X		
G	Cultural and Historic Resources Protection	X				
H	Recreational Resources		X			

Flows through the Stillwater Project, including those through the impoundment, are managed in a run-of-river mode using inflows equal to outflows and stable headpond management. The water quality of this reach is classified as Class B. There are diadromous fish species in this section of the Stillwater Branch of the Penobscot River, and there are downstream fish passage facilities for migratory species at the Stillwater and Orono Projects. Except for American eels, upstream passage is not required on the Stillwater Branch per the Settlement Agreement and FERC licenses, although migratory fish are collected at the Orono Project fish lift and trucked upriver. The Stillwater Branch of the Penobscot River is designated as critical habitat for Atlantic salmon. There are no shoreline lands within the project boundary surrounding the impoundment, as the project boundary follows the normal full pond elevation. In addition, the Stillwater Project operates to maintain a stable headpond, and thus, lands adjacent to this Zone of Effect are generally unaffected by project operations.

Seven species are federally and/or state listed as Endangered/Threatened in the project area, yellow lampmussel, tidewater mucket, brook floater, Atlantic salmon and Northern long-eared, little brown and Eastern small-footed bat, but the latter are not affected by routine project operations. No threatened or endangered mussel species were found in the impoundment during mussel relocation efforts undertaken as part of the construction of Powerhouse B. Limited vegetation removal may occur within project lands immediately adjacent to the dam for maintenance purposes, but these activities would occur in compliance with the Endangered Species Act’s Section 4e rule for Northern Long-Eared Bats. The Project operates under a Species Protection Plan (SPP) and Biological Opinion (BiOp) for the protection of Atlantic salmon. There are no prehistoric archaeological sites covered by the Project’s CRMP in this Zone of Effect. The University Boat Launch provides access to project waters within this Zone of Effect, though only limited recreation occurs on the impoundment (day use fishing and canoeing); the impoundment can also be accessed via the informal College Ave Extension North Boat Launch Site in Zone 1, as discussed above.

2.5 ZONE 3 – STILLWATER DAM BYPASS REACH

The Stillwater Dam Bypass Reach is located between RM 2.96 to 2.94 of the Stillwater Branch of the Penobscot River. The Stillwater Dam spillway discharges to this reach when flows

exceed station capacity or during unit curtailments/outages. Limited flows, 1.5 cfs, from the Project's upstream eel passage are also conveyed to this reach.

FIGURE 25. ZONE 3 – STILLWATER DAM BYPASS REACH



TABLE 4. ZONE 3 –STILLWATER DAM BYPASS REACH MATRIX OF ALTERNATIVE STANDARDS

Facility Name: Stillwater Project

Zone of Effect: 3 –Stillwater Dam Bypass Reach

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

As discussed above, the west bypass reach downstream of Stillwater Dam previously received a minimum flow of 20 cfs, except in times of high water or when units were down at the powerhouses. An amended WQC issued by the DEP on October 28, 2019 and a license amendment issued by FERC on June 8, 2020 eliminated the specific conveyance location for minimum flows, effectively relocating the total 70 cfs minimum flow to the Stillwater B tailrace. The purpose of this change was to enhance upstream eel passage at the Project, as discharge of the 20 cfs minimum flow to the west channel had been shown to falsely attract eels to this flow. The upstream eel passage facility, located in this Zone of Effect, conveys 1.5 cfs into the bypass reach. There are diadromous fish species in this section of the Stillwater Branch of the Penobscot River, and there are downstream fish passage facilities for migratory species at the dam; upstream passage is provided around Stillwater Dam by utilization of a trap and truck facility at the downstream Orono Project. The Stillwater Branch of the Penobscot River is designated as critical habitat for Atlantic salmon, with an existing SPP and BiOp in place for the Stillwater Project that dictate protection measures for the species. The lands adjacent to this Zone of Effect are not within the project boundary or managed by the licensees. Seven species are listed as Endangered/Threatened in the project area, Atlantic salmon, three species of mussel, and three species of bat, but the latter are not affected by routine project operations. The Project operates under an SPP and BiOp for the protection of Atlantic salmon, and mussels would not be expected in the exposed and high velocity ledge areas of the bypass reach. There are no prehistoric archaeological sites covered by the Project’s CRMP in this Zone of Effect. There are also no project recreation sites located within this Zone of Effect.

2.6 ZONE 4 – STILLWATER POWERHOUSE B TAILRACE

The Stillwater Dam Powerhouse B Tailrace is located between RM 2.96 to RM 1.96 of the Stillwater Branch of the Penobscot River. The Stillwater Dam Powerhouse B discharges to

this reach, and a minimum flow of 70 cfs is provided under normal operations through the downstream fishway and/or powerhouse².

FIGURE 26. ZONE 4 – STILLWATER POWERHOUSE B TAILRACE



² The Stillwater Powerhouse B Tailrace previously received a minimum flow of 50 cfs as discharged through the downstream fishway and/or powerhouse. The minimum flow of 20 cfs, as discharged from the west channel of the bypass reach into Zone 3, was relocated to the tailrace pursuant to an amendment order issued by the FERC on June 8, 2020.

TABLE 5. ZONE 4 – STILLWATER POWERHOUSE B TAILRACE

Facility Name: Stillwater Project Zone of Effect: 4 – Powerhouse B Tailrace

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	X		
G	Cultural and Historic Resources Protection	X				
H	Recreational Resources		X			

As discussed above, the Project is managed as run-of-river with inflows matching outflows and a designated minimum flow of 70 cfs, which is provided through Powerhouse B (during times when the downstream fish passage is not operational) or via the downstream fishway at Powerhouse B (during the fish passage season). The water quality of this reach is classified as Class B. There are diadromous fish species in this section of the Stillwater Branch of the Penobscot River, and there are downstream fish passage facilities for migratory fish at the Powerhouse B that discharge directly to the tailrace. The Stillwater Branch of the Penobscot River is designated as critical habitat for Atlantic salmon. There are no shoreline lands within the project boundary in this reach, and lands adjacent to this Zone of Effect are generally unaffected by project operations given the Project’s run of river operations.

Seven species are federally and/or state listed as Endangered/Threatened in the project area, Atlantic salmon, yellow lampmussel, tidewater mucket, brook floater, and Northern long-eared, little brown and Eastern smallfooted bat, the latter of which are not affected by routine project operations. The Project operates under an SPP and BiOp for Atlantic salmon protection. Rare plant species identified in the project area are addressed through the Project’s Sensitive Plant Protection Plan. There are no prehistoric archaeological sites covered by the Project’s CRMP in this Zone of Effect. There are also no formal recreation sites within this Zone of Effect with very limited access to this section of the Penobscot River, as many surrounding roads are private; however, informal access via the shoreline may occur to utilize a whitewater kayaking spot downstream of Powerhouse B.

2.7 ZONE 5 – STILLWATER POWERHOUSE A TAILRACE

The Stillwater Dam Powerhouse A Tailrace is located between RM 2.30 to RM 1.96 of the Stillwater Branch of the Penobscot River. The Stillwater Dam Powerhouse A discharges to this reach. There is no minimum flow requirement in this reach. A flow of 70 cfs is provided via the downstream fish passage facility seasonally.

FIGURE 27. ZONE 5 – STILLWATER POWERHOUSE A TAILTRACE

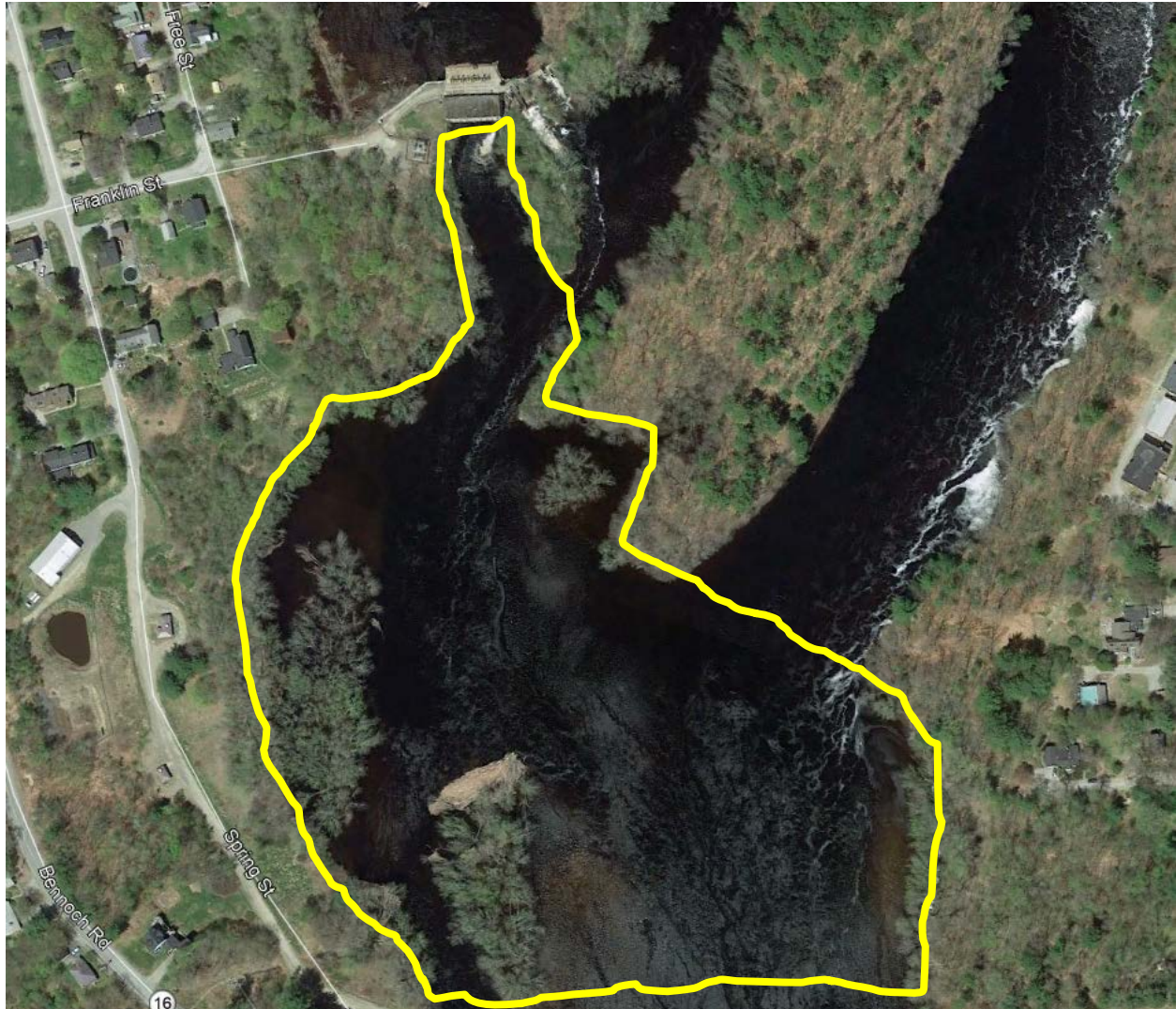


TABLE 6. ZONE 5 – STILLWATER POWERHOUSE A TAILTRACE

Facility Name: Stillwater Project Zone of Effect: 5 – Powerhouse A Tailrace

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	X		
G Cultural and Historic Resources Protection	X				
H Recreational Resources		X			

As discussed above, the Project is managed as run-of-river with inflows matching outflows, and there is no required minimum flow specific to this reach(although this reach receives flows from the bypass and from Powerhouse B, which converge at the Powerhouse A tailrace). The water quality of this reach is classified as Class B. There are diadromous fish species in this section of the Stillwater Branch of the Penobscot River, and there are downstream fish passage facilities for migratory fish at the Powerhouse A that discharge directly to the tailrace. The Stillwater Branch of the Penobscot River is designated as critical habitat for Atlantic salmon. There are no shoreline lands within the project boundary in this reach, and lands adjacent to this Zone of Effect are generally unaffected by project operations given the Project's run of river operations.

Two species are federally listed as Endangered/Threatened in the project area, Atlantic salmon and Northern long-eared bat, the latter of which are not affected by routine project operations. Six species of state-listed Endangered/Threatened bat also have the potential to be present in the project area, but they are not expected to be affected by routine project operations (little brown bat, Northern long-eared bat, and Eastern small-footed bat and yellow lampmussel, tidewater mucket and brook floater). Threatened or endangered mussels, which were not found in the Orono impoundment during relocation efforts, would not be expected in the reach just upstream. The Project operates under an SPP and BiOp for Atlantic salmon protection. There are no prehistoric archaeological sites covered by the Project's CRMP in this Zone of Effect. There are also no formal recreation sites within this Zone of Effect with very limited access to this section of the Penobscot River, as many surrounding roads are private.

2.8 ZONE 6 – ORONO IMPOUNDMENT

The Orono Dam backwaters the Stillwater Branch of the Penobscot River to the Stillwater Powerhouse A tailrace. The Zone of Effect for this reach extends from RM 1.96 to 0.15 of the Stillwater Branch of the Penobscot River, as measured from the confluence of the Stillwater Branch and mainstem of the Penobscot River. This Zone of Effect comprises the reach of the Stillwater Branch of the Penobscot River from the tailrace of the Stillwater Powerhouse A to Orono Dam.

FIGURE 28. ZONE 6 – ORONO IMPOUNDMENT



TABLE 7. ZONE 6 – ORONO IMPOUNDMENT MATRIX OF ALTERNATIVE STANDARDS

Facility Name: Orono Project

Zone of Effect: 6– 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	X		
G	Cultural and Historic Resources Protection	X				
H	Recreational Resources		X			

As discussed above, the reach of the Stillwater Branch of the Penobscot River downstream of the Stillwater Powerhouses A and B receives run of river flows and minimum flows from the Stillwater Project and is backwatered by Orono Dam to just downstream of the base of the Stillwater Powerhouse A. Flows in excess of project capacity or available units are also released to this Zone of Effect via the Stillwater Dam Bypass Reach (Zone 3). This reach is Class B, and water quality monitoring indicates that this reach meets water quality standards. There are diadromous fish species in this section of the Stillwater Branch of the Penobscot River, and there are downstream fish passage facilities for migratory species at the upstream Stillwater Project (and at the Orono Dam). The Stillwater Branch of the Penobscot River is designated as critical habitat for Atlantic salmon. While there is an upstream fish passage facility at the Orono Project, it is operated as a trap and truck facility with anadromous fish captured being released upstream into the Milford impoundment or taken to the Milford fish lift facility for sorting, analysis, and distribution.

Shoreline lands along the impoundment are not within the project boundary and are unaffected by project operations, as the Project is managed to maintain a stable headpond. Five species are listed as federally and/or state Endangered/Threatened in the project area, Atlantic salmon, Yellow lampmussel, and Northern long-eared, Eastern small-footed and little brown bat, the latter of which are not affected by routine project operations. Yellow lampmussel were not found during relocation efforts associated with the construction of Powerhouse B. There are no prehistoric archaeological sites at the Project, and there is no CRMP for the Orono Project required by the FERC license. The only recreation facility in this Zone of Effect is the canoe portage trail around Orono Dam.

2.9 ZONE 7 – ORONO BYPASS REACH

Orono Dam consists of a concrete structure with an integral powerhouse intake that serves two penstocks feeding both Powerhouse A and Powerhouse B. The dam spillway is approximately 320 feet long. The bypass reach of the Project extends from RM 0.15 to RM 0.05 of the Stillwater Branch of the Penobscot River, as measured from its confluence with the mainstem of the Penobscot River. The Project is operated in a run-of-river mode. Flows in excess of the station’s hydraulic capacity are discharged over the spillway, as is a portion of the

Project's 200 cfs minimum flow; approximately 50 cfs is provided as leakage flow through the flashboards while the remaining 150 cfs is provided to the bypass reach via the fish passage facility.

FIGURE 29. ZONE 7 – ORONO BYPASS REACH



TABLE 8. ZONE 7 – ORONO BYPASS REACH

Facility Name: Orono Project

Zone of Effect: 7– Orono Bypass Reach

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

As discussed above, the Orono Project is managed as a run-of-river facility with stable headpond management and inflows passed as outflows via the powerhouses and the spillway (spillage, upstream eel passage flows, and the 200 cfs minimum flow is discharged to the bypass reach). The water quality of this reach is classified as Class B, and minimum flows are required pursuant to the Project’s WQC into this Zone of Effect. There are diadromous fish species in this section of the Stillwater Branch of the Penobscot River, and there are both upstream and downstream fish passage facilities for migratory species at Orono Dam. The Stillwater Branch of the Penobscot River is designated as critical habitat for Atlantic salmon.

There are no shoreline lands within the Orono project boundary in this Zone of Effect, as the project boundary only extends to the full pond elevation. As Orono Dam is operated in a run-of-river mode to pass inflows, lands adjacent to this Zone of Effect are generally unaffected by project operations. Five species are listed as federal and/or state Endangered/Threatened in the project area, Atlantic salmon, Yellow lampmussel and three species of bat (Northern long-eared, little brown, and Eastern small-footed), but the latter are not affected by routine project operations, as there are no lands within this Zone of Effect. Yellow lampmussel would not be expected in the exposed and high velocity ledge areas of the bypass reach. An SPP and BiOp for the Orono Project provide protection measures for Atlantic salmon. There are no prehistoric archaeological sites at the Project, nor in this Zone of Effect. There are also no recreation sites within this Zone of Effect.

2.10 ZONE 8 - ORONO PROJECT TAILRACE/DOWNSTREAM REGULATED RIVER REACH

Orono Dam is comprised of two powerhouses (Powerhouse A and Powerhouse B) served by a single integral intake structure. The tailrace is located at RM 0.05 to RM 0.0 of the Stillwater Branch of the Penobscot River, with both powerhouses effectively discharging into the mainstem of the Penobscot River. The mainstem essentially backwaters to the discharge of both Powerhouses.

FIGURE 30. ZONE 8 - ORONO PROJECT TAILRACE/DOWNSTREAM REGULATED RIVER REACH/DOWNSTREAM REGULATED RIVER REACH



TABLE 9. ZONE 8 - ORONO PROJECT TAILRACE/DOWNSTREAM REGULATED RIVER REACH/DOWNSTREAM REGULATED RIVER REACH MATRIX OF ALTERNATIVE STANDARDS

Facility Name: Orono Project

Zone of Effect: 8– Orono Project Tailrace

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	X		
G	Cultural and Historic Resources Protection	X				
H	Recreational Resources		X			

This reach receives water from both Orono powerhouses, which converge with flow from the bypass reach, and it is subject to a backwater effect from the mainstem of the Penobscot River. Both the Stillwater Branch and the mainstem of the Penobscot River comprising this reach are Class B. There are diadromous fish species in this section of the Stillwater Branch of the Penobscot River, and there are upstream and downstream fish passage facilities for migratory species at the Orono Dam. This section of the mainstem is a free-flowing stretch of river to the estuary with no impediments downstream. The Stillwater Branch and the mainstem of the Penobscot River are designated as critical habitat for Atlantic salmon, which is listed as Endangered and for which an SPP and BiOp for the Orono Project have been developed. There are no lands within the project boundary in this Zone of Effect, save for small areas of shoreline adjacent to Powerhouse A. Five species are federal and/or state listed as Endangered/Threatened in the project area, Atlantic salmon, Yellow lampmussel, and three species of bat (Northern long-eared, little brown and Eastern small-footed). Bats are not expected to be affected by project operations as project lands are extremely limited and the Project is run of river. There are no prehistoric archaeological sites at the Project, nor in this Zone of Effect. The only project recreation site located within this Zone of Effect is the canoe portage trail around Orono Dam.

3.0 LIHI CERTIFICATION CRITERION

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.

Both Projects are operated as run of river facilities with stable headponds managed for Zone 2 – Stillwater Impoundment and Zone 6 – Orono Impoundment, monitored pursuant to the FERC-approved Operations and Flow Monitoring Plans for the Projects (see Section 6.0). Flows are conveyed through the powerhouses (to the Project tailrace Zones of Effect 4 – Stillwater Powerhouse B, 5 – Stillwater Powerhouse A, and 8 – Orono Project Tailrace/Downstream Regulated River Reach) and/or provided as spill at the dams (discharging to the Project bypass reaches Zone of Effect 3 – Stillwater Dam Bypass Reach and 7 – Orono Bypass Reach) in times of high flows or unit outages.

Flows up to the hydraulic capacity of Powerhouse A and Powerhouse B of 3,822 cfs are conveyed to Zone 8 – Orono Project Tailrace/Downstream Regulated River Reach. Flows in excess of the hydraulic capacity of the Project or in times of unit outage are conveyed to Zone 7 – Orono Bypass Reach. The Orono Project has a required bypass reach minimum flow of 200 cfs, which is provided as 150 cfs through the existing fish passage facility and 50 cfs via the spillway (both of which discharge into the Zone 8 – Orono Bypass Reach). In addition, approximately 1.5 cfs is also seasonally provided into Zone 8 – Orono Bypass Reach via the upstream eel passage facility conveyance flow from June 1 to August 31.

Flows up to the hydraulic capacity of Powerhouse A and Powerhouse B of 3,458 cfs are conveyed to Zone of Effect 4 – Stillwater Powerhouse B Tailrace and 5 – Stillwater Powerhouse A Tailrace. The Stillwater Project has a required minimum flow of 70 cfs, which is provided through the existing fish passage facility and/or Powerhouse B, discharging into Zone of Effect 4 – Stillwater B Tailrace. In addition, while there is no required minimum flow at Powerhouse A, the downstream fish passage facility conveys 70 cfs from April 1 to December 31 into Zone of Effect 5 – Stillwater A Tailrace. Approximately 1.5 cfs is provided to Zone of Effect 7 – Orono Bypass Reach via the upstream eel passage facility from June 1 to August 31.

Black Bear has not experienced a flow or water level excursion, nor received any notice of a violation of license from FERC in the last 5 years for either Project. As discussed in greater detail below, two headpond excursions (which have been previously reported) occurred at the Orono Project in May 2015, previous to the current 5 year term of the LIHI certification (June 2015 – June 2020).

3.1.1 ZONE 1 – REGULATED UPSTREAM RIVER REACH

Criterion	Standard	Supporting Information
A	1 The facility operates in a true run-of-river operational mode and there are no bypassed reaches or water diversions associated with the facility	Not Applicable / De Minimis Effect: • For run-of-river facilities, provide details on operations describe how flows, water levels, and operations are monitored to ensure such an operational mode is maintained.

The Stillwater Project is operated with inflow from the Milford impoundment, which is discharged into Zone 1 – Regulated River Reach Upstream by the Gilman Falls Dam, pursuant to the Settlement Agreement and Milford FERC license. Flows into the Stillwater Branch are monitored pursuant to the Milford Project Operations and Flow Monitoring Plan³, approved by the FERC on August 27, 2013⁴, wherein headpond transducers are used to ensure run of river operations; gate curves for both Milford and Gilman Falls Dam, plus Milford fishway orifice flow calculations and turbine capacities, provide the information necessary to ensure compliance with the required flow allocation. No deviations of the required Stillwater Branch allocation have occurred in the last 5 years.

Because this reach is outside of the project influence of the Stillwater Project, being upstream of the backwater effect of the Stillwater impoundment, a Standard of 1 “Not Applicable” is assigned.

As indicated below, Black Bear allocates flows between the main stem of the Penobscot River and Stillwater Branch through operation of its Milford Project, in accordance with the provisions of the Settlement Agreement and Milford FERC license.

Inflows	Allocation
Flows below 3,800 cfs	Comply with the existing minimum flow requirements. At 3,800 cfs, 3,268 cfs in main stem (86%) and 532 cfs in the Stillwater Branch (14%) – 60 cfs from Gilman Falls dam and 472 cfs from the west channel. Incrementally decreasing to 9% in the Stillwater Branch (216 cfs) at an inflow of 2,400 cfs.
Flows between 3,800 cfs and 5,446 cfs	Maintain the existing allocation between May 1 and October 31, and from November 1 to April 30 allow a diversion of up to 40% of total river flow into the Stillwater Branch, but must continue to comply with minimum flows required by the current FERC license and 401 WQC.
Flows greater than 5,446 cfs, up to the limit of operational control	60% of flow to the Penobscot River 40% of flow to the Stillwater Branch

³ <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=13300247>

⁴ <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=13337877>

3.1.2 ZONE 2 – STILLWATER IMPOUNDMENT

Criterion	Standard	Supporting Information
A	<p>2</p> <p>The flow regime at the facility was developed in accordance with a science-based resource agency recommendation</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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 Stillwater Project is operated in run-of-river mode with minimum impoundment fluctuations, such that inflows into the impoundment approximate outflows through the two hydro stations and/or the Stillwater Dam spillway. Water fluctuations are allowed up to 1 ft from normal full pond for operational flexibility, but the 1 ft is not used for power production or any other operational consideration, such as the provision of minimum flows.

Brookfield’s National System Control Center (NSCC) continuously monitors the Stillwater impoundment level and flows. Depending on inflows with a corresponding incremental rise or fall of the impoundment, the NSCC will utilize the generating units at either hydro station to stabilize headpond elevations, which ensures run-of-river operations. If headpond elevation maintenance cannot be met through the turbines (i.e., inflows exceed station capacity and/or units are out of service), spill is provided over the flashboard system at Stillwater Dam to discharge excess flows to the bypass reach.

The Project has a FERC-approved Operations and Flow Monitoring Plan. Except for planned maintenance activities (e.g., flashboard maintenance), any deviations from run-of-river operations or minimum flow requirements at the Project are reported to FERC as described above in Section 1.2. No deviations of the Stillwater headpond elevation have occurred in the last 5 years.

While this Zone of Effect is operated in a run-of-river mode with stable headpond elevations and inflows equal to outflows, such that Standard 1 would normally apply, the Stillwater Project has a bypass reach. As such, a Standard of 2 was selected. Effects of flows to the bypass reach are discussed below in Zone 3.

3.1.3 ZONE 3 – STILLWATER DAM BYPASS REACH

Criterion	Standard	Supporting Information
A	<p>2</p> <p>The flow regime at the facility was developed in accordance with a science-based resource agency recommendation</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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.
A	<p>PLUS</p> <p>In addition to satisfying one or more of the standards above, the facility is operating an adaptive management program to regularly evaluate and adjust facility operations with respect to flows and habitat conditions, or has implemented significant, non-flow habitat enhancements (for example, structural improvements leading to river restoration) with demonstrated net benefits to fish and wildlife resources affected by the facility.</p>	<p>Bonus Activities:</p> <ul style="list-style-type: none"> • If an adaptive management program is in place, provide sufficient information to describe the program, the current status of implementation and consultation, and how it is expected to achieve the desired results. • If non-flow habitat enhancements have been applied, explain what they are, how their benefits are being monitored, and how they are achieving a positive net benefit to fish and wildlife resources.

An instream flow study was conducted in 1991 in association with the Project relicensing (BHE 1991). The weighted usable area (WUA) for target species and life

stages was determined for both bypass channels, at various flows. The tables below provide the WUA estimates comparing leakage to the proposed flows in each channel.

TABLE 1: WEST BYPASS CHANNEL WUA AT LEAKAGE AND 20 CFS

Species/Lifestage	Leakage	20 cfs
Atlantic salmon juvenile	0.0	17.6
Smallmouth bass spawning/incubation	3.3	2.1
Smallmouth bass young-of-year	14.1	8.9
Smallmouth bass juvenile	6.9	13.3
Smallmouth bass adult	2.4	2.3
Shad spawning/incubation	0.0	0.7
Shad larval	3.5	4.1
Total available WUA	30.2	49

TABLE 2: EAST BYPASS CHANNEL WUA AT LEAKAGE AND 50 CFS

Species/Lifestage	Leakage	50 cfs
Atlantic salmon juvenile	17.6	66.7
Smallmouth bass spawning/incubation	122.3	133.9
Smallmouth bass young-of-year	212.4	270.6
Smallmouth bass juvenile	317.8	367.6
Smallmouth bass adult	243.3	264.4
Shad spawning/incubation	18	27.7
Shad larval	249.3	277.1
Total available WUA	1180.7	1408.0

The minimum flows provide 25.6 and 3.8 percent of total maximum WUA in the west and east channels, respectively. This flow equates to 1.3 WUA per cfs in the west channel and 0.9 WUA per cfs in the east channel. The purpose of these flows is to provide bypass reach habitat for migratory and resident species, but the flows also provide habitat for downstream Atlantic salmon smolt passage.

On November 8, 2019, Black Bear submitted an application to FERC for a non-capacity amendment of the Stillwater Project license, together with an amended 401 WQC, to alter the location of the bypass reach minimum flows, but without any reduction in the 70 cfs overall minimum flow. In 2015, an upstream eel passage facility was built in the west channel, which provides 1-2 cfs conveyance/attraction flow to the west channel in addition to the 20 cfs minimum flow provided via notched flashboards. However, upstream eel passage studies revealed that eel passage was affected due to false attraction of eels to the 20 cfs west channel bypass flow. A temporary variance

was granted on June 13, 2017 by FERC to change the minimum flow conveyance location from 20 cfs in the west channel and 50 cfs in the east channel to the total 70 cfs in the east channel. The intent of this variance was to allow an evaluation of upstream eel passage with a reduced flow through the flashboards on the south/west end of the dam to minimize the associated false attraction of juvenile eels to flow areas that do not provide suitable upstream passage. Upstream eel passage improved under these conditions.

On October 28, 2019, an amended 401 WQC was issued for the Project to make this change in minimum flows and upstream passage conditions for eels permanent; an amendment application, with agency consultation and support documentation (see Section 6.1) was then filed on November 8, 2019 with FERC to permanently incorporate this change into the license. This license amendment request was approved by FERC by order dated June 8, 2020. In compliance with the amended FERC Order, Black Bear filed, on August 10, 2020, a revised Operations and Flow Monitoring Plan to address the relocated minimum flow, which was approved by the Commission on September 10, 2020 (see Section 6.5). No deviations of the Stillwater minimum flow have occurred in the last 5 years.

The Project's SPP and BiOp includes an adaptive management plan for downstream Atlantic salmon smolt passage. As an iterative step in the adaptive management plan, Black Bear has provided since 2016 dedicated spill between 20 to 50% of river flows into the bypass reach during the smolt outmigration period (see discussion in Section 3.4). The spill is provided for two weeks in May following a river temperature increase to 10 degrees C. The spill is provided over the Stillwater Dam spillway through a section of downed flashboards. As discussed in Section 3.4, the provision of additional flow has improved passage success for downstream migrating smolts at the Project.

3.1.4 ZONE 4 – STILLWATER POWERHOUSE B TAILRACE

Criterion	Standard	Supporting Information
A	<p>2</p> <p>The flow regime at the facility was developed in accordance with a, science-based resource agency recommendation</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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.

Zone 4 – the Stillwater Powerhouse B tailrace extends from the discharge of the Powerhouse B to the confluence with flows from the bypass reach. A minimum flow of 70 cfs, as discussed above, is provided through the downstream fish passage facility during the downstream fish passage season, or through Powerhouse B otherwise. The downstream fish passage facility discharges immediately adjacent to the outlet of Powerhouse B. As discussed above, FERC recently approved a non-capacity amendment application incorporating the new 401 WQC to relocate the previously required 20 cfs west channel bypass reach flow to be coincidental to the 50 cfs east channel bypass reach flow – i.e. through the downstream fishway or via Powerhouse B. The total required minimum flow of 70 cfs from the Stillwater Project did not change as a result of this amendment, only the location at which the flow is discharged (i.e. entirely from the fishway/powerhouse vs 50 cfs from the fishway/powerhouse and 20 cfs from the spillway). No deviations of the Stillwater minimum flow have occurred in the last 5 years.

Except for planned maintenance activities (e.g., flashboard maintenance), any deviations from run-of-river operations or minimum flow requirements at the Project are reported to FERC as described above in Section 1.2.

3.1.5 ZONE 5 – STILLWATER POWERHOUSE A TAILRACE

Criterion	Standard	Supporting Information
A	<p>2 The flow regime at the facility was developed in accordance with a, science-based resource agency recommendation</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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.

Zone 5 – the Stillwater Powerhouse A tailrace extends from the discharge of the Powerhouse A to the confluence with flows from the bypass reach and Powerhouse B. A flow of 70 cfs is provided through the downstream fish passage facility during the downstream fish passage season. The downstream fish passage facility discharges immediately adjacent to the outlet of Powerhouse A.

Except for planned maintenance activities (e.g., flashboard maintenance), any deviations from run-of-river operations or minimum flow requirements at the Project are reported to FERC as described above in Section 1.2, though none have occurred in the last 5 years.

3.1.6 ZONE 6 - ORONO IMPOUNDMENT

Criterion	Standard	Supporting Information
A	<p>2 The flow regime at the facility was developed in accordance with a, science-based resource agency recommendation</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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.

As with the Stillwater impoundment, the Orono impoundment is operated in accordance with the FERC license and 401 WQC to limit impoundment fluctuations to 1 ft from the normal full pond elevation and to target a stable headpond.

Brookfield’s NSCC continuously monitors operations at the Orono Project including impoundment elevations and flows (through both of the Orono Powerhouses and as discharged via the spillway) to maintain compliance with requirements for run-of-river operations, headpond elevations, and minimum flows. As discussed in Section 3.1.2, maintenance of stable headpond elevations assures compliance with run-of-river obligations. Inflows into the Orono Project to be passed downstream into the Stillwater Branch of the Penobscot River at the confluence with the mainstem of the Penobscot River are monitored by the NSCC.

The Orono Project operates under a FERC-approved Operations and Flow Monitoring Plan. Except for planned maintenance activities (e.g., flashboard maintenance), any deviations from run-of-river operations or minimum flow requirements at the Project are reported to FERC as described above in Section 1.2.

No deviations of impoundment elevation have occurred at the Project in the last 5 years. Two May 2015 headpond excursions occurred prior to the current certification term, and they have been previously reported to LIHI. Black Bear’s annual compliance

statement for the June 1, 2015 to June 1, 2016 period was filed with LIHI on June 9, 2016 and acknowledged that a “notice of violation or non-compliance relevant to the facility’s certification from any government agency” was received for the Project during the statement period, referring to the May 18, 2015 and May 28, 2015 Orono impoundment elevation excursions. Specifically, the annual compliance filing included the notice of violation of license issued by FERC for the Orono Project on August 14, 2015, indicating that the impoundment elevation excursions occurring in May 2015, as a result of operator error, would be considered a violation of the Orono license.

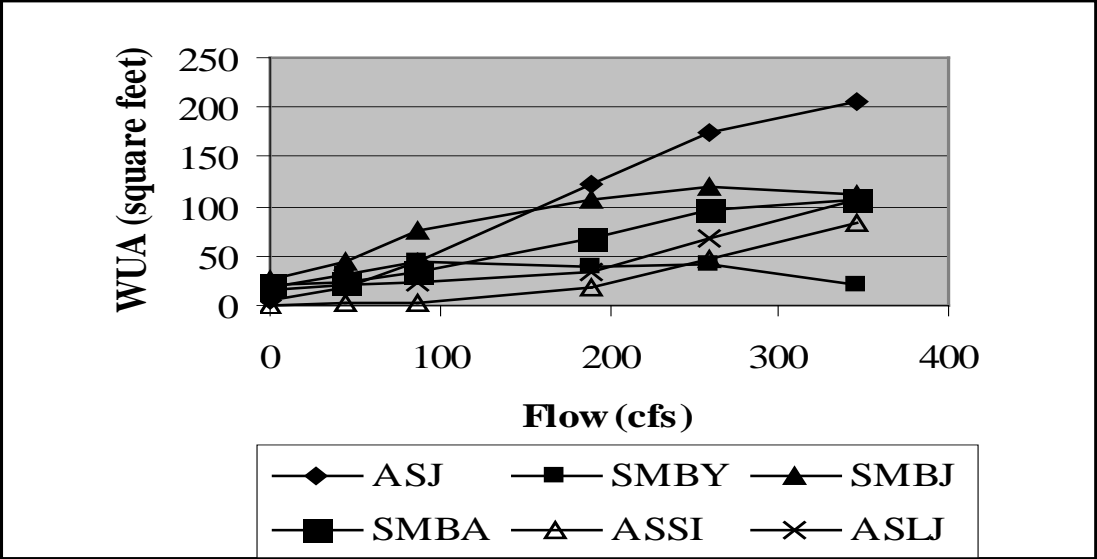
While this Zone of Effect is operated in a run-of-river mode with stable headpond elevations and inflows equal to outflows, such that Standard 1 would normally apply, the Orono Project has a bypass reach to which minimum required flows, spills in excess of station capacity, and targeted spills for downstream Atlantic salmon smolt passage are discharged. Therefore, a Standard of 2 was selected to account for the bypass reach. Effects of flows to the bypass reach are discussed in Zone 7.

3.1.7 ZONE 7 - ORONO BYPASS REACH

Criterion	Standard	Supporting Information
A	<p>2</p> <p>The flow regime at the facility was developed in accordance with a, science-based resource agency recommendation</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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.
A	<p>PLUS</p> <p>In addition to satisfying one or more of the standards above, the facility is operating an adaptive management program to regularly evaluate and adjust facility operations with respect to flows and habitat conditions, or has implemented significant, non-flow habitat enhancements (for example, structural improvements leading to river restoration) with demonstrated net benefits to fish and wildlife resources affected by the facility.</p>	<p>Bonus Activities:</p> <ul style="list-style-type: none"> • If an adaptive management program is in place, provide sufficient information to describe the program, the current status of implementation and consultation, and how it is expected to achieve the desired results. • If non-flow habitat enhancements have been applied, explain what they are, how their benefits are being monitored, and how they are achieving a positive net benefit to fish and wildlife resources.

The minimum flow of 200 cfs was analyzed in the 2005 FERC Environmental Assessment (EA) pursuant to an Instream Flow Incremental Methodology (IFIM) conducted as part of relicensing the Orono Project. The analysis showed that over the range of flows evaluated, WUA was highest at a flow of 346 cfs for all but two species life stages--smallmouth bass young of the year (YOY) and juveniles. However, for this species and these life stages, the WUA versus discharge curves were relatively flat over a range of flows from 86 to 258 cfs for YOY and 189 to 346 cfs for juveniles suggesting that similar habitat is provided by the 200-cfs flow. Although WUA is shown to continue

to increase with increasing flow for smallmouth bass adults and Atlantic salmon juveniles over the range of flows evaluated, the rate of habitat improvement declined at flows above 189 cfs. Habitat improvement for American shad spawning/incubation and larvae/juvenile life stages continued to increase as flows increased throughout the entire range of flows evaluated.



In accordance with the 2012 Amended License for the Orono Project, the 200 cfs minimum flow is provided by conveying 153 cfs through the fish passage facility and 47 cfs through the flashboards. An additional flow of 1-2 cfs is provided to the bypass reach via the upstream eel passage facility. No violations of Project minimum flows have occurred in the last 5 years.

In addition to the minimum bypass reach flows, an adaptive management plan for downstream Atlantic salmon smolt passage has been implemented as part of the Project’s SPP and BiOp. This has resulted in the provision of spill between 20 to 50% of river flows into the bypass reach, which have been provided since 2016 during the smolt outmigration period. The spill is provided for two weeks following a river temperature increase to 10 degrees C. This is provided as spill over the spillway by leaving a section of flashboards down. As discussed in Section 3.4, the provision of additional flow has improved passage success for downstream migrating smolts at the Project.

3.1.8 ZONE 8 - ORONO PROJECT TAILRACE/DOWNSTREAM REGULATED RIVER REACH

Criterion	Standard	Supporting Information
A	<p>2</p> <p>The flow regime at the facility was developed in accordance with a, science-based resource agency recommendation</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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.

As discussed above, flows are allocated to the Stillwater Branch of the Penobscot River from the Milford Project in accordance with the flow schedule contained in the Settlement Agreement. Flows discharged to the Stillwater Branch pass both the Stillwater and Orono Projects. These flows are conveyed downstream of the Orono Project via the bypass or the Project’s two powerhouses. The bypass reach converges with the powerhouse flows at the tailrace where the Stillwater Branch merges with the mainstem of the Penobscot River.

The NSCC monitors all discharges from the Orono Project powerhouses and via spill at Orono Dam, pursuant to the FERC and agency-approved Operations and Flow Monitoring Plan. Except for planned maintenance activities (e.g., flashboard maintenance), any deviations from run-of-river operations at the Orono Project are reported to FERC as described above in Section 1.2. No excursions of minimum flow requirements have occurred at the Orono Project in the last 5 years.

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.” A discussion of the applicable standards by Zone of Effect is provided in the Sections below.

The entirety of the Stillwater Branch of the Penobscot River is Class B. According to Maine statute, Class B waters must be suitable for the following designated uses: drinking water supply after treatment, fishing, agriculture, recreation in and on the water, industrial process and cooling water supply, hydroelectric power generation, navigation, and as habitat for fish and other aquatic life.

The water quality standards for Class B waters require that DO be maintained at not less than 7 parts per million (ppm) or 75 percent saturation, whichever is higher, except that for the period from October 1 to May 14 when the 7-day mean DO concentration must not be less than 9.5 ppm and the 1-day minimum DO concentration must not be less than 8.0 ppm in identified spawning areas in order to ensure spawning and egg incubation of indigenous fish species. The DEP historically conducted ambient water quality sampling in the Stillwater Branch with all DO readings in attainment. Water quality monitoring conducted by Black Bear as part of the FERC required Dissolved Oxygen monitoring plan is discussed below.

Class B water quality standards also include numeric criteria for Escherichia coli. The standard requires that waters “maintain the level of Escherichia coli bacteria of human and domestic animal origin below a geometric mean of 64 per 100 milliliters or an instantaneous level of 236 per 100 milliliters.” According to Maine DEP’s 2016 Integrated Water Quality and Assessment Report (305(b) report) to the U.S. Environmental Protection Agency, the Stillwater Branch is not impaired. The main stem of the Penobscot River at Orono is classified by Maine DEP as a Category 4B water— Rivers and Streams with Impaired Use Other than Mercury, TMDL Completed—as a result of excursions of Class B bacteria (E. coli) standards, which are not influenced or caused by project operations.

3.2.1 ZONE 1 – REGULATED RIVER REACH UPSTREAM

Criterion	Standard	Supporting Information
B	<p>2</p> <p>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.</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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.

This reach is upstream and outside of the Stillwater Project and is unaffected by project operations. However, it is the source water for flows into the Stillwater

impoundment, which is controlled by the Milford Project in accordance with the Milford FERC license and 401 WQC, and the reach is in compliance with water quality standards.

This section of the Stillwater Branch of the Penobscot River is not identified as impaired in Maine DEP’s 2016 305(b) report.

3.2.2 ZONE 2 - STILLWATER IMPOUNDMENT

Criterion	Standard	Supporting Information
B	<p>2</p> <p>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.</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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.

Water quality studies conducted as part of relicensing of the Stillwater Project and subsequent compliance activities indicate that the water quality in the Stillwater impoundment meets Class B criteria. All designated uses were deemed to have been met as outlined in the 1997 WQC and 2004 and 2011 amendments to the WQC. Specific to aquatic habitat, this designated use was deemed to be met through run-of-river operations (stable impoundment elevations) and a minimum flow of 70 cfs that is maintained in the bypass reach of the Project.

This section of the Stillwater Branch of the Penobscot River is not identified as impaired in Maine DEP’s 2016 305(b) report.

3.2.3 ZONE 3 – STILLWATER DAM BYPASS REACH

Criterion	Standard	Supporting Information
B	<p>2</p> <p>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.</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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.

As discussed in Section 3.1.3, Stillwater bypass reach minimum flows, plus any excess flows and leakage flows, are passed into the bypass reach downstream of Stillwater Dam; this channel has been established under this flow regime since issuance of the Stillwater FERC license in 1998. Bypass reach flows were established to maintain both the aquatic life designated use plus the water quality numeric standards. Dissolved oxygen monitoring, required pursuant to the construction of Stillwater Powerhouse B, also shows attainment of water quality standards (see Section 6.0).

This section of the Stillwater Branch of the Penobscot River is not identified as impaired in MDEP’s 2016 305(b) report.

3.2.4 ZONE 4 – STILLWATER POWERHOUSE B TAILRACE

Criterion	Standard	Supporting Information
B	<p>2</p> <p>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.</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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 Stillwater Project tailrace receives flows from Powerhouse B that converge with bypass reach minimum flows, plus any excess flows and leakage flows that are passed into the bypass reach downstream of Stillwater Dam. Minimum flows of 50 cfs are provided via Powerhouse B or the downstream fish passage facility, and are discussed extensively above with respect to the aquatic life designated use. Dissolved oxygen monitoring, required pursuant to the construction of Powerhouse B, shows attainment of water quality standards (see Section 6.0).

Except for planned maintenance activities (e.g., flashboard maintenance), any deviations from run-of-river operations or minimum flow requirements at the Stillwater Project are reported to FERC as described above in Section 1.2.

3.2.5 ZONE 5 – STILLWATER POWERHOUSE A TAILRACE

Criterion	Standard	Supporting Information
B	<p>2</p> <p>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.</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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 Stillwater Project A tailrace receives flows from Powerhouse A that converge with bypass reach and Powerhouse B minimum flows, plus any excess flows and leakage flows that are passed into the bypass reach downstream of Stillwater Dam. As this reach receives flows from the Stillwater bypass reach and Powerhouse B tailrace, along with backwater effects from the Orono impoundment, water quality metrics would be consistent.

Except for planned maintenance activities (e.g., flashboard maintenance), any deviations from run-of-river operations or minimum flow requirements at the Stillwater Project are reported to FERC as described above in Section 1.2.

3.2.6 ZONE 6 - ORONO IMPOUNDMENT

Criterion	Standard	Supporting Information
B	<p>2</p> <p>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.</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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.

Water quality studies conducted as part of relicensing of the Orono Project and subsequent compliance activities indicate that the water quality in the Orono impoundment meets Class B criteria. All designated uses were deemed to have been met as outlined in the 2004 WQC and 2011 amendment to the WQC. Specific to aquatic habitat, this designated use was deemed to be met through run-of-river operations (stable impoundment elevations) and a minimum flow of 200 cfs that is maintained in the bypass reach of the Orono Project.

This section of the Stillwater Branch of the Penobscot River is not identified as impaired in Maine DEP's 2016 305(b) report.

3.2.7 ZONE 7 - ORONO BYPASS REACH

Criterion	Standard	Supporting Information
B	<p>2</p> <p>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.</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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.

As discussed in Section 3.1.3, bypass reach minimum flows plus any excess flows and leakage flows are passed into the bypass reach downstream of Orono Dam; this channel has been established under this flow regime since issuance of the Orono Project license in 1998. Bypass reach flows were established to maintain both the aquatic life designated use plus water quality numeric standards. Dissolved oxygen monitoring, required pursuant to the construction of Powerhouse B, shows attainment of water quality standards (see Section 6.0).

This section of the Stillwater Branch of the Penobscot River is not identified as impaired in Maine DEP's 2016 305(b) report.

3.2.8 ZONE 8 - ORONO PROJECT TAILRACE/DOWNSTREAM REGULATED RIVER REACH

Criterion	Standard	Supporting Information
B	<p>2</p> <p>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.</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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.

As discussed above, the reach of the Stillwater Branch of the Penobscot River below Orono Dam is classified as Class B. All designated uses were deemed to have been met as outlined in the 1997 WQC and subsequent 2004 and 2011 WQC amendments for the Orono Project. Impairments were identified for this reach of the Stillwater Branch of the Penobscot River in the 2016 303(b) Report, as discussed above, but were related to E. coli and unrelated to project operations.

Except for planned maintenance activities (e.g., flashboard maintenance), any deviations from run-of-river operations or minimum flow requirements at the Orono Project are reported to FERC as described above in Section 1.2.

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.”

The Stillwater Branch of the Penobscot River is critical habitat for Atlantic salmon, and diadromous fish, including American shad, blueback herring, alewife, American eel, and Atlantic salmon, are present. There is an upstream fish passage trap and truck facility at the Orono Project, which allows fish to be captured and transported to areas above the Stillwater Branch.

The upstream fish passage facility at the Orono Project consists of a fish lift system with a single gated entrance located in the bypass reach immediately downstream from the spillway and adjacent to the Powerhouse B intake. The entrance channel is an 8-foot-wide concrete

flume that runs parallel to the intake wall for Powerhouse B and at 45 degrees to the spillway discharge. The entrance is equipped with a downward opening gate that is manually set to maintain an entrance velocity of 4 to 6 feet per second depending on tailwater level, an adjustable V-gate (normally operated at a gate width opening of 12 inches), a 733 gallon lifting hopper with floor brail crowder, and a blocking/diffusion screen (Photo 2). The hopper is raised by a manually controlled electric hoist atop a steel tower. The hopper discharges into a movable 853 gallon circular sorting tank where fish can be sorted and then loaded into a transport tank and trucked to habitat upstream of Milford Dam.

The upstream fishway at the Orono Project is operated April 15 to November 15 with Atlantic salmon passage throughout the operational season, alewife season May 1 to June 30; and American shad and blueback herring season June 1 to July 31.

Both Projects provide upstream eel passage facilities that are operated at a minimum from June 1 to August 31 annually.

The upstream eel passage is located at the small bedrock island about mid-river of the Stillwater Dam spillway. The eel passage structure is approximately 36 feet long and 6 feet wide with a 4.5-foot-wide sloped inner floor. The ladder is inclined at approximately an 11 to 13-degree angle up the face of the dam, and the inner floor is sloped at approximately a 24-degree angle. The sloped floor allows the eel passage channel to operate under a range of head pond elevations. The entrance of the ladder at the base of the dam is at an elevation of approximately 86.0 feet. The eel ladder exit invert is at an elevation of approximately 93.58 feet. This placement provides a water depth of 12 inches at the full pond elevation of 94.65 feet, thus providing approximately 680 gallons a minute (about 1.5 cubic feet a second) for attraction and conveyance water at the full pond elevation. The sloped floor extends approximately 1 foot above the water level in the channel to provide an area of low flow and velocity at the edge of the water that eels can use for climbing. The climbing substrate consists of bristle-brush material spaced at 25 millimeters on-center, with staggered rows offset at 12 millimeter spacing. The bristle-brush can pass both large and small eels and provides them with refuges from high velocity flow.

At the Orono Project, the upstream eel passage is located to the right and downstream side of the non-overflow spillway section of the dam. The eel passage structure is approximately 66 ft long, 4.5 ft wide, and ascends approximately 15 ft of vertical height at a 20° angle slope. It consists of a 42 ft long steel ramp that connects the exit to a steel trough, which in turn is grouted into the spillway crest at an invert of elevation 72.0 ft. The steel ramp is covered to prevent both debris loading during times of spill and ice damage during the winter when the eel passage is not operational. A series of hinged doors provide access along the length of the ramp. A concrete entrance structure supports the ramp and directs eels to the climbing substrate. The ramp floor is covered with rigid bristle-brush climbing substrate laid down in 0.40 x 1.0 meter sheets. The bristle-brush is spaced at 25 millimeters on-center, in staggered rows offset at 12 millimeter spacing. The eel passage ramp exits directly into the Orono Project head pond. Flow through the eel passage is controlled by a stop log weir at its exit.

Both Projects provide downstream fish passage. The Gilman Falls Dam at the head of the Stillwater Branch provides unimpeded fish passage via spill and open gates. As a result, and with the exception of American eel (for which upstream passage facilities are available at both

Projects), fish present in the various Zones of Effect are generally those that are migrating downstream to the ocean, or those that have passed upstream at the Milford Project on the mainstem of the Penobscot River, but which have experienced fall back into the Stillwater Branch rather than continuing upstream.

Fish passage facilities, information, and adaptive management provisions are included in the Settlement Agreement, BiOp, and FERC Licenses (see Section 6.0) and have been previously provided to LIHI pursuant to annual Compliance Statements. Only one upstream passage study, for adult alewife, has been attempted at the Orono Project, and it was unsuccessful due to fallback (i.e. all alewife traversed downstream and did not continue their upstream migration following tagging). Upstream eel passage studies have been conducted at the Project as follows:

- *March 31, 2017 American Eel Upstream Passage Operation and Monitoring Report*

The report indicates that the upstream eel ladder at the Stillwater Project, based on 2016 video monitoring and night-time observations, exhibited some passage issues in the concrete transition area from the ledge pool up to the eel ladder entrance, which was initially left uncovered with climbing substrate, and as a result of water flows at the spillway resulting in false attraction. A follow up study season with substrate and flow modifications was proposed and supported by the agencies. The Orono eel ladder passed many eels safely and effectively based on video monitoring and night-time observations, and no follow up studies were proposed or required by the agencies.

- *March 26, 2018 American Eel Upstream Passage Operation and Monitoring Report*

An estimated 11,500 eels were observed utilizing the upstream eel ladder at the Stillwater Project in 2017 through video monitoring and night-time observations. Reduced leakage through the flashboards and extending the bristle brush climbing substrate at the entrance greatly improved the ability of eels to enter and successfully pass the eel ladder.

3.3.1 ZONE 1 – REGULATED RIVER REACH UPSTREAM

Criterion	Standard	Supporting Information
C	<p>1</p> <p>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.</p>	<p>Not Applicable/De Minimis Effect:</p> <ul style="list-style-type: none"> • 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 or was not the cause of this.

There are currently diadromous fish species present in this reach of the Stillwater Branch of the Penobscot River. The Stillwater Branch of the Penobscot River is within historical habitat for Atlantic salmon and is designated as critical habitat. While this reach includes Gilman Falls Dam (which is part of the Milford Project and upstream of the project boundary for the Stillwater Project), this structure does not create a barrier to upstream or downstream fish passage, as swim through passage is provided through gates or over the dam’s spillway.

3.3.2 ZONE 2 – STILLWATER IMPOUNDMENT

Criterion	Standard	Supporting Information
C	<p>2</p> <p>The facility is in compliance with science-based fish passage recommendations issued by appropriate resource agency(ies) for the facility and which may include provisions for appropriate monitoring and effectiveness determinations.</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented. • Provide evidence that required passage facilities are being operated and maintained as mandated (e.g. meets season, coordination with agencies)

There are currently anadromous fish species present in this reach of the Stillwater Branch of the Penobscot River that move through during their downstream migration. There are no upstream migrating diadromous fish species in this reach, as there are no upstream fish passage facilities at the Stillwater Dam (fish are trapped and trucked upstream and around the Stillwater Branch from the downstream Orono Dam). The Stillwater Branch of the Penobscot River is within historical habitat for Atlantic salmon and is designated as critical habitat. An upstream eel passage at the Project discharges eels from the dam spillway into the impoundment.

While this reach receives water from Gilman Falls dam, this structure does not create a barrier to upstream or downstream fish passage, as swim through passage is provided through the gates or over the dam’s spillway.

3.3.3 ZONE 3 – STILLWATER DAM BYPASS REACH

Criterion	Standard	Supporting Information
C	<p>2</p> <p>The facility is in compliance with science-based fish passage recommendations issued by appropriate resource agency(ies) for the facility and which may include provisions for appropriate monitoring and effectiveness determinations.</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented. • Provide evidence that required passage facilities are being operated and maintained as mandated (e.g. meets season, coordination with agencies)

As with the Stillwater impoundment, there are currently anadromous fish species present in this reach of the Stillwater Branch of the Penobscot River that move through during their downstream migration. With the exception of American eel, there are no upstream migrating diadromous fish species in this reach, as there are no upstream fish passage facilities at the Stillwater Dam (fish are trapped and trucked upstream and around the Stillwater Branch from the downstream Orono Dam). The Stillwater Branch of the Penobscot River is within historical habitat for Atlantic salmon and is designated as critical habitat.

The Stillwater Project has a permanent, flow-through concrete upstream eel passage channel located adjacent to dam Section E. The entrance of the eel passage starts at the base of dam structure at approximately 86 ft (Section F), traverses the mid-river island, and exits into the Stillwater head pond at approximately 93.58 ft invert elevation (Section E). The eel passage structure is approximately 6 ft wide and 36 ft long. The structure is sloped approximately 11 degrees at the entrance and 13 degrees at the exit. The climbing substrate consists of bristle-brush material, which provide refuge from high velocity flows. The exit has slots for either stop logs or a grizzly rack depending on operation requirements.

3.3.4 ZONE 4 – STILLWATER POWERHOUSE B TAILRACE

Criterion	Standard	Supporting Information
C	<p>2</p> <p>The facility is in compliance with science-based fish passage recommendations issued by appropriate resource agency(ies) for the facility and which may include provisions for appropriate monitoring and effectiveness determinations.</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented. • Provide evidence that required passage facilities are being operated and maintained as mandated (e.g. meets season, coordination with agencies)

There are currently diadromous fish species present in this reach of the Stillwater Branch of the Penobscot River, particularly as the downstream passage facility discharges at the interface of the Powerhouse B tailrace and the spillway. Fish that move through during their downstream migration would be in this area at the downstream passage discharge. With the exception of American eel, for which an upstream ladder is installed in the west channel of the bypass reach (Zone 3 – Stillwater Dam Bypass Reach), there are no upstream-migrating diadromous fish species in this reach, as there are no upstream fish passage facilities at Stillwater Dam (fish are trapped and trucked upstream and around the Stillwater Branch from the downstream Orono Dam). The Stillwater Branch of the Penobscot River is within historical habitat for Atlantic salmon and is designated as critical habitat.

3.3.5 ZONE 5 – STILLWATER POWERHOUSE A TAILRACE

Criterion	Standard	Supporting Information
C	<p>2</p> <p>The facility is in compliance with science-based fish passage recommendations issued by appropriate resource agency(ies) for the facility and which may include provisions for appropriate monitoring and effectiveness determinations.</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented. • Provide evidence that required passage facilities are being operated and maintained as mandated (e.g. meets season, coordination with agencies)

There are currently diadromous fish species present in this reach of the Stillwater Branch of the Penobscot River, particularly as the downstream passage facility discharges to the Powerhouse A tailrace. Fish that move through during their downstream migration to the ocean would be in this area at the downstream passage discharge. With the exception of American eel, for which an upstream ladder is installed in the west channel of the bypass reach (Zone 3 – Stillwater Dam Bypass Reach), there are no upstream-migrating diadromous fish species in this reach, as there are no upstream fish passage facilities at Stillwater Dam (fish are trapped and trucked upstream and around the Stillwater Branch from the downstream Orono Dam). The Stillwater Branch of the Penobscot River is within historical habitat for Atlantic salmon and is designated as critical habitat.

3.3.6 ZONE 6 – ORONO IMPOUNDMENT

Criterion	Standard	Supporting Information
C	<p>2</p> <p>The facility is in compliance with science-based fish passage recommendations issued by appropriate resource agency(ies) for the facility and which may include provisions for appropriate monitoring and effectiveness determinations.</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented. • Provide evidence that required passage facilities are being operated and maintained as mandated (e.g. meets season, coordination with agencies)

There are currently diadromous fish species present in the Stillwater Branch of the Penobscot River, including the Orono impoundment. While the Orono Dam has an upstream fish passage facility, it is operated as a trap and truck facility and fish are collected there and transported to reaches upstream of the Stillwater Branch and are not released into the Orono impoundment. As such, anadromous species present in the Orono impoundment are those that move through during their downstream migration. An upstream eel passage facility was installed on the spillway in 2016, providing upstream migratory connectivity for American eel. There are no other upstream migrating anadromous fish species in this reach. The Stillwater Branch of the Penobscot River is within historical habitat for Atlantic salmon and is designated as critical habitat.

3.3.7 ZONE 7 – ORONO BYPASS REACH

Criterion	Standard	Supporting Information
C	<p>2</p> <p>The facility is in compliance with science-based fish passage recommendations issued by appropriate resource agency(ies) for the facility and which may include provisions for appropriate monitoring and effectiveness determinations.</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented. • Provide evidence that required passage facilities are being operated and maintained as mandated (e.g. meets season, coordination with agencies)

There are currently anadromous fish species present in this reach of the Stillwater Branch of the Penobscot River that migrate upstream to the upstream fish passage facility. In addition, there may be species that are present as a result of their downstream migration. The Stillwater Branch of the Penobscot River is within historical habitat for Atlantic salmon and is designated as critical habitat.

The upstream fish lift trapping facility is adjacent to and integral with the downstream fish passage facility. Of the 150 cfs downstream attraction flow entering the screen chamber, approximately 130 cfs is passed through the floor screen and used for upstream attraction flow for the trapping facility, controlled by two submerged gates. The upstream trapping facility consists of a fixed rail system, a blocking screen, and an elevating hopper to retrieve the trapped fish. Black Bear provides short distance trucking of trapped fish to a location upstream of the dam. The entrance velocity is controlled by a downward opening gate.

A permanent, flow-through concrete upstream eel passage channel was completed at the Orono Project in June 2016; this structure is located on the existing overflow dam, and it ends approximately 20 feet from the pier between the spillway and the overflow dam. The entrance of the eel passage starts at the base of dam structure at an elevation of approximately 59 feet NGVD, then traverses up the dam and exits into the Orono head pond at an invert elevation of approximately 72 feet NGVD. The eel passage structure is approximately 4 feet wide and 49 feet long. The structure is sloped approximately 19 degrees from the entrance to the exit. The eel way floor contains a bristle-brush material that provides a climbing substrate for the eels and

refuge from high velocity flows. The exit has slots for either stop logs or a grizzly rack, depending on operation requirements.

In May 24, 2018, a mortality event involving approximately 50,000 alewife and 1 Atlantic salmon occurred during a routine drawdown necessary for the safe installation of boat barriers at the Orono impoundment. Under normal circumstances (i.e. in previous years), reduced outflows from the fish passage facility into the bypass reach that resulted from drawdowns for the installation of boat barriers had not resulted in fish stranding issues. Unfortunately, a large number of upstream migrating alewife were present in the bypass reach as flows dropped, resulting in stranding and mortality. Agencies consulted in the event did not indicate any concern or corrective actions. The incident was reported to the Commission on June 19, 2018, including all agency consultation, and the FERC determined the event not to be a violation of license on October 30, 2018 (see Section 6.5.3). The corrective actions included updating Brookfield’s internal environmental risk assessment for the Orono Project, incorporating environmental risks into job planning, updating the drawdown procedure to accommodate the consideration of fish passage season risks, and provide additional training to staff. All of the documentation associated with these measures is internal and proprietary.

3.3.8 ZONE 8 – ORONO TAILRACE

Criterion	Standard	Supporting Information
C	<p>2 The facility is in compliance with science-based fish passage recommendations issued by appropriate resource agency(ies) for the facility and which may include provisions for appropriate monitoring and effectiveness determinations.</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented. • Provide evidence that required passage facilities are being operated and maintained as mandated (e.g. meets season, coordination with agencies)

There are currently diadromous fish species present in the mainstem of the Penobscot River that may migrate up the Stillwater Branch to the upstream fish passage facility or upstream eel ladder at Orono Dam, as described above. In addition, there may be species that are present as a result of their downstream migration. The

Stillwater Branch and the mainstem of the Penobscot River are within historical habitat for Atlantic salmon and are designated as critical habitat.

Fish passage facilities, studies, and adaptive management provisions are included in the Orono Project's Settlement Agreement, BiOp, and FERC License (see Section 6.0). Extensive fish passage information, plans and studies are likewise provided in Section 6.0).

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.”

The Stillwater Branch of the Penobscot River is designated as critical habitat for Atlantic salmon, and diadromous fish, including American shad, blueback herring, alewife, American eel, and Atlantic salmon, are present. There is an upstream fish passage trap and truck facility at the Orono Project that allows transport of anadromous fish to areas above the Stillwater Branch and both Projects provide upstream eel passage facilities.

The Stillwater Powerhouse A has full-depth trash racks with 1-inch clear spacing across the turbine intakes angled perpendicular to the flow; a downstream fish bypass facility located at the left side of the intake (looking downstream) between the forebay wall and trashracks, which consists of a single low-level entrance and a single surface entrance both of which flow into a 2.83 ft wide bypass flume that discharges into the tailwater through a 36-inch-diameter conduit pipe. Subject to suitable river conditions, the Powerhouse A bypass is operated from April 1 to December 31 annually, with a total combined flow of 70 cfs. From April 1 to August 15, the flow is provided entirely through the surface entrance. From August 15 to November 15, the flow is balanced with a 40/30 cfs split between the surface entrance and low-level entrance to enhance downstream eel passage. The flow then reverts back to surface entrance flow only from November 15 to December 31 (or ice-in of the headpond).

The Stillwater Powerhouse B has full-depth trash racks with 1-inch clear spacing across the turbine intakes angled at 45° to the flow; a 4-ft wide surface fish bypass controlled by stop logs located between the trashrack and forebay wall; and a 4-ft square low-level entrance installed at the base of the trashrack which flows into a stop log weir-controlled box. Both bypasses discharge to a plunge pool that empties into a flume which runs along the west side of the powerhouse to the tailrace. Subject to suitable river conditions, the Stillwater Powerhouse B bypass is operated from April 1 to December 31 annually with a total combined flow of 70 cfs. From April 1 to August 15, the flow is provided entirely through the surface entrance. From August 15 to November 15, the flow is balanced with a 40/30 cfs split between the surface entrance and low-level entrance to enhance downstream eel passage; operation of the fish bypass then reverts back to surface entrance flow only from November 15 to December 31 (or ice-in of the headpond).

The downstream fish passage system at the Orono Project consists of full depth, angled trashracks with vertical bars spaced at one inch (clear) across the powerhouse intakes, a single surface bypass, and a single low-level bypass for American eel. The downstream surface bypass is located adjacent to the upstream fish passage facility next to the 45-degree angled section of trashracks across the Powerhouse B intake. An attraction flow of at least 153 cfs is provided to the downstream surface bypass transition flume through an 8-foot-wide adjustable entrance weir (manual, electrically operated downward opening gate) into a 12-foot-wide concrete transition flume. The transition flume has a 3/8 inch clear spacing wedge-wire screened floor and is the source of up to 130 cfs of attraction flow for the upstream fish lift. In consultation with the agencies, the wedge-wire screen was overlaid with 3/4-inch punch plate in 2018 in order to reduce the amount of grass and leaves passing through the screen, which plugs the upstream fish lift screens. The downstream passage conveyance flow (approximately 20 cfs) discharges into a 6-ft-wide steel plunge box which discharges to the river below the dam immediately adjacent to the entrance of the upstream fish lift. The downstream flow is controlled by a 3-ft-wide surface weir adjusted by wooden stop logs. The low-level bypass entrance is located at the bottom of the angled trashracks for Powerhouse B (invert elevation 58.1 ft). The 4.25 ft by 4.0 ft entrance is reduced in size by a 2.5 ft by 1.5 ft orifice plate to increase attraction to and utilization of the low level bypass by eels. The water then flows upward through a sloped steel weir box and discharges into the concrete transition flume of the downstream passage system. Water flow through the low level bypass is controlled by a 3-ft-wide flow control weir that can be adjusted by adding or removing wooden stop logs.

Downstream facilities at both Projects are operated during the downstream migration period. The downstream migration period is defined as April 1 to June 30 and November 1 to December 15 for Atlantic salmon, July 1 to December 31 for American shad and alewife, August to December 31 for blueback herring, and August 15 to November 15 and during any spring run that may occur for American eel. The Gilman Falls Dam, at the head of the Stillwater Branch, provides unimpeded downstream fish passage via spill and open gates.

Fish passage facilities, studies, and adaptive management provisions are included in the Settlement Agreement, BiOp, and FERC Licenses (see Section 6.0) and have been previously provided to LIHI pursuant to annual Compliance Statements. Extensive fish passage information, plans and studies are likewise provided in Section 6.5.3 and 6.5.4) and have been previously provided to LIHI pursuant to annual Compliance Statements and/or as required by the conditions of the Projects' LIHI certifications. In the last 5 years, the following plans and studies, which include as the respective appendices all agency consultation documentation for both Projects, have been conducted and are provided in Section 6.5.3 and 6.5.4:

- November 30, 2015 Letter of Intent for the 2016 Downstream American Eel Passage Study
- March 31, 2016 American Eel Upstream Passage Operation and Monitoring Report 2015
- April 14, 2016 Diadromous Fish Passage Report for Alosines and American Eels 2015
- March 31, 2017 American Eel Upstream Passage Operation and Monitoring Report 2016
- April 13, 2017 Diadromous Fish Passage Report for Alosines and American Eels 2016
- May 17, 2017 Diadromous Fish Passage Quantitative Study Plan 2017
- March 16, 2018 Diadromous Fish Passage Quantitative Study Plan 2018

- March 26, 2018 American Eel Upstream Passage Operation and Monitoring Report 2017
- April 12, 2018 Diadromous Fish Passage Report 2017
- March 22, 2019 American Eel Upstream Passage Operation and Monitoring Report 2018
- February 12, 2019 Diadromous Fish Passage Report 2018
- March 25, 2019 Diadromous Fish Passage Study Plan 2019
- January 13, 2020 Diadromous Fish Passage Report 2019
- March 10, 2020 American Eel Upstream Passage Operation and Monitoring Report 2019
- April 15, 2020 Diadromous Fish Passage Study Plan 2020

The above referenced study results are summarized in the table below. Fish passage studies are ongoing with a prioritized focus on downstream passage efficiencies, as discussed with agencies. To that end, Black Bear is conducting juvenile river herring passage route studies and turbine blade strike analyses at the Orono and Stillwater Projects in Fall, 2020. Study reports are generally filed in January or March of each year (depending on the field season), and study plans are generally filed with the FERC in March of each year.

TABLE 10. SUMMARY OF LOWER PENOBSCOT FISHERIES DOWNSTREAM PASSAGE STUDIES ON THE STILLWATER BRANCH

Study Year	Study Dates	Species	Life Stage	Project	Analysis Type	Median Residence Time	Passage Survival/Success		Key Agency Comments Related to Study Findings
							Estimate	Confidence Interval	
2017	June 13-Aug 15	American Shad	Adult	Stillwater	Quantitative	4.7 d	95.8%	75% CI = 91.7-97.9%	Forebay residence prior to downstream passage was relatively long at Stillwater.
2018	June-July	American Shad	Adult	Stillwater	Quantitative	0.3 d	94.7% *	*estimated from 18 of 19 tagged shad which approached dam	
2018	June-July	Alewife	Adult	Stillwater	Quantitative	0.4 d	94.6%	75% CI = 92.4-97.8%	
2016	September-October	American Eel	Adult	Stillwater	Quantitative	1.8 hr	92.0%	-	22% of eels passed Stillwater via Powerhouse A and half died during passage. Existing one inch rack spacing was not successful and Licensee should inspect racks to gaps or bends which allowed eels to enter; passage delay a concern.
2017	June 13-Aug 15	American Shad	Adult	Orono	Quantitative	1.6 d	87.0%	75% CI = 82.4-91.2%	
2018	June-July	American Shad	Adult	Orono	Quantitative	8.1 hr	94.4% *	*estimated from 17 of 18 tagged shad which approached dam	
2018	June-July	Alewife	Adult	Orono	Quantitative	2.1 hr	97.8%	75% CI = 96.0-98.8%	
2016	September-October	American Eel	Adult	Orono	Quantitative	0.1 hr	98.0%	-	Possible mortality issue associated with ledges downstream of spillway; passage delay a concern
2014	May	Atlantic Salmon	Smolt	Orono	Quantitative	>24 hrs	92.3%	75% CI = 85.5-99.4%	
2015	May	Atlantic Salmon	Smolt	Orono	Quantitative	>24 hrs	82.8%	75% CI = 79.3-86.2%	
2016	May	Atlantic Salmon	Smolt	Orono	Quantitative	>24 hrs	85.8%	75% CI = 81.9-89.4%	Implementation of 20 to 50% spill
2017	May	Atlantic Salmon	Smolt	Orono	Quantitative	>24 hrs	99.1%	75% CI = 98.3-100%	Implementation of 20 to 50% spill
2018	May	Atlantic Salmon	Smolt	Orono	Quantitative	>24 hrs	99.2%	75% CI = 99.2-97.9%	Implementation of 20 to 50% spill

Study Year	Study Dates	Species	Life Stage	Project	Analysis Type	Median Residence Time	Passage Survival/Success		Key Agency Comments Related to Study Findings
							Estimate	Confidence Interval	
2014	May	Atlantic Salmon	Smolt	Stillwater	Quantitative	>24 hrs	98.2%	75% CI = 92.5-100%	
2015	May	Atlantic Salmon	Smolt	Stillwater	Quantitative	>24 hrs	69.2%	75% CI = 62.3-76.2%	
2016	May	Atlantic Salmon	Smolt	Stillwater	Quantitative	>24 hrs	94.3%	75% CI = 91.9-96.5%	Implementation of 20 to 50% spill
2017	May	Atlantic Salmon	Smolt	Stillwater	Quantitative	>24 hrs	95.3%	75% CI = 93.2-97.5%	Implementation of 20 to 50% spill
2018	May	Atlantic Salmon	Smolt	Stillwater	Quantitative	>24 hrs	91.7%	75% CI = 88.7-94.5%	Implementation of 20 to 50% spill

On March 6, 2020, FERC issued a letter regarding fish passage conditions on the lower Penobscot River, including the Stillwater Branch, identifying “frequent issues that arise in the stakeholder comments which may require further explanation, additional review or data analysis, or future study. These are: (1) migratory delay; (2) operational conditions; and (3) development of passage performance standards (effectiveness criteria).” Two meetings have been held with the agencies to date, one on June 3, 2020 and one on September 9, 2020, to discuss the March 6, 2020 letter. For migratory delay, the above referenced studies were disseminated for residence times, compared to other eel and alosine studies conducted in New England, and found to be comparable or better. Study factors, such as the use of pre-spawn shad contributing to increased residence time, were also discussed. For operational conditions, the various improvements implemented to date, such as spill, were discussed with acknowledgement that any future improvements would be contingent upon passage performance standards. Regarding passage performance standards, a review of a model of shad restoration was conducted and for which restoration goals will need to be considered. At the September 9, 2020 meeting, it was agreed that another meeting should be convened after the fall passage studies (juvenile river herring passage route studies and turbine blade strike analyses at Orono/Stillwater/Milford) are completed.

3.4.1 ZONE 1 – REGULATED RIVER REACH UPSTREAM

Criterion	Standard	Supporting Information
C	<p>1</p> <p>The facility does not create a barrier to downstream 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; the facility does not contribute adversely to riverine fish populations or to their access to habitat necessary for the completion of their life cycles.</p>	<p>Not Applicable/De Minimis Effect:</p> <ul style="list-style-type: none"> • 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 are currently anadromous fish species present in this reach of the Stillwater Branch of the Penobscot River that migrate downstream. The Stillwater Branch of the Penobscot River is within historical habitat for Atlantic salmon and is designated as critical habitat. While this reach includes Gilman Falls Dam, this structure does not create a barrier to upstream or downstream fish passage as swim through passage is provided via gates or over the dam’s spillway.

3.4.2 ZONE 2 – STILLWATER IMPOUNDMENT

Criterion	Standard	Supporting Information
C	<p>2</p> <p>The facility is in compliance with science-based resource agency recommendation for downstream fish passage or fish protection, which may include provisions for appropriate monitoring and effectiveness determinations.</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented. • Provide evidence that required passage facilities are being operated and maintained as mandated (e.g. meets season, coordination with agencies)

There are currently anadromous fish species present in this reach of the Stillwater Branch of the Penobscot River that move through during their downstream migration. The Stillwater Branch of the Penobscot River is within historical habitat for Atlantic salmon and is designated as critical habitat.

While this reach receives water from Gilman Falls Dam, this structure does not create a barrier to upstream or downstream fish passage as swim through passage is provided through gates or over the dam’s spillway.

Egress from the Stillwater impoundment into the Project bypass reach (Zone 3) and Powerhouse B tailrace (Zone 4) is provided by the Project’s downstream fish passage facilities. As discussed above, Powerhouse B has a downstream fish passage facility consisting of a 4-ft-wide opening in the forebay wall at invert elevation 88.5 ft NGVD (3.15 ft below the permanent crest elevation of the dam) controlled by stoplogs. A 4 ft square downstream eel passage facility is installed at the base of the trashrack with an invert at 78.56 ft NGVD extending to a weir-controlled box structure, which outlets to a plunge pool adjacent to the trashrack structure and passes alongside the powerhouse to the tailrace of the powerhouse. The downstream fish passage facility is designed to pass a combined flow of 70 cfs. The double-regulated unit nearest the downstream fish passage facility at Powerhouse B is operated as first on and last off to provide additional attraction to the downstream fish passage facility at Powerhouse B.

A downstream fish passage facility at Powerhouse A discharges to the Orono impoundment. Powerhouse A has a downstream fish bypass facility constructed in 1989

consisting of 1-in clear spacing trashracks (completed in 2005), a collection box, and a discharge chute. The existing downstream fish bypass facility was modified to pass 70 cfs into the project tailrace/Orono impoundment in 2012.

Fish passage facilities, studies, and adaptive management provisions are included in the Stillwater Project’s Settlement Agreement, BiOp, and FERC License (see Section 6.0). Extensive fish passage information, plans and studies are likewise provided in Section 6.0) and provided in Table 10.

3.4.3 ZONE 3 – STILLWATER DAM BYPASS REACH

Criterion	Standard	Supporting Information
C	<p>2</p> <p>The facility is in compliance with science-based resource agency recommendation for downstream fish passage or fish protection, which may include provisions for appropriate monitoring and effectiveness determinations.</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented. • Provide evidence that required passage facilities are being operated and maintained as mandated (e.g. meets season, coordination with agencies)
C	<p>PLUS</p> <p>In addition to satisfying one or more of the standards above, the facility has deployed an advanced technology, the primary purpose of which is to increase downstream fish passage; or is part of a basin-scale redevelopment strategy; or is operating an adaptive management program to regularly evaluate the performance of new technology. The adaptive management program should include monitoring of the overall fish passage effectiveness and correction of deficiencies in effectiveness.</p>	<p>If adaptive management is being applied, describe the management objectives, the monitoring program pursuant to evaluating performance against those objectives, and the management actions that will be taken in response to monitoring results.</p>

As with the Stillwater impoundment, there are currently anadromous fish species present in this reach of the Stillwater Branch of the Penobscot River that move through during their downstream migration using various routes, including through the downstream fish passage facility at Stillwater Dam, which discharges to the interface between the spillway and Powerhouse B. The Stillwater Branch of the Penobscot River is within historical habitat for Atlantic salmon and is designated as critical habitat.

Since 2016, Black Bear has implemented an enhancement measure (contained in the SPP’s tiered decision-making process – see Section 6.0) for downstream-migrating Atlantic salmon smolts to increase spill at the Milford, Stillwater, Orono, and West Enfield Projects to between 20% and 50% of river flow. Specifically, this protection measure states: “Black Bear will increase spill to between 20% and 50% of river flow at the station from 8 p.m. to 4 a.m. during the peak two weeks of the outmigration period. Spill in this SPP is defined as the percent of total instantaneous flow at the project location as measured daily. Spill will be concentrated, as possible, with a spill depth of at least one foot. The timing of the two-week partial shutdown will be timed to coincide with the peak smolt outmigration and will start when the temperature of river water reaches 10°C and will occur at night (8 p.m. to 4 a.m.). This timing is based on analysis provided in the draft BA. This proposed timing of the start of the partial shutdown may be altered by Black Bear, in consultation with NMFS and USFWS, to coincide with the stocking of smolts in the river.” The provision of additional spill has resulted in increased salmon smolt passage success (See Table 10).

3.4.4 ZONE 4 – STILLWATER POWERHOUSE B TAILRACE

Criterion	Standard	Supporting Information
C	<p>2</p> <p>The facility is in compliance with science-based resource agency recommendation for downstream fish passage or fish protection, which may include provisions for appropriate monitoring and effectiveness determinations.</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented. • Provide evidence that required passage facilities are being operated and maintained as mandated (e.g. meets season, coordination with agencies)

There are currently diadromous fish species present in this reach of the Stillwater Branch of the Penobscot River, particularly as the downstream passage facility discharges at the interface of the Powerhouse B tailrace and the spillway. Fish that move through the downstream fish passage facility during their downstream migration would be in this area at the downstream fish passage discharge. The Stillwater Branch of the Penobscot River is within historical habitat for Atlantic salmon and is designated as critical habitat.

3.4.5 ZONE 5 – STILLWATER POWERHOUSE A TAILRACE

Criterion	Standard	Supporting Information
C	<p>2 The facility is in compliance with science-based resource agency recommendation for downstream fish passage or fish protection, which may include provisions for appropriate monitoring and effectiveness determinations.</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented. • Provide evidence that required passage facilities are being operated and maintained as mandated (e.g. meets season, coordination with agencies)

There are currently diadromous fish species present in this reach of the Stillwater Branch of the Penobscot River, particularly as the downstream passage facility discharges at the Powerhouse A tailrace. Fish that move through the downstream fish passage facility during their downstream migration to the ocean would be in this area at the downstream fish passage discharge. The Stillwater Branch of the Penobscot River is within historical habitat for Atlantic salmon and is designated as critical habitat.

3.4.6 ZONE 6 – ORONO IMPOUNDMENT

Criterion	Standard	Supporting Information
C	<p>2</p> <p>The facility is in compliance with science-based resource agency recommendation for downstream fish passage or fish protection, which may include provisions for appropriate monitoring and effectiveness determinations.</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented. • Provide evidence that required passage facilities are being operated and maintained as mandated (e.g. meets season, coordination with agencies)

There are currently diadromous fish species present in the Stillwater Branch of the Penobscot River, including the Orono impoundment, that move downstream into the impoundment after passing the Stillwater Project. The Stillwater Branch of the Penobscot River is within historical habitat for Atlantic salmon and is designated as critical habitat.

Powerhouse A has a downstream fish passage facility consisting of 1 inch (in) clear-spacing trashracks, an adjacent 2.83-ft-wide bypass flume, and a discharge chute. Currently, 70 cfs is passed at the existing downstream fish bypass facility at Powerhouse A. The downstream fish passage facility at Powerhouse A discharges to the Orono impoundment, whereas the downstream fish passage facility at Powerhouse B discharges to Zone 4 as described above.

Fish passage facilities, studies, and adaptive management provisions are included in the Project’s Settlement Agreement, BiOp, and FERC License (see Section 6.0). Extensive fish passage information, plans and studies are likewise provided in Section 6.0) and discussed in Table 10 above.

3.4.7 ZONE 7 – ORONO BYPASS REACH

Criterion	Standard	Supporting Information
C	<p>2</p> <p>The facility is in compliance with science-based resource agency recommendation for downstream fish passage or fish protection, which may include provisions for appropriate monitoring and effectiveness determinations.</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented. • Provide evidence that required passage facilities are being operated and maintained as mandated (e.g. meets season, coordination with agencies)
C	<p>PLUS</p> <p>In addition to satisfying one or more of the standards above, the facility has deployed an advanced technology, the primary purpose of which is to increase downstream fish passage; or is part of a basin-scale redevelopment strategy; or is operating an adaptive management program to regularly evaluate the performance of new technology. The adaptive management program should include monitoring of the overall fish passage effectiveness and correction of deficiencies in effectiveness.</p>	<p>If adaptive management is being applied, describe the management objectives, the monitoring program pursuant to evaluating performance against those objectives, and the management actions that will be taken in response to monitoring results.</p>

There are currently anadromous fish species present in this reach of the Stillwater Branch of the Penobscot River that are present as a result of their downstream migration or that migrate upstream from the main stem of the Penobscot River to Orono Dam. The Stillwater Branch of the Penobscot River is within historical habitat for Atlantic salmon and is designated as critical habitat.

The downstream fish passage facility, located in the spillway section of Orono Dam and discharging to the bypass reach, consists of an 8-foot-wide entrance into a 20-foot-long by 12-foot-wide floor screen chamber with a 3-foot wide exit at the downstream end. A downward opening gate controls flow at the entrance, and stoplogs

are used to control the chamber water level and flow of at the exit. The downstream fish passage facility allows for a combined attraction flow of approximately 150 cfs. The fish exit the screen chamber into a steel sluice and are conveyed to a plunge pool, which discharges into the bypass reach below the dam. The fish passage facility also provides a lower level entrance, which consists of a 4-foot-square opening at the base of the trashrack with an invert at elevation 58.1 feet NGVD extending to a weir-controlled box structure, which outlets to the downstream end of the screen chamber. Velocity at the lower entrance is controlled by an orifice plate. The downstream fish passage facility is designed to pass a combined flow of approximately 150 cfs through the surface entrance and lower orifice.

As discussed above, Black Bear has provided targeted spill of 20-50% of river flow for two weeks during the peak smolt outmigration window when river temperature reaches 10°C. In addition, Black Bear prioritizes operation of Orono Powerhouse A over Powerhouse B to increase Atlantic salmon smolt survival based upon the results of smolt passage studies. As shown in Table 10, the provision of additional spill has improved Atlantic salmon smolt passage success.

Fish passage facilities, studies, and adaptive management provisions are included in the Orono Project’s Settlement Agreement, BiOp, and FERC License (see Section 6.0). Extensive fish passage information, plans and studies are likewise provided in Section 6.0) and discussed in Table 10 above.

3.4.8 ZONE 8 – ORONO TAILRACE

Criterion	Standard	Supporting Information
C	<p>2</p> <p>The facility is in compliance with science-based resource agency recommendation for downstream fish passage or fish protection, which may include provisions for appropriate monitoring and effectiveness determinations.</p>	<p>Agency Recommendation:</p> <ul style="list-style-type: none"> • 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. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented. • Provide evidence that required passage facilities are being operated and maintained as mandated (e.g. meets season, coordination with agencies)

There are currently anadromous fish species present in the mainstem of the Penobscot River that may migrate downstream from the Stillwater Branch or mainstem of the Penobscot River, or they may be present after migrating upstream from the Atlantic Ocean. The Stillwater Branch and the mainstem of the Penobscot River are within historical habitat for Atlantic salmon and are designated as critical habitat. Downstream-migrating fish that pass into the tailrace at the Orono Project either pass via the downstream fish passage facility or on spill.

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.”

Criterion	Standard	Supporting Information
E	<p>1</p> <p>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 low-impact recreation, and the facility is not subject to any Shoreline Management Plan (SMP) or similar protection plan.</p>	<p>Not Applicable/De Minimis Effect</p> <ul style="list-style-type: none"> • 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 FERC project boundary of the Stillwater Project encloses the dam and powerhouses and follows the reservoir up to the full pond 94.65 ft NGVD elevation (see Exhibit G in Section 6.0); therefore, none of the islands are project lands, and there are no shoreline lands within the project boundary save for a small parcel upstream of Powerhouse A (that includes the egress and the canoe portage trail) and a small parcel upstream of Powerhouse B (that provides vehicular access to the Project from Stillwater Avenue). Immediately adjacent to Stillwater Powerhouse A, the canoe portage ingress and a short section of trail are located on project lands.

The current FERC project boundary of the Orono Project encloses the dam; the reservoir up to the full pond 73.0 feet NGVD elevation; the two powerhouses; and the penstocks (see Exhibit G in Section 6.0). There are no shoreline lands within the project boundary save for a small parcel upstream of the project intake (that includes the egress and a very short section of the canoe portage trail). Immediately adjacent to Powerhouse A, the canoe portage ingress and a short section of trail are located on project lands.

Black Bear’s ownership is limited to those lands within the project boundary. Therefore, Black Bear only has the ability to manage limited shoreline and submerged lands below the corresponding full pool elevation for each 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 Projects requires the appropriate permits and must adhere to the design and development standards of the appropriate town zoning regulations. Neither Project is required to have a Shoreline Management Plan, pursuant to the 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 (IAC) report and USFWS Official Species List were developed for the Projects and is provided in Section 7.0. The following federally-listed Endangered or Threatened species may be present in the project vicinities: 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 Atlantic salmon (Endangered; which are documented as historically occupying the Stillwater Branch of the Penobscot River and for which critical habitat has been designated in the project vicinities).

The Maine Natural Areas Program (MNAP) has historically identified several rare plant species in the bypass reaches of the Projects, and a Sensitive Plant Protection Plan has been implemented for both Projects, as outlined in the current LIHI certification.

In addition, the Maine Department of Inland Fisheries and Wildlife (MDIFW) provided information regarding state listed endangered or threatened species documented in the general vicinity of the Stillwater and Orono Projects, however, none of the state listed fauna species were specifically documented in the project boundary.

- Yellow Lampmussel (State Threatened)
- Wood Turtle (Special Concern)
- 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)

In addition to the above, two state listed Threatened species were identified by MDIFW as having been documented in the general vicinity of the Stillwater Project:

- Tidewater Mucket (State Threatened)
- Brook Floater (State Threatened)

It is not expected that the Projects would affect bat or turtle species, as lands within the Project areas are limited. Endangered and threatened mussels were not among the species identified during mussel relocation efforts at the Orono and Stillwater impoundments

undertaken as part of the construction of the two new powerhouses (Orono Powerhouse B; Stillwater Powerhouse B).

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

3.6.1 AQUATIC AND TERRESTRIAL STATE LISTED BOTANICAL SPECIES

Criterion	Standard	Supporting Information
F	<p>2 There are or may be listed species in the facility 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 facility's affected area or is not impacted by facility operations.</p>	<p>Finding of No Negative Effects:</p> <ul style="list-style-type: none"> • Identify all federal and state listed species that are or may be in the immediate 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 ZoE or is not impacted by facility operations.

Special concern botanical features were documented in the tailwater reaches of both the Stillwater and Orono Projects. The 2012 License Amendments for the Projects required a Sensitive Plan Survey Report to assess the environmental effects of the proposed construction of new powerhouses at both Projects, which required excavation of tailrace areas identified as host to sensitive plant species. The final report was provided to LIHI via email dated June 1, 2018 in compliance with Condition 5 of the LIHI Certification for the Orono Project.

3.6.2 FEDERALLY LISTED TERRESTRIAL SPECIES

Criterion	Standard	Supporting Information
F	<p>2</p> <p>There are or may be listed species in the facility 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 facility's affected area or is not impacted by facility operations.</p>	<p>Finding of No Negative Effects:</p> <ul style="list-style-type: none"> • Identify all federal and state listed species that are or may be in the immediate 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 ZoE or is not impacted by facility operations.

Routine project operations are not anticipated to affect terrestrial species, such as bats. There may be periodic vegetation clearing for dam safety, access, and other purposes, but these activities would be conducted in accordance with the Section 4(d) rule for Northern Long-Eared Bats using the USFWS streamlined consultation process. In addition, these activities would be extremely limited given how little land is located within the project boundaries. As such, no negative effects are anticipated by these periodic activities.

3.6.3 FEDERALLY LISTED AQUATIC SPECIES

Criterion	Standard	Supporting Information
F	<p>3</p> <p>The facility is in compliance with relevant conditions in a species recovery plan, with relevant conditions in an incidental take permit or statement, biological opinion, habitat conservation plan, or similar government document and the incidental take document and/or biological opinion issued relevant to the facility was designed to be a long-term solution for protection of the listed species.</p>	<p>Recovery Planning and Action:</p> <ul style="list-style-type: none"> • If listed species are present, document that the facility is in compliance with relevant conditions in the species recovery plans, incidental take permits or statements, biological opinions, habitat conservation plans, or similar government documents. • Document that any incidental take permits and/or biological opinions currently in effect were designed as long-term solutions for protection of listed species in the area.

Criterion	Standard	Supporting Information
F	PLUS	Bonus Activities: <ul style="list-style-type: none"> • Describe any enforceable agreement that the facility has with resource agencies to operate the facility in support of rare and endemic species. • Describe any enforceable agreement that the facility has with resource agencies to take proactive measures in the vicinity of the facility to substantially minimize impacts on species that are at risk of becoming listed species. • Describe any enforceable agreement that the facility has with resource agencies to be a significant participant in a species recovery effort.

On June 19, 2009, the USFWS and NMFS issued their final rule designating both naturally spawned and conservation hatchery populations of anadromous Atlantic salmon as endangered in the state of Maine. A final rule issued by NMFS on August 10, 2009 designates critical habitat for DPS (Distinct Population Segments) of Atlantic salmon, including the lower Penobscot River and the Stillwater Branch of the Penobscot River, on which the Stillwater and Orono Projects are located.

The Lower Penobscot River Multi-party Settlement Agreement (Settlement Agreement or MPA) was filed with the FERC on June 25, 2004 as part of the Penobscot River Restoration Project (Restoration Project). This wide-ranging Settlement Agreement was intended to restore native sea-run fish and their habitat, while also providing the opportunity to maintain comparable hydropower production from the river. The purpose of the Restoration Project is to provide improved access to historic habitat for all species of migratory fish that are present now or may have historically occurred in the Penobscot River, including Atlantic salmon, American shad, alewife, blueback herring, striped bass, Atlantic sturgeon, shortnose sturgeon, rainbow smelt, sea lamprey, Atlantic tomcod, and American eel.

FERC issued orders on September 14, 2012 for the Orono and Stillwater Projects that incorporated the Atlantic salmon Species Protection Plan (SPP) and Biological Opinion (BiOp) associated with these Projects (including an Atlantic Salmon Passage Study Plan) into the referenced FERC Project licenses. The SPP was developed as part of the consultation process for the energy enhancements and fish passage measures that were incorporated into the respective licenses, pursuant to the Settlement Agreement discussed above.

In 2014, the upstream and downstream fish passage facilities at the Orono Project and the downstream fish passage facilities at the Stillwater Project were completed in accordance with revised Section 18 prescriptions consistent with the Settlement Agreement and the SPP/BiOp. Since 2016, Black Bear has implemented an

enhancement measure (contained in the SPP’s tiered decision-making process) for downstream-migrating Atlantic salmon smolts to increase spill at the Milford, Stillwater, Orono, and West Enfield Projects to between 20% and 50% of river flow. Black Bear has also prioritized operation of Orono Powerhouse A over Powerhouse B to increase Atlantic salmon smolt survival based upon the results of smolt passage studies. In consultation with the resource agencies and Penobscot Indian Nation, no Atlantic salmon passage studies were conducted at the Projects in 2019. Studies conducted from 2014 – 2018 are included in the annual SPP reports (see Section 6.0 and Table 10).

3.6.4 STATE LISTED TERRESTRIAL SPECIES

Criterion	Standard	Supporting Information
F	<p>2 There are or may be listed species in the facility 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 facility’s affected area or is not impacted by facility operations.</p>	<p>Finding of No Negative Effects:</p> <ul style="list-style-type: none"> • Identify all federal and state listed species that are or may be in the immediate 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 ZoE or is not impacted by facility operations.

As discussed above, routine project operations are not anticipated to affect terrestrial species, such as bats. There may be periodic vegetation clearing for dam safety, access, and other purposes, but these activities would be extremely limited given how little land is located within the project boundaries. As such, no negative effects are anticipated by these periodic activities.

3.6.5 STATE LISTED AQUATIC SPECIES

Criterion	Standard	Supporting Information
F	2 There are or may be listed species in the facility 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 facility's affected area or is not impacted by facility operations.	<p>Finding of No Negative Effects:</p> <ul style="list-style-type: none"> • Identify all federal and state listed species that are or may be in the immediate 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 ZoE or is not impacted by facility operations.

Yellow lampmussel, tidewater mucket and brook floater were not found in the impoundments during mussel relocation efforts undertaken as part of the construction of new powerhouses at both Projects, and the Sensitive Plant Protection Plans and follow up surveys were provided to LIHI pursuant to the requirements of the existing LIHI certification. Due to a lack of presence and available habitat, no negative effects are anticipated by run of river operations.

Wood turtle are identified as a species of Special Concern. Given run-of-river operations and limited shoreline management activities at the Projects, impacts to this species is anticipated to be de minimus.

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.”

Criterion	Standard	Supporting Information
G	1 There are no cultural or historic resources present on facility lands that can be potentially threatened by construction or operations of the facility, or facility operations have not adversely affected those that are or were historically present.	<p>Not Applicable/De Minimis Effect:</p> <ul style="list-style-type: none"> • Document that there are no cultural or historic resources located on facility lands that can be affected by construction or operations of the facility.; or • Document that the facility construction and operation have not in the past, nor currently adversely affect any cultural or historic resources that are present on facility lands.

The Maine Historic Preservation Commission (MHPC), by letter dated March 14, 2004, reported that there are no properties in the Orono Project area of prehistoric, historic, architectural or archaeological significance that would be adversely affected by the Project. There is no requirement in the Orono Project license for a Programmatic Agreement or Cultural Resource Management Plan, as no culturally significant properties have been identified. Article 405 of the Project license required the Licensees to consult with the State Historic Preservation Officer (SHPO) and Tribal Historic Preservation Officer (THPO) if any archaeological or cultural sites are discovered during ground-disturbing or land clearing activities at the Project.

In addition, the MPHC, by letter dated March 15, 2004, determined that there are no properties in the Stillwater Project area of prehistoric, historic, or architectural archaeological significance that would be impacted by the Project. Article 412 of the Project license required a Programmatic Agreement (PA) for the Stillwater Project, which was executed on August 8, 1997 and included a Cultural Resources Management Plan (CRMP) for the Project, which was approved by FERC on November 29, 1999. Section II.D of the PA requires Black Bear to file an annual report by the Project license anniversary (April 20th) on activities conducted under the applicable CRMP with the FERC, MHPC, Penobscot Indian Nation (PIN), and the U.S. Department of the Interior Bureau of Indian Affairs (BIA). Extensive field surveys have identified no historic properties at the Stillwater Project, and no properties have been uncovered. Annual reports are provided in Section 7.0.

Black Bear will take appropriate measures as defined in Article 405 of the Orono FERC license and in the Stillwater Project CRMP should new properties be discovered as discussed in Section 1.4.

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.”

Article 404 of the Orono Project license requires the licensees to implement a recreation plan and file documentation with FERC that the plan has been implemented. The only recreational facility at the Orono Project is the canoe portage trail. The canoe portage trail was completed in 2006, and documentation of its completion was filed with FERC. Other non-project recreation facilities are discussed by Zone of Effect below. There are no specific recreation monitoring requirements at the Orono Project.

Article 410 of the Stillwater Project FERTC license requires the licensees to construct and maintain recreation facilities at the Project, but there is only one recreation facility: the canoe portage trail. Other non-project recreation facilities are discussed by Zone of Effect below. Article 411 of the Stillwater Project license requires recreation monitoring at the Project every 6 years.

The Orono and Stillwater Projects are also subject to the requirements of Part 8 of FERC’s regulations, including safety signage. Inspections of Part 8 signs are scheduled annually at the start of the recreation season, and signs are replaced, as necessary.

3.8.1 ZONE 1 – REGULATED RIVER REACH UPSTREAM

Criterion	Standard	Supporting Information
H	1 The facility does not occupy lands or waters to which the public can be granted safe access and does not otherwise impact recreational opportunities in the vicinity of the facility.	Not Applicable / De Minimis Effect: Document that the facility does not occupy lands or waters to which public access can be granted and that the facility does not otherwise impact recreational opportunities in the facility area

As discussed above, a canoe portage trail around the Gilman Falls Dam provides access to this Zone of Effect, which is used to provide a whitewater boating opportunity, but which has been changed geomorphologically due to high flow conditions. This ingress also provides access to the Stillwater impoundment. In addition, the Stillwater River Recreation Facility provides shoreline access at the Gilman Falls Dam on river left and also provides access to this Zone of Effect. These recreation sites are outside of the Stillwater Project boundary, and it is not managed as part of the Stillwater Project, nor are they required to be monitored.

3.8.2 ZONE 2 - STILLWATER 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: <ul style="list-style-type: none"> • 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 Stillwater Project canoe portage trail begins at the impoundment take-out at the Stillwater Avenue Bridge, approximately 750 ft upstream of the Stillwater Dam and Powerhouse A. The trail follows Free Street approximately 1,200 ft past the Dam to a shoreline access to the Stillwater Branch at the terminus of Free Street. A small gravel parking area for approximately six vehicles is located adjacent to Stillwater Dam to serve the canoe portage trail and informal tailrace angling access. This site is monitored pursuant to the requirements of Article 411 (see Section 6.0).

Approximately 1 mile of the shoreline adjacent to the Stillwater Project is included in the University of Maine’s Dwight B. DeMerritt Forest, which also provides non-motorized boat access to visitors via a hand-carry launch (improved under Article 410 of the Project license). In addition, trails in the Forest lead to a popular site known as “the Ledges”, which are large, prominent rock outcroppings that extend into the Stillwater impoundment. The Ledges are a popular site for sunbathing, picnicking, swimming, and fishing.

The College Ave Extension North Boat Launch is an informal non-Project facility at the top of the impoundment that provides parking for 2-3 vehicles, a small path, and shoreline access.

Boater barriers upstream of Stillwater Dam are installed annually for public safety purposes.

3.8.3 ZONE 3 – STILLWATER DAM BYPASS REACH

Criterion	Standard	Supporting Information
H	1 The facility does not occupy lands or waters to which the public can be granted safe access and does not otherwise impact recreational opportunities in the vicinity of the facility.	Not Applicable / De Minimis Effect: Document that the facility does not occupy lands or waters to which public access can be granted and that the facility does not otherwise impact recreational opportunities in the facility area

There are no formal recreation facilities within this Zone of Effect, and public access is prohibited for safety reasons.

3.8.4 ZONE 4 – STILLWATER POWERHOUSE B TAILRACE

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: <ul style="list-style-type: none"> • 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.

There are no recreation facilities in this reach; however, public access is available via the shoreline (through private property), and a whitewater feature is available in this reach that receives very light use. The whitewater site, known to local boaters as the “Typewriter”, is accessed by a turnout off Stillwater Bridge on the western side of the dam. Whitewater activities primarily take place during high-flow conditions, typically in late spring.

3.8.5 ZONE 5 – STILLWATER POWERHOUSE A TAILRACE

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: <ul style="list-style-type: none"> • 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.

There are no recreation facilities in this reach.

3.8.6 ZONE 6 - ORONO IMPOUNDMENT

Criterion	Standard	Supporting Information
H	1 The facility does not occupy lands or waters to which the public can be granted safe access and does not otherwise impact recreational opportunities in the vicinity of the facility.	Not Applicable / De Minimis Effect: Document that the facility does not occupy lands or waters to which public access can be granted and that the facility does not otherwise impact recreational opportunities in the facility area

Black Bear maintains a portage trail around the Orono Dam via Water Street to a downstream put-in location on the mainstem of the Penobscot River immediately below the Orono Powerhouse A. Public parking is available at the downstream end of the portage trail off Water Street.

In addition, three non-project recreation facilities provide access to the Orono Project impoundment. Webster Park is located upstream of the Orono Dam and is accessible via North Main Avenue in Orono. The Park is owned and maintained by the Town of Orono and functions as a day use site for visitors. Webster Park has a gravel parking area, benches, and picnic tables, and provides shoreline access to the Stillwater Branch of the Penobscot River. The University of Maine’s Stillwater Branch Riverside Recreation Area is located on the eastern shore of the Orono impoundment and is located on College Avenue. The recreation site is approximately 1.3 acres and includes four picnic tables, two stationary barbeque grills, and two ADA compliant portable restrooms. The Stillwater Branch Riverside Recreation Area offers visitors views of the Stillwater Branch and an informal hand-carry boat launch to the Orono impoundment. The Fay Hyland Botanical Garden and Walking Trail encompasses approximately 10 acres along the Orono impoundment shoreline and provides a scenic route for visitors.

Boater barriers are deployed annually for public safety purposes.

3.8.7 ZONE 7 - ORONO BYPASS REACH

Criterion	Standard	Supporting Information
H	1 The facility does not occupy lands or waters to which the public can be granted safe access and does not otherwise impact recreational opportunities in the vicinity of the facility.	Not Applicable / De Minimis Effect: Document that the facility does not occupy lands or waters to which public access can be granted and that the facility does not otherwise impact recreational opportunities in the facility area

There are no formal recreation facilities within this Zone of Effect, and public access is prohibited for safety reasons.

3.8.8 ZONE 8 - ORONO PROJECT TAILRACE/DOWNSTREAM REGULATED RIVER REACH

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: <ul style="list-style-type: none"> • 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.

This Zone of Effect can be reached via the ingress of the Orono Project canoe portage trail. Whitewater canoeing and kayaking opportunities are located below the Orono Dam at the confluence of the Stillwater Branch and the mainstem of the Penobscot River at a site known to local boaters as the “Trestle”.

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 Black Bear Hydro Partners, LLC, 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: Black Bear Hydro Partners, LLC

Authorized Representative:

Name: Thomas Uncher

Title: VP, Operations

Authorized Signature: 

Date: 11/12/20

5.0 CONTACTS FORM

5.1 APPLICANT RELATED CONTACTS

Facility Owner: Black Bear Hydro Partners, LLC	
Name and Title	Tom Uncher, Vice President
Company	Brookfield Renewable
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	James Cole, Senior Operations Manager
Company	Brookfield Renewable
Phone	207-723-4341 Ext, 127
Email Address	James.Cole@brookfieldrenewable.com
Mailing Address	1024 Central Street, Millinocket, Maine 04462
Consulting Firm / Agent for LIHI Program (if different from above):	
Name and Title	
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 Manager, Accounts Payable, Finance & Accounting
Company	Brookfield Renewable
Phone	819-561-8099
Email Address	Judith.charette@brookfieldrenewable.com
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 <u>x</u> , 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 <u>x</u> , 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 <u>x</u> , Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	National Marine Fisheries Service
Name and Title	Jeff Murphy; Penobscot SHRU
Phone	(207) 866-7379
Email address	Jeff.Murphy@noaa.gov
Mailing Address	Maine Field Station, 17 Godfrey Drive, Orono, Maine 04473
Agency Contact (Check areas of responsibility: Flows __, Water Quality __, Fish/Wildlife Resources __, Watersheds __, 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 <u>x</u> , Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	Maine Department of Inland Fisheries and Wildlife
Name and Title	Kevin Dunham, Regional Fisheries Biologist
Phone	207-732-4131
Email address	Kevin.Dunham@maine.gov
Mailing Address	16 Cobb Road, Enfield, Maine 04493
Agency Contact (Check areas of responsibility: Flows __, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	Maine Dept. of Agriculture, Conservation & Forestry
Name and Title	Kathleen Leyden, Director
Phone	207-287-5254
Email address	Kathleen.Leyden@maine.gov
Mailing Address	93 State House Station, Augusta, Maine 04333-0038

Agency Contact (Check areas of responsibility: Flows __, Water Quality __, Fish/Wildlife Resources <u>x</u> , Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	Maine Department of Marine Resources
Name and Title	Gail Wippelhauser, Marine Resources Scientist
Phone	207-624-6349
Email address	gail.wippelhauser@maine.gov
Mailing Address	21 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 <u>x</u> , Recreation __):	
Agency Name	Maine Historic Preservation Commission
Name and Title	Kirk Mohney; Director
Phone	(207) 287-3811
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 <u>x</u> , 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

5.3 CURRENT STAKEHOLDER CONTACTS THAT ARE ACTIVELY ENGAGED WITH THE FACILITY

Stakeholder Contact (Check areas of interest: Flows __, Water Quality __, Fish/Wildlife_X__ Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Stakeholder Organization	Penobscot Indian Nation
Name and Title	Dan McCaw, Fisheries Program Manager
Phone	207-817-7377
Email address	Dan.McCaw@penobscotnation.org
Mailing Address	12 Wabanaki Way, Indian Island, ME 04468
Stakeholder Contact (Check areas of interest: Flows __, Water Quality __, Fish/Wildlife_X__ Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Stakeholder Organization	Penobscot Indian Nation
Name and Title	John Banks, Director, Department of Natural Resources
Phone	John.Banks@penobscotnation.org
Email address	207-817-7330
Mailing Address	12 Wabanaki Way, Indian Island, ME 04468
Stakeholder Contact (Check areas of interest: Flows __, Water Quality __, Fish/Wildlife_X__ Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Stakeholder Organization	Penobscot Indian Nation
Name and Title	Dan Kusnierz; Water Resources Program Manager
Phone	207-817-7361
Email address	Dan.Kusnierz@penobscotnation.org
Mailing Address	12 Wabanaki Way, Indian Island, ME 04468

6.0 FERC AND REGULATORY INFORMATION

Major license and compliance documents are provided in hyperlinks below. Compliance and resource relevant filings for the previous certification period to date (2015 – 2020) are also hyperlinked below.

6.1 FERC LICENSE AND AMENDMENT ORDERS

Orono Project

- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15160075> – February 11, 2019 Order Approving Revised Exhibit A, Revising Project Description, and Revising Annual Charges re Black Bear Hydro Partners, LLC et al under P-2710 (correcting Authorized Installed Capacity)
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15079506> - 20181022 Orono Project 2710; Follow up to 20180709 Environmental Inspection; Revised Exhibit A to Correct Authorized Installed Capacity
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13064628> – September 14, 2012 Order amending license and revising annual charges re Black Bear Hydro Partners, LLC's Orono Project under P-2710 (to construct second powerhouse and extend license term).
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=10899577> – December 8, 2005 Order on Offer of Settlement and issuing new license re PPL Maine, LLC's Orono Hydroelectric Project under P-2710.

Stillwater Project

- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15553606> – June 8, 2020 Order Amending Minimum Flows Pursuant To Article 402 re Black Bear Hydro Partners, LLC under P-2712 (to relocate 20 cfs west channel flow).
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15402219> - 20191108 Stillwater Project 2712; Article 402-Minimum Flows; Application for Non-Capacity Amendment of License
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15159995> – February 11, 2019 Order Approving Revised Exhibit A and Revising Annual Charges re Black Bear Hydro Partners, LLC et al. under P-2712 (correcting Authorized Installed Capacity).
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15079533> - 20181022 Stillwater Project 2712; Follow up to 20180709 Environmental Inspection; Revised Exhibit A to Correct Authorized Installed Capacity Discrepancy
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13064645> – September 14, 2012 Order amending license and revising annual charges re Black Bear Hydro Partners, LLC's Stillwater Project under P-2712 (to construct second powerhouse and extend license term).
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=10498865> – April 18, 2005 Order modifying and approving amendment of license re PPL Maine LLC's Stillwater Project under P-2712 (for reservoir increase of 1 ft).
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13705724> – April 20, 1998 Order issuing new license to Bangor Hydro-Elec Co for Stillwater Hydroelec Proj-

2712.

6.2 WATER QUALITY CERTIFICATION, AMENDMENTS, AND REPORTS

- https://www.maine.gov/dep/water/monitoring/classification/reclass/BEP_2018_ReclassProposals_ForBEP_Dec_final.pdf - 2016 Water Quality Monitoring Report for the State of Maine
- <https://www.maine.gov/dep/water/monitoring/305b/> - Maine Department of Environmental Protection 2016 Integrated Water Quality Monitoring Report
- Water Quality Certifications are inherent to the respective licenses and amendments; Section 401 Water Quality Certifications for the Project are also provided in Section 7.0.

6.3 SETTLEMENT AND OTHER AGREEMENTS

- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=10188480> - PPL Maine, LLC's et al submittal of the Lower Penobscot River Basin Comprehensive Settlement Accord with Explanatory Statement under P-2403 et al.

6.4 PERMITS

- None.

6.5 COMPLIANCE PLANS AND MONITORING REPORTS

Orono Project

- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15074427> - Environmental Inspection Report for Black Bear Development Holdings, LLC's Orono Project, conducted on July 9, 2018, under P-2710
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13630727> - Environmental Inspection Report by New York Regional Office, for Black Bear Hydro Development, LLC's Orono Project, inspection conducted July 16, 2014 under P-2710.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13337881> - Order approving Operations and Flow Monitoring Plan pursuant to Article 401 regarding the Black Bear Hydro Partners, LLC under P-2710.
- <https://elibrary.ferc.gov/elibrary/filedownload?fileid=13282501> - Black Bear Hydro Partners, LLC Operation and Flow Monitoring Plan (6-13-13) under P-2710

Stillwater Project

- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13649959> - Environmental Inspection Report re Black Bear Development Holdings, LLC's Stillwater Project, conducted on July 16, 2014 under P-2712.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15074400> - Environmental Inspection Report for Black Bear Development Holdings, LLC's Stillwater Project, conducted on July 9, 2018, under P-2712.

- <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=15620612> - Order Approving Revised Operations and Flow Monitoring Plan Pursuant to Article 401 re Black Bear Hydro Partners, LLC under P-2712.
- <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=15599881> - 20200810 Stillwater Project; Updated Operations and Flow Compliance Monitoring Plan
- <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=13337886> - Order approving Operations and Flow Monitoring Plan pursuant to Article 401 regarding the Stillwater Project under P-2712.
- <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=13282505> - Black Bear Hydro Partners, LLC SW Operation and Flow Monitoring Plan (6-13-13) under P-2712.
- Other Plans and Reports are provided by resource below.

6.5.1 ECOLOGICAL FLOWS AND WATER QUALITY

- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13939404> – Letter acknowledging Black Bear Hydro Partners LLC's 2014 Dissolved Oxygen Monitoring Reports filed 4/10/15 for the Orono Hydroelectric Project et al under P-2710 et al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13834857> - 20150410 Stillwater Project P-2712, Article 415; Orono Project P-2710, Article 408; 2014 Dissolved Oxygen Monitoring Reports
- Operation and Flow Monitoring Plan files provided under Section 6.5.

Orono Project

- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13370454> - Order modifying and approving Dissolved Oxygen Monitoring Plan pursuant to license Article 408 re Black Bear Hydro Partners, LLC under P-2710.
- <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=13350030> - Black Bear Hydro Partners, LLC's compliance Filing for License Articles 408, for Orono Hydroelectric Project under P-2710; Dissolved Oxygen Monitoring Plan

Stillwater Project

- <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=13380050> - Order modifying and approving Dissolved Oxygen Monitoring Plan pursuant to Article 415 re Black Bear Hydro Partners, LLC under P-2712.
- <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=13348151> - Black Bear Hydro Partners, LLC Compliance Filings for License Article 415 for the Stillwater Hydroelectric Project under P-2712; Dissolved Oxygen Monitoring Plan

6.5.2 SHORELINE AND WATERSHED PROTECTION

Orono Project

- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13203563> - Black Bear Hydro Partners, LLC's CD containing their revised Exhibit G drawings for the Orono Hydroelectric Project in compliance with License Article 207 under P-2710.

Stillwater Project

- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13155599> - Black Bear Hydro Partners, LLC's CD containing their revised Exhibit G drawings for the Stillwater Hydroelectric Project in compliance with License Article 205 under P-2712.

6.5.3 FISH PASSAGE

- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13786133> – February 25 2015 Order approving and modifying Quantitative Diadromous Fish Passage Study Plan re Black Bear Hydro Partners, LLC for the Stillwater and Orono Projects, et. al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14241717> – May 6, 2016 Order Approving Upstream Eelway Operational Dates re Black Bear Hydro Partners, LLC for the Stillwater and Orono Projects, et. al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14301696> – July 11, 2016 Letter to Black Bear Hydro Partners, LLC re the 2015 Diadromous Fish Passage Report and 2016 Study Plans for the Stillwater and Orono Hydroelectric Projects et al
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14319222> – July 29, 2016 Order Modifying and Approving Quantitative American Eel Downstream Passage Study Plan re Black Bear Hydro Partners, LLC et al for the Stillwater and Orono Projects, et. al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14701601> – October 4, 2017 Letter order approving the Continuation of Quantitative Study Plans, 2017 Diadromous Fish Passage re the Stillwater and Orono Projects et al
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14817162> – February 7, 2018 Letter to Black Bear Hydro Partners, LLC re the Request for Extension of Time to File 2018 Diadromous Fish Passage Quantitative Study Plan for the Stillwater and Orono Projects et al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14919353> – May 15, 2018 Letter to Black Bear Hydro Partners, LLC re the quantitative evaluations of the fish passage facilities Diadromous Fish Passage Study Report etc. for the Maine Stillwater and Orono Hydroelectric Projects et al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15144389> – January 22, 2019 Letter to the Black Bear Hydro Partners LLC re the Request for Extension of Time to File the 2018 Diadromous Fish Passage Quantitative Study Report for the Stillwater and Orono Hydroelectric Projects et al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15470485> – February 26, 2020 Letter order to Black Bear Hydro Partners, LLC's granting 02/25/2020 request for extension of time to file the 2020 Diadromous Fish Passage Quantitative Study Plans pursuant to Article 409 for the Stillwater and Orono Projects et al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13774453> – February 17, 2015 Stillwater Project 2712; Orono Project 2710; Upstream American Eel Fishway Plans and Revised American Eel Assessment and Monitoring Plans

- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13813797> – March 24, 2015 Atlantic Salmon Species Protection Plan 2014 Annual Report for the Stillwater and Orono Projects et.al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13840922> – April 14, 2015 2014 Diadromous Fish Passage Report for Stillwater and Orono Projects et.al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14059276> – November 30, 2015 Black Bear Hydro Partners, LLC's Letter of Intent to FERC for Projects Milford 2534, Stillwater 2712, Orono 2710 - 2016 Downstream American Eel Passage Study.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14602017> - Letter acknowledging receipt of Black Bear Hydro Partners, LLC's 4/13/17 filing of the 2016 Diadromous Fish Passage Report for the Stillwater and Orono Project et al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14186189> – March 31, 2016 Black Bear Hydro Partners, LLC Milford Project 2534; West Enfield Project 2600; Stillwater Project 2712; Orono Project 2710; 2015 American Eel Upstream Passage Operation and Monitoring Report
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14204848> – April 14, 2016 Black Bear Hydro Partners, LLC Stillwater Project P-2712; Orono Project P-2710; Milford Project P-2534; Final 2015 Diadromous Fish Passage Report for Alosines and American Eels
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14542862> – March 31, 2017 Milford Project 2534; West Enfield Project 2600; Stillwater Project 2712; Orono Project 2710; 2016 American Eel Upstream Passage Operation and Monitoring Report.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14559531> – April 13, 2017 Stillwater project 2712; Orono project 2710; Milford project 2534; Final 2016 Diadromous Fish Passage Report for Alosines and American Eels
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14589516> – May 17, 2017 Stillwater, Orono and Milford Diadromous Fish Passage Quantitative Study Plan 2017.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14607927> – June 5, 2017 Stillwater Project 2712, Orono Project 2710, and Milford Project 2534; Extension of Time Request for Upstream Eelway Operations
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14799485> – November 17, 2018 Stillwater Project 2712, Orono Project 2710, Milford Project 2534; Extension of Time Request for Diadromous Fish Passage Quantitative Study Plan for 2018
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14843537> – March 16, 2018 Stillwater Project 2712, Orono Project 2710, Milford Project 2534; Diadromous Fish Passage Quantitative Study Plan 2018
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14850133> – March 26, 2018 Milford, West Enfield, Stillwater, Orono; 2017 American Eel Upstream Passage Operation and Monitoring Report
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14885195> – April 12, 2018 Stillwater, Orono, Milford Projects; 2017 Diadromous Fish Passage Report Alosines and American Eels under P-2712, et al.

- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15193704> – March 22, 2019 Milford Project 2534; West Enfield Project 2600; Stillwater Project 2712; Orono Project 2710; 2018 American Eel Upstream Passage Operation and Monitoring Report
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15160942> – February 12, 2019 Stillwater 2712, Orono 2710, Milford 2534, West Enfield 2600; 2018 Diadromous Fish Passage Report
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15194708> – March 25, 2019 Stillwater 2712;Orono 2710;Milford 2534;West Enfield 2600; 2019 Diadromous Fish Passage Study Plan
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15440722> – January 13, 2020 Brookfield Renewable submits the Diadromous Fish Passage Report for the Stillwater and Orono Projects et al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15480864> – March 10, 2020 Black Bear Hydro Partners, LLC submits the 2019 American Eel Upstream Passage Operation and Monitoring Report for the Stillwater and Orono Projects et al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15510846> – April 15, 2020 Stillwater 2712, Orono 2710, Milford 2534, et al Projects; 2020 Diadromous Fish Passage Study Plan
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13078405> – October 1, 2012 Fish Salvage Plan for Orono (P-2710) and Stillwater (P-2712) Hydroelectric Projects

Orono Project

- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13825307> – April 1, 2015 Order Modifying and Approving Upstream American Eel Fishway Plan And Revised American Eel Assessment And Monitoring Plan Pursuant To Article 412 re Black Bear Hydro Partners, LLC under P-2710
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15086236> – October 30, 2018 Letter to Black Bear Hydro Partners, LLC re the Fish Mortality Incident for the Orono Hydroelectric Project under P-2710.
- <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=14952094> – June 19, 2018 Orono Project P-2710; Fish Mortality Incident
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13990036> – September 15, 2017 Brookfield Energy Renewable Group's Upstream American Eel Fishway; Final Contract Plans and Specifications and Supporting Design Report for the Orono Project P-2710.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14371717> – October 6, 2016 Black Bear Hydro Partners, LLC Reply to FERC Comments 21061006 Orono Project on the 2015 Diadromous Fish Passage Report for Alosines and American Eels; Proposed Timeline for Fish Transport Protocol Orono Project FERC No. 2710.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14952094> – June 19, 2018 Orono Project P-2710; Fish Mortality Incident

Stillwater Project

- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13825310> – April 1, 2015 Order Modifying and Approving Upstream American Eel Fishway Plan And Revised American Eel Assessment and Monitoring Plan Pursuant to Articles 407 and 408 re Black Bear Hydro Partners, LLC under P-2712.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14603296> – May 31, 2017 20170531 Stillwater Project; Follow Up to American Eel Upstream Passage Operation and Monitoring Report; Request for Temporary Minimum Flow Variance

6.5.4 THREATENED AND ENDANGERED SPECIES

- IPAC Report (attach at the end of the section and cross reference)
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13057314> - National Marine Fisheries Service submits Biological Opinion re the Endangered Species Act Section 7 formal consultation for the Stillwater Hydroelectric Project et al under P-2712 et al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13057314> - National Marine Fisheries Service submits its Biological Opinion Section 7(a)(2) of the Endangered Species Act Consultation for the Stillwater, Orono, Milford, West Enfield, and Medway Hydroelectric Projects under P-2712, et al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14423136> - Letter acknowledging receipt of Black Bear Hydro Partners LLC's Atlantic Salmon Species Protection Plan 2015 Annual Report and 2016 Proposed Activities for the Milford Project et al under P-2534 et al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14458746> - Letter to Black Bear Hydro Partners, LLC re the fish transport protocol schedule for the Orono Hydroelectric Project under P-2710.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14483483> - Order Approving Revised Handling Plan for Shortnose and Atlantic Sturgeon re Black Bear Hydro Partners, LLC under P-2534 et al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14483437> - Order Approving Revised Handling Plan for Shortnose and Atlantic Sturgeon re Black Bear Hydro Partners, LLC under P-2534 et al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14083156> - Brookfield Renewable Energy Group submits the Incidental Take Annual Report - Milford Project 2534; West Enfield Project 2600; Medway Project 2666; Orono Project 2710; and Stillwater Project 2712.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14262864> - 20160531 Atlantic Salmon Species Protection Plan - 2015 Annual Report Orono, Stillwater, Milford, West Enfield and Medway under P-2710, et al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14456203> - Brookfield Renewable submits the Incidental Take Annual Report for projects: Milford 2534, West Enfield 2600, Medway 2666, Orono 2710 and Stillwater 2712.

- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14462501> - Brookfield Renewable submits Updated Handling Plan for Shortnose and Atlantic Sturgeon under P-2710, et al
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14532197> - 20170327 Atlantic Salmon Species Protection Plan - 2016 Annual Report for Hydroelectric Projects Milford P-2534, West Enfield P-2600, Medway P-2666, Orono P-2710 and Stillwater P-2712
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14787572> - 20171229 Incidental Take Annual Report; Milford, West Enfield, Medway, Orono and Stillwater
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14847746> - 20180323 Atlantic Salmon Species Protection Plan - 2017 Annual Report for FERC projects 2710, 2712, 2534, 2600 and 2666
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15130476> - 20181228 - 2018 Penobscot River Incidental Take Annual Report Milford, West Enfield, Medway, Orono and Stillwater
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15195815> - 20190326 Atlantic Salmon Species Protection Plan - 2018 Annual Report for FERC Project Nos. 2710, 2712, 2534, 2600 and 2666 (Orono, Stillwater, Milford, West Enfield and Medway)
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15433261> - Brookfield Renewable submits the 2019 Penobscot River Incidental Take Report for the Milford Project et al under P-2534 et al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15488596> - 20200320 Atlantic Salmon Species Protection Plan - 2019 Annual Report for FERC Projects Milford 2534, West Enfield 2600, Medway 2666, Orono 2710 and Stillwater 2712

6.5.5 CULTURAL AND HISTORIC RESOURCES

Orono Project

- None

Stillwater Project

- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15222942> - 20190419 Milford 2534; Stillwater 2712; Cultural Resource Management Plans Report
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15511218> - Cultural Resource Management Plans Report under P-2534, et al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=8415872> - Bangor Hydro Electric Co submits Cultural Resource Management Plans for Veazie Hydroelectric Project, et al under P-2403, et al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=149563> - Penobscot Hydro, LLC submits revised Cultural Resource Management Plans for Veazie Hydroelectric Project, et al under P-2403, et al.

- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=9022618> - Order approving cultural resources management plans re Penobscot Hydro, LLC re Veazie, Stillwater & Milford Projects under P-2403 et al.

6.5.6 RECREATIONAL RESOURCES

- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14757063> - Letter to Black Bear Hydro Partners, LLC re the recreation use and facility reports for the Stillwater and Orono Hydroelectric Projects, et al under P-2534, et al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13826166> - 2014 Form 80 Report of Black Bear Hydro Partners, LLC for Orono under P-2710.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13828463> - 2015 FERC Form 80 Recreation Report Monitoring - Filing of Methodology under P-4026 et.al.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13822649> - Black Bear Hydro Partners, LLC's 2014 Form 80 Report for the Stillwater Project under P-2712.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14413950> - Black Bear Hydro Partners, LLC submits the 12/01/2016 Recreation Use and Facility Report; Milford P-2534 and Stillwater P-2712 Projects.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14756703> - 20171114 Recreation Use and Facility Report; Milford Project 2534 Article 414, Stillwater Project 2712 Article 411, Supplemental Filing of Consultation Record

6.6 LICENSE AND CERTIFICATION COMPLIANCE

- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13957337> - Letter to Black Bear Hydro Partners, LLC regarding letter dated 6/3/2015 re events described pursuant to Article 401 for the Orono Hydroelectric Project under P-2710.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14613241> - Order Approving Stillwater Project Temporary Minimum Flow Variance re Black Bear Hydro Partners, LLC under P-2712.
- <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13895298> - 20150603 Orono Project, FERC No 2710 Article 401 Compliance; Impoundment Level, Fish Passage Flow, and Run of River Excursions

7.0 SUPPORTING DOCUMENTATION

- 2004 Water Quality Certification for the Orono Project
- 2011 Water Quality Certification for the Orono Project
- 1997 Water Quality Certification for the Stillwater Project
- 2004 Water Quality Certification for the Stillwater Project
- 2011 Water Quality Certification for the Stillwater Project
- 2019 Water Quality Certification for the Stillwater Project
- IPAC Report
- Stillwater CRMP Annual Reports
- MDIFW Correspondence RE: State Listed Species Orono
- MDIFW Correspondence RE: State Listed Species Stillwater
- MNAP Report Orono
- MNAP Report Stillwater
- MDEP Section 401 WQC Status Letter

UNITED STATES OF AMERICA 113 FERC ¶62,181
FEDERAL ENERGY REGULATORY COMMISSION

PPL Maine, LLC

Project No. 2710-035

ORDER ON OFFER OF SETTLEMENT
AND ISSUING NEW LICENSE

(December 8, 2005)

INTRODUCTION

1. On June 25, 2004, PPL Maine, LLC (PPL Maine) filed an application for a new license, pursuant to sections 4(e) and 15 of the Federal Power Act (FPA),¹ for the redevelopment and operation of the 2.332-megawatt (MW) Orono Hydroelectric Project No. 2710 (Orono Project).
2. The Orono Project is located on the Penobscot River and Stillwater Branch of the Penobscot River in Penobscot County, Maine. The Penobscot River and Stillwater Branch of the Penobscot River are navigable waters of the United States.² The project is currently not operating. PPL Maine estimates that the project will produce an average annual energy generation of about 16,682 megawatt-hours (MWh).
3. The project does not occupy any federal land. As discussed below, I am issuing a new license for the project.

BACKGROUND

4. The current project license, issued on November 10, 1977,³ to Bangor Hydro-Electric, became effective on July 1, 1950, and originally was to expire on December 31, 1993. By order issued September 25, 1985, the license expiration date was accelerated, and became effective on September 25, 1985.⁴ Since then, the project has been under annual license.

¹ 16 U.S.C §§ 797(e) and 808, respectively.

² See *Bangor Hydro-Electric Co.*, 33 FPC 278 (1965) and *Bangor Hydro-Electric Co.*, 1 FERC ¶ 61,104 (1977).

³ 1 FERC ¶ 61,104.

⁴ 32 FERC ¶ 62,640.

5. On July 31, 1990, Bangor Hydro-Electric Co. filed an application to construct and operate the proposed Basin Mills Project No. 10981. The Basin Mills dam would have been located on the Penobscot River just downstream of the Orono powerhouse. The reservoir created by the Basin Mills dam would have made continued operation of the Orono Project impracticable, thus Bangor Hydro-Electric proposed to decommission the Orono Project.⁵ In the April 20, 1998 order denying the application for the Basin Mills Project, the Commission directed Bangor Hydro-Electric to report on its plans for the Orono Project in light of the Basin Mills' denial.⁶ After a series of extensions of time to file the report on its plans, PPL Maine filed its plans as an application for a new license for the Orono Project.

6. In 1996, the three project wood-stave penstocks failed, which caused the project to be shut down. On April 1, 1999,⁷ the Orono Project license was transferred from Bangor Hydro-Electric Company to Penobscot Hydro, LLC. On October 31, 2000,⁸ Penobscot Hydro, LLC changed its name to PPL Maine, LLC.

7. On June 25, 2004, PPL Maine filed the Lower Penobscot River Basin Comprehensive Settlement Accord (Lower Penobscot Settlement) on behalf of the: Penobscot Indian Nation (Penobscot); U.S. Department of the Interior (Interior); Maine State Planning Office (Maine Agencies) representing the and Maine Atlantic Salmon Commission, Maine Department of Inland Fisheries and Wildlife, and Maine Department of Marine Resources; American Rivers, Inc., Atlantic Salmon Federation, Maine Audubon Society, Natural Resources Council of Maine, and Trout Unlimited (jointly filed as the Conservation Interests); and the Penobscot River Restoration Trust (Trust). On June 29, 2004, the Commission issued a public notice of the filed Lower Penobscot Settlement and solicited comments.⁹

8. The Commission issued a public notice accepting the application and soliciting motions to intervene on February 25, 2005. The deadline to respond to this notice was April 26, 2005. The following entities filed timely motions to intervene, none of which

⁵ No one filed a competing application.

⁶ 83 FERC ¶ 61,039.

⁷ 87 FERC ¶ 62,001.

⁸ 93 FERC ¶ 62,076.

⁹ The following entities filed comments: National Oceanographic and Atmospheric Administration (NOAA Fisheries), Conservation Interests, Penobscot, Maine Agencies, and Interior.

are in opposition: NOAA Fisheries; Conservation Interests; Penobscot; Maine Agencies. Interior filed a motion to intervene out of time which was granted by notice issued December 1, 2005.

9. On February 23, 2005, the Commission issued a public notice that the application was ready for environmental analysis, soliciting comments, recommendations, terms and conditions, and prescriptions. The deadline to respond to this notice was April 24, 2005. The following entities filed comments: Interior; Conservation Interests; NOAA Fisheries; Penobscot; and Maine Agencies.

10. On August 19, 2005, the Commission staff made available for public comment an environmental assessment (EA). In letters filed on September 15, 16, and 19, 2005, Ronald Kreisman on behalf of PPL Maine, Interior, the Maine Agencies, and NOAA Fisheries commented on the EA. All comments have been fully considered in determining whether, and under what conditions, to issue this license.

PROJECT DESCRIPTION

11. The rehabilitated Orono Project would consist of the following facilities: (1) an existing 1,178-foot-long by 15-foot-high dam that includes a 320-foot-long spillway topped with 2.4-foot-high flashboards; (2) an existing 2.3-mile-long reservoir, which has a surface area of 175 acres at the normal full pond elevation of 72.4 feet above mean sea level (msl); (3) three new 10-foot-diameter penstocks; (4) a 40-foot-wide, 94-foot-long and 27-foot-high surge tank located adjacent to the powerhouse; (5) a restored powerhouse containing four existing generating units with a total installed generating capacity of 2.332 MW; (6) three existing 325-foot-long transmission lines; and (7) appurtenant facilities. The dam and existing project facilities are owned by the applicant. The current project boundary encloses the dam, the reservoir up to the 73.0-foot msl elevation, the powerhouse, and the penstocks except for a short section that traverse beneath the Maine Central railroad bridge.

12. PPL Maine's project proposal includes:

- replacing the three failed wood-stave penstocks within the existing penstock right-of-way;
- rehabilitating the concrete surge tank that is adjacent to the powerhouse;
- replacing the wood-plank wheelpit floors with concrete;
- rehabilitating the four triple-runner horizontal turbines, and replacing two waterwheels;

- removing debris from the tailraces of each turbine discharge flume;
- rehabilitating the four generators and associated equipment (wicket gate pins, bushings, weak links, gate shaft bearings, push-pull arms, etc);
- replacing the generator controls and switchgear; and
- rehabilitating the powerhouse structure by replacing windows, plank decking above the wheelpits, wheelpit gates, access doors, and roofing as needed.

13. Prior to the June 1996 penstock failure and project shutdown, PPL Maine operated the project in a run-of-river mode, with a normal reservoir surface elevation of 72.4 feet msl. At 72.4 feet msl, the reservoir has a gross storage capacity of 1,300 acre-feet. When the project is operating, the project bypasses a 1,000-foot-long and up to 500-foot-wide reach of the Stillwater River. Flows through the bypassed reach during past operation consisted of leakage and unplanned spillage. PPL Maine proposes to operate in a run-of-river mode and maintain a 200-cfs minimum flow in the bypassed reach.

LOWER PENOBSCOT SETTLEMENT

14. The Lower Penobscot Settlement affects nine projects in the Penobscot River Basin and one project just outside the basin,¹⁰ and calls for phased implementation. Under phase 1, the parties requested that the Commission: approve amendment applications for the Milford (FERC No. 2534), Veazie, Stillwater (FERC No. 2712), Medway (FERC No. 2666), and West Enfield (FERC No. 2600) projects;¹¹ issue a new 40-year license for the Orono Project (FERC No. 2710), suspend processing of the relicensing applications for the Howland and Great Works projects;¹² and extend certain requirements of the licenses for the Veazie and Milford projects. The remaining three phases include: the withdrawal of pending requests for rehearing from the parties in the Basin Mills, Milford, Stillwater, and Veazie licensing proceedings and withdrawal of

¹⁰ The Ellsworth Project (FERC No. 2727) is located on the Union River in the Union River Basin, east of the Penobscot River.

¹¹ By Orders Modifying and Approving Amendment of License 111 FERC ¶ 62,061, 111 FERC ¶ 62,062, 111 FERC ¶ 62,063, 111 FERC ¶ 62,064, 111 FERC ¶ 62,065, the Commission approved the amendment requests for increased headpond levels, decreased minimum flows, and modified fishway prescriptions.

¹² See letter issued October 20, 2004, suspending the licensing process until June 2009.

Interior's section 4(e) and 10(e) requests for the Milford Project (Phase 2); the transfer and surrender of three licenses if the Option is exercised (Phase 3),¹³ and the potential for increased generating capacity at several projects (Phase 4).¹⁴

15. The Lower Penobscot Settlement contains provisions for the redevelopment of the Orono Project and includes two attachments: Attachment A containing specific fish passage provisions, and Attachment B pertaining to a Contingent Mitigation Fund (Fund). The Lower Penobscot Settlement also includes two additional agreements, the Lower Penobscot River Option Agreement (Option),¹⁵ and the Comprehensive Settlement Agreement between the Penobscot, PPL Maine, and the Bureau of Indian Affairs.

WATER QUALITY CERTIFICATION

16. Under Section 401(a)(1) of the Clean Water Act (CWA),¹⁶ the Commission may not issue a license for a hydroelectric project unless the state water quality certifying agency either has issued water quality 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 on any federal license or permit that is issued.¹⁷

17. On June 14, 2004, PPL Maine applied to the Maine Department of Environmental Protection (Maine DEP) for water quality certification for the project. On December 15, 2004, Maine DEP issued a certification for the Orono Project that includes conditions for water levels and flows (conditions 1.A-E), upstream and downstream fish passage (conditions 2.A-D, F and G), a contingent mitigation fund (condition 2.E), recreation facilities (condition 3), limits of approval (condition 4), and compliance with all

¹³ The Veazie and Great Works projects would be decommissioned and their dams removed; the Howland Project would be decommissioned and studied for potential dam removal.

¹⁴ The final phase of the Settlement calls for additional generation at Milford, Orono, Stillwater, Medway, and Ellsworth.

¹⁵ A key element of the Settlement involves PPL Maine providing the Trust with a 5-year option (Option) to acquire the Veazie (FERC No. 2403), Howland (FERC No. 2721), and Great Works (FERC No. 2312) projects from PPL Maine.

¹⁶ 33 U.S.C. § 1341(a)(1).

¹⁷ 33 U.S.C. § 1341(d).

applicable laws (condition 5). These conditions are set forth in Appendix A of this order and incorporated into the license (see ordering paragraph D).

COASTAL ZONE MANAGEMENT

18. The Coastal Zone Management Act (CZMA) of 1972, as amended, requires review of the project's consistency with the state's Coastal Management Program. In Maine, the State Planning Office is responsible for reviewing hydroelectric projects for consistency with the state's Coastal Zone Management Program (CZMP). In a letter dated March 17, 2004, the Maine State Planning Office states that the Orono project is not located in Maine's designated coastal zone, and that any issues regarding coastal resources or uses will be addressed through other pertinent state license and permitting processes.

FISHWAY PRESCRIPTIONS

19. Section 18 of the FPA, 16 U.S.C. § 811, provides that the Commission shall require the construction, maintenance, and operation by a licensee of such fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce (Commerce), as appropriate.

20. Interior and NOAA Fisheries, on behalf of Commerce, filed preliminary fishway prescriptions on July 2, 2004, and April 20, 2005, respectively. Interior and Commerce also requested reservation of their respective authorities to prescribe the construction, operation, and maintenance of fishways, to be consistent with the Lower Penobscot Settlement.¹⁸

21. The preliminary prescriptions are similar and include provisions for downstream passage of all fish species, upstream passage for American eel, and upstream passage for species other than American eel. Upstream passage to species other than American eel is contingent on actions taken under the Lower Penobscot Settlement and on effectiveness monitoring.

22. The prescription for downstream facilities specifies the installation of trash racks with 1-inch clear spacing at the powerhouse turbine intake, and a gated surface as well as a bottom bypass discharging up to 70 cfs during the downstream migration period.¹⁹ The

¹⁸ Interior's and Commerce's reservations include the authority to prescribe a fish trap, as specified in the Lower Penobscot Settlement, upon acquisition by the Trust of the Veazie, Great Works, and Howland projects.

¹⁹ If shown to be necessary by studies of the effectiveness of these measures, but (continued)

prescription specifies operating periods and protocols, and would require maintenance and operation plans, detailed design drawings and schedules. For upstream passage of American eel, the licensee is to assess the appropriate location for the siting of a new upstream eel fishway, and upon approval of its proposed location by the FWS, Marine Resources, and the Penobscot, complete installation and initial testing, and have the fishway operational prior to the beginning of the third upstream eel migration season (approximately May 1) following the effective date²⁰ of the Lower Penobscot Settlement. The prescription defines the upstream migration period for subsequent years as April 1 to November 30. As with the downstream passage facilities, the prescription specifies operating periods and protocols, and requires maintenance and operational plans, detailed design drawings and schedules.

23. The prescriptions for upstream fish passage for species other than American eel depend on the disposition of the Veazie, Great Works, and Howland projects in accordance with the Lower Penobscot Settlement. If the above projects are acquired by the Trust and removed, PPL Maine would file an amendment for installation and operation of a fish trapping facility at the Orono Project spillway. Trapped fish would be transported a short distance to the tailwater of the Orono Project at the confluence of the main stem Penobscot River and Stillwater Branch. If the above projects are not acquired, the licensee would implement the fishway prescriptions for upstream facilities previously filed by Interior and Commerce on May 20, 1997, and February 16, 1995, respectively, no later than June 25, 2010.

24. Lastly, the preliminary prescriptions require plans to monitor the effectiveness of the downstream and upstream facilities.

25. Interior and Commerce's prescriptions, which are consistent with the water quality certification, are attached to this order as Appendices B and C, and incorporated into the license (see ordering paragraph E). Consistent with Commission policy, Article 402 of this license reserves the Commission's authority to require fishways that may be prescribed by Interior and Commerce for the Orono project.

in no case before the expiration of the safe harbor period delimited in Attachment A, section II(c) of the Settlement, PPL Maine would institute nightly shutdowns for downstream eel passage for a 2-week period during the downstream eel migration season.

²⁰ The effective date is the date the last party signs the Settlement, in this case, June 22, 2004, signed by the Trust.

ESSENTIAL FISH HABITAT

26. Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act²¹ requires federal agencies to consult with the Secretary of Commerce regarding any action or proposed action authorized, funded, or undertaken by the agency that may adversely affect Essential Fish Habitat (EFH) identified under the Act. Under section 305(b)(4)(A)²² of the Magnuson-Stevens Act, NOAA Fisheries is required to provide EFH Conservation Recommendations for actions that would adversely affect EFH. Under section 305(b)(4)(B) of the Act,²³ an agency must, within 30 days after receiving recommended conservation measures from NOAA Fisheries or a Regional Fishery Management Council, describe the measures proposed by the agency for avoiding, mitigating, or offsetting the effects of the agency's activity on the EFH.²⁴

27. EFH has been designated for Atlantic salmon in the Penobscot River and its tributaries. In the EA, Commission staff concluded that licensing the project, as proposed by PPL Maine, in accordance with the Lower Penobscot Settlement, would not adversely affect EFH. As such, no consultation is required with NOAA Fisheries. However, in a letter filed September 19, 2005, NOAA Fisheries indicated that it could not agree with staff's conclusions because staff did not recommend inclusion of the Lower Penobscot Settlement's provision for a Contingent Mitigation Fund in any license issued. Therefore, NOAA Fisheries recommended pursuant to section 305(b)(4)(A) that the Commission include the Contingent Mitigation Fund as a license condition for the Orono Project.

28. Because the Contingent Mitigation Fund is included as condition 2.E of the water quality certification, it is a requirement of this license.

²¹ 16 U.S.C. § 1855(b)(2).

²² 16 U.S.C. § 1855 (b)(4)(A).

²³ 16 U.S.C. § 1855(b)(4)(B).

²⁴ The measures recommended by the Secretary of Commerce are advisory, not prescriptive. However, if the federal agency does not agree with the recommendations of the Secretary of Commerce, the agency must explain its reasons for not following the recommendations.

THREATENED AND ENDANGERED SPECIES

29. Section 7(a)(2) of the Endangered Species Act of 1973²⁵ requires federal agencies to ensure their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species, or result in the destruction or adverse modification of their designated critical habitat.

30. No federally listed threatened or endangered fish species occur in the Orono Project area including the Penobscot River main stem above the Veazie dam. However, two endangered fish species are found in areas further downstream. The federally endangered Cove Brook Atlantic salmon are included in the Gulf of Maine Distinct Population Segment (DPS) and occur downstream of the former site of the Bangor dam located about 9 miles downstream. The federally endangered Shortnose sturgeon is believed to occupy habitat in the lower Penobscot River drainage most likely downstream of Veazie Dam located about 6 miles downstream. Because the project would be operated run-of-river, the project would not affect habitat conditions in the lower Penobscot drainage below Veazie Dam. The EA, therefore, concluded that redeveloping and operating the project, as proposed by PPL Maine, and in accordance with the Lower Penobscot Settlement, would not affect the Gulf of Maine DPS of Atlantic salmon or Shortnose sturgeon. In its letter filed September 19, 2005, NOAA Fisheries agreed with this no effect finding. Therefore, section 7 consultation for listed Atlantic salmon and shortnose sturgeon is not necessary.

31. Bald eagle reportedly forage in the Orono project area year-round and are the only other federally listed species known to occur in the project area. The EA found that project rehabilitation, because it would be of short duration with limited ground disturbance, much of which would be within the project powerhouse, would not have a significant adverse effect on bald eagles that forage in the project area. Regarding project operation, the EA found that the proposed 200-cfs flow release through the bypassed reach should protect habitat for fish that eagles may use for food. To protect bald eagle habitat at the project, the EA recommended maintaining existing riparian forest at the project.

32. Based on the anticipated minimal effects of rehabilitating and operating the project, the EA found that redevelopment of the Orono Project would not be likely to adversely affect the bald eagle. In a letter dated September 8, 2005, the FWS concurred with this determination. Article 403 requires that the licensee maintain riparian forest at the project.

²⁵ 16 U.S.C. § 1536(a).

CULTURAL RESOURCES

33. The Maine Historical Preservation Commission (State Historic Preservation Officer - SHPO), in its letter dated March 14, 2004, reported that there are no properties in the Orono Project area of prehistoric, historic, architectural or archaeological significance that would be adversely affected by project licensing. PPL Maine also consulted with the Penobscot Tribal Historic Preservation Officer (THPO) regarding the project licensing to confirm that there are no cultural, historic or archaeological issues at this time. If, however, PPL Maine undertakes land-disturbing maintenance or repair at the project in the future, and if archaeological or historic sites are discovered, consultation with the SHPO and THPO and mitigation measures would help protect the discovered sites. Article 405 requires PPL Maine to consult with the SHPO and THPO if any archaeological or cultural sites are discovered during ground-disturbing or land-clearing activities.

RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES

34. Section 10(j)(1) of the FPA,²⁶ requires the Commission, when issuing a license, to include conditions based on recommendations by federal and state fish and wildlife agencies submitted pursuant to the Fish and Wildlife Coordination Act,²⁷ to "adequately and equitably protect, mitigate damages to, and enhance fish and wildlife (including related spawning grounds and habitat)" affected by the project.

35. In a letter filed April 20, 2005, NOAA Fisheries submitted four recommendations, all of which fall within the scope of section 10(j).²⁸ This license includes conditions consistent with all four recommendations and require the licensee to: (a) maintain a continuous, year-round minimum flow of 200 cfs in the bypassed reach (water quality certification condition 1.B; Appendix A); (b) develop a minimum flow operation and monitoring plan (water quality certification condition 1.E; Appendix A); (c) operate the

²⁶ 16 U.S.C. § 803(j)(1).

²⁷ 16 U.S.C. § 661 *et seq.*

²⁸ In its April 25, 2005, filing, the Maine State Planning Office, submitting comments on behalf of Maine Departments of Conservation, Inland Fisheries and Wildlife, Marine Resources, and the Atlantic Salmon Commission recommended as licensing conditions the terms and conditions submitted by NOAA Fisheries pursuant to section 10(j) of the FPA.

project in a run-of-river mode (water quality certification condition 1.A; Appendix A); and (d) coordinate head pond drawdowns with the resource agencies (Article 401).

COMMENTS ON THE EA

A. Contingent Mitigation Fund

36. The signatories to the Lower Penobscot Settlement disagree with Commission staff's recommendation in the EA to exclude from the Orono Project license an article requiring PPL Maine to contribute to the Contingent Mitigation Fund (Fund). NOAA Fisheries indicates that the Fund is needed to offset impacts associated with the Orono Project in the event that upstream fish passage is not installed. The signatories request that the Commission include the Fund in a license article for the Orono Project.

37. Under the Lower Penobscot Settlement, PPL Maine would establish the Fund to provide mitigation for habitat effects of certain PPL Maine activities if the Veazie and Great Works projects are not acquired by the Trust and their respective dams not subsequently removed.²⁹ In the EA, staff concluded that its recommended measures including operating the project in a run-of-river mode with an impoundment fluctuation of one foot or less, maintaining a minimum flow of 200 cfs in the bypassed reach and providing downstream fish passage and upstream eel passage facilities would protect and enhance aquatic resources in the Stillwater Branch and main stem of the Penobscot River. The EA did not identify additional effects of the project that were not being addressed by the above recommended measures. However, condition 2.E of the water quality certification requires the establishment of and payments to the Fund in accordance with the Lower Penobscot Settlement and, therefore, the Fund will be incorporated into this license by ordering paragraph D.

B. Upstream Fish Passage

38. The signatories also disagreed with staff's treatment of the Lower Penobscot Settlement's provisions for upstream fish passage. The signatories state that inclusion of an upstream fish passage article in the Orono license in a manner consistent with the Lower Penobscot Settlement is an essential component of the Settlement.

39. Because the nature of upstream fish passage requirements under section 18 of the FPA at the Orono Project for species other than American eel was contingent on whether certain projects in the Penobscot River Basin would be acquired by the Trust and ultimately removed, the EA concluded that the appropriate time to consider upstream fish

²⁹ If Veazie and Great Works are acquired by the Trust but the dams are not removed, the Trust would replace PPL Maine as the payor to the Fund.

passage would be once the future action had been identified; essentially, a reservation of the Commission's authority to require fishways that Interior or Commerce may prescribe in the future. However, since fish passage requirements submitted by Interior and Commerce under Section 18 are mandatory, they have been included in the license under ordering paragraph E. Furthermore, because upstream fish passage provisions in accordance with the Lower Penobscot Settlement are also included in the water quality certification (conditions 2.A, 2.D, 2.F, and 2.G), the upstream fish passage provisions of the Lower Penobscot Settlement will be incorporated into this license by ordering paragraph D.

OTHER ISSUES

A. Soil erosion and sedimentation control

40. The EA found that PPL Maine's proposal to replace previously demolished penstocks with new penstocks within the existing penstock right-of-way could cause some short-term erosion and sedimentation effects in the Stillwater Branch of the Penobscot River. To help ensure that aquatic resources in the Stillwater Branch are protected during rehabilitation activities, Article 302 requires a soil erosion and sediment control plan prior to the start of any construction including installing new penstocks.

B. Recreation

41. In a recreation plan filed with the application, PPL Maine proposes to maintain an existing portage trail, signage, and parking area at the powerhouse. Condition 3 of the section 401 WQC requires PPL Maine to maintain a portage trail around the project. The plan is approved in ordering paragraph F. Article 404 requires implementation of the recreation plan.

C. Aesthetics

42. The three new 10-foot-diameter penstocks would extend 800-900 feet from the dam to the powerhouse and would run along a section of the river below the project dam. The EA recommended that the new penstocks be painted a color that blends with the surrounding environment in order to minimize the visual effects of installing new penstocks. Article 406 requires the penstocks to be a color that blends with the surrounding environment to protect project aesthetics.

ADMINISTRATIVE CONDITIONS

A. Annual Charges

43. The Commission collects annual charges from licensees for administration of the FPA. Article 201 provides for the collection of funds for administration of the FPA.

B. Exhibit F and G Drawings

44. The Exhibit F drawings filed with the license application are approved and made part of the license (see ordering paragraph (C)). The Commission requires licensees to file sets of approved project drawings on microfilm and in electronic file format. Article 202 requires the filing of these drawings.

45. The Exhibit G drawings that were filed with the license application and response to additional information do not meet the current Commission requirements for project boundary maps, because the project boundary map does not enclose all principal project works necessary for operation and maintenance of the project within the project boundary line. Specifically, the project boundary must enclose the entire length of the penstock from the dam to the powerhouse, the primary transmission lines, and the canoe portage. Article 203 requires the licensee to file revised Exhibit G drawings meeting the above requirements pursuant to 18 CFR sections 4.39 and 4.41.

C. Amortization Reserve

46. The Commission requires that for new major licenses, licensees must set up and maintain an amortization reserve account upon license issuance. Article 204 requires the establishment of the account.

D. Headwater Benefits

47. Some projects directly benefit from headwater improvements that were constructed by other licensees, by the United States, or by permittees. Article 205 requires the licensee to reimburse such entities for these benefits if they were not previously assessed and reimbursed.

E. Construction Activities

48. This license requires PPL Maine to replace or rehabilitate the penstocks, surge tank, wheelpit floors, and powerhouse. Articles 301, 302, 303, 304, and 305 require cofferdam construction drawings, contract plans and specifications, a quality control and inspection plan, a temporary emergency action plan, and as-built drawings, respectively.

F. Use and Occupancy of Project Lands and Waters

49. Requiring a licensee to obtain prior Commission approval for every use or occupancy of the project would be unduly burdensome. Therefore, Article 407 allows

the licensee to grant permission, without prior Commission approval, for the use and occupancy of project lands for such minor activities as landscape planting. Such uses must be consistent with the purposes of protecting and enhancing the scenic, recreational, and environmental values of the project.

STATE AND FEDERAL COMPREHENSIVE PLANS

50. Section 10(a)(2)(A) of the FPA, 16 U.S.C. § 803(a)(2)(A), requires the Commission to consider the extent to which a project is consistent with federal and state comprehensive plans for improving, developing, and conserving a waterway or waterways affected by the project.³⁰ Under Section 10(a)(2)(A), federal and state agencies filed 11 comprehensive plans that address various resources in Maine. Staff identified and reviewed the 11 comprehensive plans, all of which are relevant to this project.³¹ No conflicts were found.

APPLICANT'S PLANS AND CAPABILITIES

51. In accordance with sections 10(a)(2)(C) and 15(a) of the FPA,³² Commission staff evaluated PPL Maine's record as a licensee for these areas: (A) conservation efforts; (B) compliance history and ability to comply with the new license; (C) safe management, operation, and maintenance of the project; (D) ability to provide efficient and reliable electric service; (E) need for power; (F) transmission services; (G) cost effectiveness of plans; and (H) actions affecting the public. I accept the staff's findings in each of the following areas.

A. Conservation Efforts

52. Section 10(a)(2)(C) of the FPA requires the Commission to consider the electricity consumption improvement program of the applicant, including its plans, performance, and capabilities for encouraging or assisting its customers to conserve electricity, taking into account the published policies, restrictions, and requirements of state regulatory authorities. PPL Maine sells all the power generated by the project on a wholesale basis to customers within the Independent System Operator - New England (ISO-NE) system, and does not serve any retail customers. Staff concludes that, given the limits of its

³⁰ Comprehensive plans for this purpose are defined at 18 C.F.R. § 2.19.

³¹ The list of applicable plans can be found in section IX of the environmental assessment for the project.

³² 16 U.S.C. § 803(a)(2)(C) and § 808(a).

ability to influence users of the electricity generated by the project, PPL Maine complies with Section 10(a)(2)(C) of the FPA.

B. Compliance History and Ability to Comply with the New License

53. Commission staff reviewed PPL Maine's compliance with the terms and conditions of the existing license. PPL Maine's overall record of making timely filings and compliance with its license is satisfactory. Staff concludes that PPL Maine has or can acquire the resources and expertise necessary to carry out its plans and comply with all articles and terms and conditions of a new license.

C. Safe Management, Operation, and Maintenance of the Project

54. Commission staff reviewed PPL Maine's proposed operation and maintenance of the Orono Project pursuant to the requirements of 18 C.F.R. Part 12 and the Commission's Engineering Guidelines and periodic Independent Consultant's Safety Inspection Reports. The staff concludes that the dam and project works at the Orono Project are safe, and has no reason to believe that PPL Maine cannot continue to safely manage, operate, and maintain the project facilities under a new license.

D. Ability to Provide Efficient and Reliable Electric Service

55. Commission staff reviewed PPL Maine's plans and its ability to operate and maintain the project in a manner most likely to provide efficient and reliable electric service. PPL Maine has been operating the project in an efficient manner within the constraints of the existing license. Staff concludes that PPL Maine is capable of operating the project to provide efficient and reliable electric service in the future.

E. Need for Power

56. To assess the need for power, Commission staff looked at the needs in the operating region in which the project is located. The project is located in the Northeast Power Coordinating Council region of the North American Electric Reliability Council (NERC). NERC annually forecasts electric supply and demand in the nation and the region for a ten-year period. NERC's recent report on annual supply and demand projections indicate that, for the period 2004 – 2013, average growth in electrical demand will increase 1.3 percent annually. Staff concludes that the project's power, low cost, displacement of nonrenewable fossil-fired generation, and contribution to the region's diversified generation mix, will help meet a need for power in the region.

F. Transmission Services

57. The Orono Project has three, 325-foot-long, 2.4-kilovolt primary transmission lines that carry electric power generated from the project to the regional grid. No changes are recommended or proposed that would affect the capability of the project to connect to the regional grid to serve delivery to the region.

G. Cost Effectiveness of Plans

58. PPL Maine proposes a number of facility and operational changes to enhance water quality, fishery, and recreation resources. Based on PPL Maine's record as an existing licensee, staff concludes that these plans are likely to be carried out in a cost-effective manner.

H. Actions Affecting the Public

59. PPL Maine pays taxes annually to local and state governments, and the project provides employment opportunities and attracts those interested in various forms of available recreation. Staff concludes that the various environmental and recreational enhancement measures approved in this license would benefit the public.

PROJECT ECONOMICS

60. In determining whether a proposed project will be best adapted to a comprehensive plan for developing a waterway for beneficial public purposes, the Commission considers a number of public interest factors, including the economic benefit of the project power. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in Mead Corp.,³³ the Commission uses current costs to compare the costs of the project and likely alternative power with no forecasts concerning potential future inflation, escalation, or deflation beyond the license issuance date. The basic purpose of the Commission's economic analysis is to provide a general estimate of the potential power benefits and the costs of a project, and of reasonable alternatives to project power. The estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license.

61. As proposed by PPL Maine, consistent with the Lower Penobscot Settlement, and with the mandatory water quality certification conditions and section 18 prescriptions, the annual cost of the project would be about \$507,310 (30.41 mills/kWh). The annual power value, for the estimated annual generation of 16,682 MWh, would be \$902,230

³³ 72 FERC ¶ 61,027 (1995).

(54.08 mills/kWh).³⁴ To determine whether the proposed project is currently economically beneficial, staff subtracts the project's cost from the value of the power the project produces. Therefore, in the first year of operation, the project would cost \$394,920 (23.67 mills/kWh) less than the likely alternative cost of power.

62. If licensed with staff-recommended measures,³⁵ without upstream fish passage facilities, the fish trapping facility, and the Fund, the Orono Project would produce an average of 16,682 MWh of energy annually at a cost of about \$487,910 or 29.25 mills/kWh. The annual value of the project's power would be about \$902,230 or 54.08 mills/kWh. Therefore, in the first year of operation, the project would cost \$414,320, or 24.83 mills/kWh less than currently available alternative power.

63. If licensed as proposed by PPL Maine, consistent with the Lower Penobscot Settlement, with the mandatory water quality certification conditions and section 18 prescriptions, and with the staff-recommended measures, the Orono Project would produce an average of 16,682 MWh of energy annually at a cost of about \$508,220 or 30.46 mills/kWh. The annual value of the project's power would be about \$902,230 or 54.08 mills/kWh. Therefore, in the first year of operation, the project would cost \$394,010, or 23.62 mills/kWh less than currently available alternative power.

64. In considering public interest factors, the Commission takes into account that hydroelectric projects offer unique operational benefits to the electric utility system (ancillary service benefits). These benefits include their capability to provide an almost instantaneous load-following response to dampen voltage and frequency instability on the transmission system, system-power-factor-correction through condensing operations, and a source of power available to help in quickly putting fossil-fuel based generating stations back on line following a major utility system or regional blackout.

COMPREHENSIVE DEVELOPMENT

65. Sections 4(e) and 10(a) of the FPA,³⁶ require the Commission, in acting on license applications, to give equal consideration to the developmental and environmental uses of

³⁴ The annual value of alternative power is based on information in Energy Information Administration, Annual Energy Outlook 2005.

³⁵ Staff recommendations include protecting existing forested riparian areas and historic properties, blending the new penstocks with the surrounding environment, and plans for soil erosion control and operation compliance monitoring.

³⁶ 16 U.S.C. § 797(e) and 803§ (a)(1).

the waterway on which a project is located. Any license issued shall be such as in the Commission's judgment would be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. The decision to license this project, and the terms and conditions included herein, reflect such consideration.

66. The EA for the Orono Project contains background information, analysis of effects, support for related license articles, and the basis for a finding that the project will not result in any major, long-term adverse environmental effects. The project would be safe if operated and maintained in accordance with the requirements of this license.

67. Based on my independent review and evaluation of the Orono Project, recommendations from the resource agencies and other stakeholders, and the no-action alternative, as documented in the EA, I have selected the staff-recommended alternative for the Orono Project, including the WQC conditions and section 18 prescriptions from the agencies because they are mandatory, and find that it is best adapted to a comprehensive plan for improving or developing the Stillwater Branch of the Penobscot River.

68. I selected this alternative because: (1) issuance of a new license would serve to maintain a beneficial, dependable, and inexpensive source of electric energy; (2) the required environmental measures would protect and enhance fish and wildlife resources, water quality, recreational resources and historic properties; and (3) the 2.332 MW of electric energy generated from a renewable resource would offset the use of fossil-fueled, steam-electric generating plants, thereby conserving nonrenewable resources and reducing atmospheric pollution.

LICENSE TERM

69. Section 15(e) of the FPA³⁷ provides that any new license issued shall be for a term that the Commission determines to be in the public interest, but not less than 30 years or more than 50 years. The Commission's general policy is to establish 30-year terms for projects with little or no redevelopment, new construction, new capacity, or environmental mitigation and enhancement measures; 40-year terms for projects with a moderate amount of such activities; and 50-year terms for projects with extensive measures.

70. Section I.d.1 of Attachment A to the Lower Penobscot Settlement contains a provision requesting the issuance of a 40 year license. This license authorizes a moderate

³⁷ 16 U.S.C. § 808(e).

amount of construction and environmental measures. Therefore, this license is being issued for a term of 40 years.

The Director orders:

(A) This license is issued to PPL Maine, LLC (licensee), for a period of 40 years, effective the first day of the month in which this order is issued, to construct, operate and maintain the Orono Hydroelectric Project. This license is subject to the terms and conditions of the FPA, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the FPA.

(B) The project consists of:

(1) All lands, to the extent of the licensee's interests in those lands, enclosed by the project boundary shown by Exhibit G filed on January 24, 2005:

<u>Exhibit G Drawing</u>	<u>FERC No. 2710</u>	<u>Description</u>
Sheet 1 of 1	1001	Detail Map Reservoir

(2) Project works consisting of: (1) an existing 1,178-foot-long by 15-foot-high dam including a 320-foot-long spillway topped with 2.4-foot-high flashboards; (2) an existing 2.3-mile-long reservoir, which has a surface area of 175 acres at the normal full pond elevation of 72.4 feet above mean sea level (msl); (3) three new 800- to 900-foot-long, 10-foot-diameter penstocks; (4) a restored powerhouse containing four existing generating units with a total installed generating capacity of 2.332 MW; (5) three existing 325-foot-long, 2.4-kilovolt transmission lines; and (6) appurtenant facilities.

The project works generally described above are more specifically shown and described by those portions of exhibits A and F shown below:

Exhibit A: Pages A-1 through A-10 filed on June 25, 2004, and pages A#1-1 through A#1-3 filed on January 24, 2005.

Exhibit F: The following Exhibit F drawings filed on June 25, 2004:

<u>Exhibit F Drawings</u>	<u>FERC No. 2710-</u>	<u>Description</u>
Sheet 1	1001	General Plan and Dam Sections
Sheet 2	1002	Main Floor Plan
Sheet 3	1003	Power House Sections

(3) All of the structures, fixtures, equipment or facilities used to operate or maintain the project and located within the project boundary, all portable property that may be employed in connection with the project, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) The Exhibits A and F described above are approved and made part of the license. The Exhibit G drawing filed January 24, 2005, in response to Commission staff's additional information request supplementing the license application, does not conform to Commission regulations and is not approved. Article 203 requires the licensee to file revised Exhibit G drawings.

(D) This license is subject to the conditions submitted by the Maine Department of Environmental Protection under section 401(a)(1) of the Clean Water Act, 33 U.S.C. § 1431(a)(1), as those conditions are set forth in Appendix A to this order.

(E) This license is subject to the prescriptions submitted by the U.S. Department of the Interior and the U.S. Department of Commerce under section 18 of the FPA, as those conditions are set forth to this order in Appendices B and C, respectively.

(F) The recreation plan, filed with the application on January 24, 2005, is approved and made part of this license.

(G) This license is subject to the articles set forth in Form L-3 (October 1975), entitled "Terms and Conditions of License for Constructed Major Project Affecting Navigable Waters," and the following additional articles:

Article 201. Administrative Annual Charges. The licensee shall pay the United States the following annual charges, effective the first day of the month in which the license is issued, and as determined in accordance with provisions of the Commission's regulations in effect from time to time, for the purpose of reimbursing the United States for the cost of administration of Part I of the Federal Power Act. The authorized installed capacity for that purpose is 2,332 kilowatts.

Article 202. Exhibit Drawings. Within 45 days of license issuance, the licensee shall file the approved exhibit F drawings in aperture card and electronic file formats.

a) Three sets of the approved exhibit drawings shall be reproduced on silver or gelatin 35mm microfilm. All microfilm shall be mounted on type D (3-1/4" X 7-3/8") aperture cards. Prior to microfilming, the FERC Project Drawing Number (i.e., P-1234-#### through P-1234-####) shall be shown in the margin below the title block of the approved drawing. After mounting, the FERC Drawing Number shall be typed on the upper right corner of each aperture card. Additionally, the Project Number, FERC

Exhibit (i.e., F-1, etc.), Drawing Title, and date of this license shall be typed on the upper left corner of each aperture card.

Two of the sets of aperture cards shall be filed with the Secretary of the Commission, ATTN: OEP/DHAC. The third set shall be filed with the Commission's Division of Dam Safety and Inspections New York Regional Office.

b) The licensee shall file two separate sets of exhibit drawings in electronic raster format with the Secretary of the Commission, ATTN: OEP/DHAC. A third set shall be filed with the Commission's Division of Dam Safety and Inspections New York Regional Office. Exhibit F drawings must be identified as critical energy infrastructure information (CEII) material under 18 CFR §388.113(c). Each drawing must be a separate electronic file, and the file name shall include: FERC Project-Drawing Number, FERC Exhibit, Drawing Title, date of this license, and file extension in the following format [P-1234-####, F-1, Description, MM-DD-YYYY.TIF]. Electronic drawings shall meet the following format specification:

IMAGERY - black & white raster file
FILE TYPE – Tagged Image File Format, (TIFF) CCITT Group 4
RESOLUTION – 300 dpi desired, (200 dpi min)
DRAWING SIZE FORMAT – 24” X 36” (min), 28” X 40” (max)
FILE SIZE – less than 1 MB desired

Article 203. Exhibit G Drawings. Within 90 days of license issuance, the licensee shall file, for Commission approval, revised Exhibit G drawings enclosing within the project boundary all principal project works necessary for operation and maintenance of the project, including the entire length of the penstock from the dam to the powerhouse, the primary transmission lines, and the existing canoe portage located on the right shoreline, northeast of the powerhouse. The Exhibit G drawings must comply with sections 4.39 and 4.41 of the Commission's regulations.

Article 204. Amortization Reserve. Pursuant to Section 10(d) of the Federal Power Act, a specified reasonable rate of return upon the net investment in the project shall be used for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. The licensee shall set aside, in a project amortization reserve account at the end of each fiscal year, one-half of the project surplus earnings, if any, in excess of the specified rate of return per annum on the net investment.

To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year, the licensee shall deduct the amount of that deficiency from the amount of any surplus earnings subsequently accumulated, until absorbed. The licensee shall set aside one-half of the remaining surplus earnings, if any, cumulatively computed, in the project amortization reserve account. The licensee shall

maintain the amounts established in the project amortization reserve account until further order of the Commission.

The specified reasonable rate of return used in computing amortization reserves shall be calculated annually based on current capital ratios developed from an average of 13 monthly balances of amounts properly included in the licensee's long-term debt and proprietary capital accounts as listed in the Commission's Uniform System of Accounts. The cost rate for such ratios shall be the weighted average cost of long-term debt and preferred stock for the year, and the cost of common equity shall be the interest rate on 10-year government bonds (reported as the Treasury Department's 10-year constant maturity series) computed on the monthly average for the year in question plus four percentage points (400 basis points).

Article 205. Headwater Benefits. If the licensee's project was directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement during the term of the original license (including extensions of that term by annual licenses), and if those headwater benefits were not previously assessed and reimbursed to the owner of the headwater improvement, the licensee shall reimburse the owner of the headwater improvement for those benefits, at such time as they are assessed, in the same manner as for benefits received during the term of this new license.

Article 301. Cofferdam Construction Drawings. Before starting construction, the licensee shall review and approve the design of contractor-designed cofferdams and deep excavations and shall make sure construction of cofferdams and deep excavations is consistent with the approved design. At least 30 days before starting construction of the cofferdam, the licensee shall submit one copy to the Commission's New York Regional Engineer and two copies to the Commission (one of these copies shall be a courtesy copy to the Commission's Director, Division of Dam Safety and Inspections), of the approved cofferdam construction drawings and specifications and the letters of approval.

Article 302. Contract Plans and Specifications. At least 60 days prior to the start of any construction, the licensee shall submit one copy of its plans and specifications (and a supporting design document for an unconstructed dam) to the Commission's New York Regional Engineer, and two copies to the Commission (one of these shall be a courtesy copy to the Director, Division of Dam Safety and Inspections). The licensee may not begin construction until the Regional Engineer has approved in writing the plans and specifications and determined that all preconstruction requirements have been satisfied. The submittal to the Regional Engineer must also include as part of preconstruction requirements: a Quality Control and Inspection Program, Temporary Construction Emergency Action Plan, and Soil Erosion and Sediment Control Plan.

Article 303. Quality Control and Inspection Program (QCIP). At least 60 days before starting and license-related construction activities, the licensee shall submit one copy to the Commission's New York Regional Engineer and two copies to the Commission (one of which shall be a courtesy copy to the Director, Division of Dam Safety and Inspections) of a Quality Control and Inspection Program (QCIP) for the Commission's review and approval. The QCIP shall include a sediment and erosion control plan.

Article 304. Temporary Emergency Action Plan (TEAP). At least 60 days before starting construction, the licensee shall submit one copy to the Commission's New York Regional Engineer and two copies to the Commission (one of which shall be a courtesy copy to the Director, Division of Dam Safety and Inspections) of a Temporary Emergency Action Plan (TEAP) for Commission's review and approval. The TEAP shall describe emergency procedures in case failure of a cofferdam, large sediment control structures or any other water retaining structure that would endanger construction workers or the public. The TEAP shall include a notification list of emergency response agencies, a plan drawing of the proposed cofferdam arrangement, the location of safety devices and escape routes, and a brief description of testing procedures.

Article 305. As-built Drawings. Within 90 days of completion of construction of the facilities authorized by this license, the licensee shall file for Commission approval, revised exhibits A, F, and G, as applicable, to describe and show those project facilities as built. A courtesy copy shall be filed with the Commission's New York Regional Engineer, the Director, D2SI, and the Director, DHAC.

Article 401. Operation and flow compliance monitoring plan. Within six months of license issuance, the licensee shall file for Commission approval, a plan for providing and monitoring run-of-river operation, water levels, and minimum flows required by condition 1 of the section 401 water quality certification including additional measures identified below.

The plan shall include, at a minimum:

- (1) a description of the means for maintaining the 200-cfs minimum flow in the Orono bypassed reach;
- (2) a schedule for installing all necessary gaging devices;
- (3) the proposed locations of the gaging devices;
- (4) the method of flow and impoundment level data collection;
- (5) a provision for coordinating the timing of maintenance drawdowns with the consulted agencies and Penobscot Indian Nation; and
- (6) a provision for providing the data to the agencies and Penobscot Indian Nation in a timely manner.

The plan shall be prepared in consultation with the U.S. Fish and Wildlife Service, Maine Department of Environmental Protection, Maine Department of Inland Fisheries and Wildlife, Maine Atlantic Salmon Commission, Maine Department of Marine Resources, and the Penobscot Indian Nation (entities).

The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the entities, and specific descriptions of how the entities' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the entities to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on site-specific information.

The Commission reserves the right to require changes to the plan. The plan shall not be implemented until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 402. Reservation of Authority to Prescribe Fishways. Authority is reserved by the Commission to require the licensee to construct, operate, and maintain, or to provide for the construction, operation, and maintenance of such fishways as may be prescribed by the Secretaries of the Interior and/or Commerce pursuant to section 18 of the Federal Power Act.

Article 403. Riparian Habitat Protection. To protect bald eagle habitat at the project, the licensee shall, to the extent feasible, maintain existing forested riparian areas at the project. If, during the license term, modification or disturbance of such habitat is proposed, the licensee shall consult with the Maine Department of Inland Fisheries and Wildlife and the U.S. Fish and Wildlife Service, and file a request with the Commission for approval. The licensee's request must include comments on the proposal from the consulted agencies.

Article 404. Recreation Plan. Within three months of license issuance, the licensee shall implement its recreation plan and file documentation with the Commission that the plan has been implemented.

Article 405. Cultural Resources. The licensee, before starting any land-clearing or land-disturbing activities within the project boundaries, other than those specifically authorized in this license, including recreation developments at the project, shall consult with the Maine State Historic Preservation Officer (SHPO) and the Penobscot Tribal Historic Preservation Officer (THPO).

If the licensee discovers previously unidentified archeological or historic resources during the course of constructing or developing project works or other facilities at the project, the licensee shall stop all land-clearing and land-disturbing activities in the vicinity of the resources and consult with the SHPO and THPO.

In either instance, the licensee shall file for Commission approval an historic properties management plan (plan) prepared by a qualified cultural resource specialist after having consulted with the SHPO and THPO. The plan shall include the following items:

- (1) a description of each identified or discovered resource indicating whether it is listed on or eligible to be listed on the National Register of Historic Places (NRHP);
- (2) an evaluation of each identified or discovered resource not listed on the HRHP with respect to its eligibility for such listing (historic property);
- (3) a description of the potential effects on any historic properties;
- (4) proposed measures for avoiding or mitigating any adverse effects on historic properties;
- (5) documentation of the nature and extent of consultation; and
- (6) a schedule for implementing any proposed mitigation measures and conducting additional studies.

The licensee shall not begin land-clearing or land-disturbing activities, other than those specifically authorized in this license, or resume such activities in the vicinity of a resource discovered during construction, until informed by the Commission that the requirements of this article have been fulfilled. The Commission reserves the right to require changes to the plan.

Article 406. Aesthetics. The licensee shall paint the proposed new project penstocks a color, or construct the penstocks with a material, that visually blends the penstocks with the surrounding landscape. The licensee shall provide photographic documentation of compliance with this article with the as-built drawings required in Article 305.

Article 407. Use and Occupancy. (a) In accordance with the provisions of this article, the licensee shall 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 licensee 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 licensee shall 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 licensee 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 licensee shall 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 water for which the licensee 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 watercraft 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 licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The licensee shall 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 licensee shall: (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 licensee 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 licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensee 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 licensee shall file three copies of 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.

(d) The licensee 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 watercraft 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 licensee must submit a letter to the Director, Office of Energy Projects, stating its 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 Director, within 45 days from the filing date, requires the licensee to file an application for prior approval, the licensee 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 licensee shall 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 licensee shall 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 shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee shall 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 shall not unduly restrict public access to project waters.

(4) The Commission reserves the right to require the licensee 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 shall be consolidated for consideration when revised Exhibit G drawings would be filed for approval for other purposes.

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

(H) The licensee shall serve copies of any Commission filing required by this order on any entity specified in the order to be consulted on matters relating to that filing. Proof of service on these entities must accompany the filing with the Commission.

(I) This order is final unless a request for rehearing is filed within 30 days from the date of its issuance, as provided in section 313(a) of the FPA. The filing of a request for rehearing does not operate as a stay of the effective date of this license or of any other date specified in this order, except as specifically ordered by the Commission. The licensee's failure to file a request for rehearing shall constitute acceptance of this order.

J. Mark Robinson
Director
Office of Energy Projects

APPENDIX A

Maine Department of Environmental Protection
Certification under section 401 of the
Federal Clean Water Act

1. WATER LEVELS AND FLOWS

A. Except as temporarily modified by (1) approved maintenance activities, (2) extreme hydrologic conditions, as defined below, or (3) emergency electrical system conditions, as defined below, or (4) agreement between the applicant, appropriate state and/or federal agencies, and the Penobscot Indian Nation, beginning within 60 days of FERC approval of the flow and water level monitoring plan described in Condition 1 .E. below, or upon such other schedule as established by FERC, the Orono Project shall be operated in a run-of-river mode, with outflow approximately equal to inflow on an instantaneous basis except for flashboard failure or replacement, and impoundment levels maintained within one foot of full pond (elevation 72.4 feet msl). During times of flashboard failure, the applicant will maintain water levels at or above the spillway crest. During those times when flashboards are being replaced, the applicant will maintain water levels within one foot of the spillway crest.

B. Except as temporarily modified by (1) approved maintenance activities, (2) extreme hydrologic conditions, as defined below, or (3) emergency electrical system conditions, as defined below, or (4) agreement between the applicant and appropriate state and/or federal agencies, a minimum flow of 200 cfs to the bypass reach shall be maintained.

C. "Extreme Hydrologic Conditions" means the occurrence of events beyond the Licensee's control, such as, but not limited to, abnormal precipitation, extreme runoff, flood conditions, ice conditions or other hydrologic conditions such that the operational restrictions and requirements contained herein are impossible to achieve or are inconsistent with the safe operation of the project.

D. "Emergency Electrical System Conditions" means operating emergencies beyond Licensee's control which require changes in flow regimes to eliminate such emergencies which may in some circumstances include but are not limited to equipment failure or other abnormal temporary operating condition, generating unit operation or third-party mandated interruptions under power supply emergencies; and orders from local, state or federal law enforcement or public safety authorities.

E. The applicant shall, within 6 months of issuance of a New License for the project by FERC or upon such other schedule as established by FERC, submit plans for providing and monitoring the water levels and flows required by this condition. These plans shall be developed in consultation with U.S. Fish and Wildlife Service (USFWS), Maine

Department of Inland Fisheries and Wildlife (MDIFW), Maine Atlantic Salmon Commission (MASC), Maine Department of Marine Resources (MDMR), Penobscot Indian Nation (PIN), and DEP. These plans shall be reviewed by and must receive the approval of the DEP Bureau of Land and Water Quality.

2. FISH PASSAGE

A. UPSTREAM EEL PASSAGE

The applicant shall install and operate an upstream fishway for eels at the Orono Project, in accordance with the terms of the Lower Penobscot River Multiparty Settlement Agreement, dated June 2004.

B. DOWNSTREAM FISH PASSAGE

Permanent downstream fish passage facilities shall be installed and operational at the Orono Project in accordance with the terms of the Lower Penobscot River Multiparty Settlement Agreement, dated June 2004. These fish passage facilities shall be as prescribed by the May 20, 1997, DOI Fishway Prescription and shall be operational concurrent with the commencement of project operation.

C. DOWNSTREAM EEL PASSAGE

If shown to be necessary by effectiveness studies conducted in accordance with condition 2G. below, the applicant shall implement 2-week shutdowns at night for downstream eel migration. This shutdown shall not be required earlier than the expiration of the Safe Harbor period described in the Lower Penobscot River Multiparty Settlement Agreement, dated June 2004.

D. UPSTREAM FISH PASSAGE

(1) Upon Acquisition of Designated Projects by the Trust. In the event the option to purchase the Veazie, Great Works, and Howland projects is exercised and those projects are acquired by the Trust, the applicant shall install a fish trapping facility at the Orono project spillway in accordance with the terms of the Lower Penobscot River Multiparty Settlement Agreement, dated June 2004.

(2) If Designated Projects are Not Acquired by the Trust. In the event the Veazie, Great Works, and Howland projects are not acquired by the Trust, the applicant shall install upstream fish passage facilities in accordance with the terms of the Lower Penobscot River Multiparty Settlement Agreement, dated June 2004. These fish passage facilities shall be as prescribed by the May 20, 1997 DOI Fishway Prescription.

E. CONTINGENT MITIGATION FUND

In the event that the option to purchase the Veazie and Great Works projects is not exercised or is terminated, or if, subsequent to the exercise of the option, the Veazie and Great Works projects are not acquired and removed, the applicant shall participate in the establishment of and shall provide funds to a Contingent Mitigation Fund, in accordance with the terms of the Lower Penobscot River Multiparty Settlement Agreement, dated June 2004.

F. FISH PASSAGE FACILITIES PLANS

The applicant shall, in accordance with the terms of the Lower Penobscot River Multiparty Settlement Agreement, dated June 2004, or upon such other schedule(s) as established by FERC, submit final design and operational plans for all upstream and downstream fish passage facilities and/or operational measures required by this approval, prepared in consultation with state and federal fisheries agencies and the Penobscot Indian Nation. These plans shall include a schedule for facilities construction and operation. These plans shall be reviewed by and must receive approval of the DEP prior to construction.

G. FISH PASSAGE EFFECTIVENESS STUDIES AND RESULTS

(1) Studies. The applicant shall, in consultation with state and federal fisheries agencies and the Penobscot Indian Nation, conduct a study or studies to determine the effectiveness of all interim and permanent upstream and downstream fish passage facilities and/or operational measures required by this approval.

(2) Study plans. The applicant shall, in accordance with the schedule(s) established by FERC, submit plans for a study or studies to determine the effectiveness of all interim and permanent upstream and downstream fish passage facilities and/or operational measures required by this approval, prepared in consultation with state and federal fisheries agencies and the Penobscot Indian Nation. These plans shall be reviewed by and must receive approval of the DEP prior to implementation.

(3) Results of studies. The applicant shall, in accordance with the terms of the Lower Penobscot River Multiparty Settlement Agreement, dated June 2004, or the schedule(s) established by FERC, submit the results of any fish passage effectiveness study or studies, along with any recommendations for changes in the design and/or operation of any interim or permanent upstream or downstream fish passage facilities constructed and/or operated pursuant to this approval. The Department reserves the right, after notice and opportunity for hearing, to require reasonable changes in the design and/or operation of these fish passage facilities as may be deemed necessary to adequately pass

anadromous fish through the project site. Any such changes must be approved by FERC prior to implementation.

3. RECREATIONAL FACILITIES

The applicant shall maintain a portage trail around the project.

4. LIMITS OF APPROVAL

This approval is limited to and includes the proposals and plans contained in the application and supporting documents submitted and affirmed to by the applicant. All variances from the plans and proposals contained in said documents are subject to review and approval of the DEP prior to implementation.

5. COMPLIANCE WITH ALL APPLICABLE LAWS

The applicant shall secure and appropriately comply with all applicable federal, state and local licenses, permits, authorizations, conditions, agreements and orders required for the operation of the project in a

APPENDIX B

U.S. Department of the Interior Section 18 Prescriptions

The Department included specific requirements for fishways at the Orono Project in its May 20, 1997 prescription in the Basin Mills Project proceeding (Project no. 10891). The Commission has yet to issue a subsequent long-term license for the Orono Project. In response to PPL Maine's application for a new license for the Orono Project, the Secretary of the Interior, exercising her authority under § 18 of the FPA, hereby provides a preliminary prescription providing for upstream and downstream passage that comply with the specific provisions in the Agreement.

1. The licensee shall provide safe and effective upstream eel passage at the Orono project. The licensee shall assess the appropriate location for the siting of the new upstream eel fishway, and upon approval of its proposed location by the USFWS, MDNR, and PIN, shall complete installation and initial testing, and have the fishway fully operational prior to the beginning of the third upstream eel migration season (approximately May 1) following the effective date of the Agreement.
2. The licensee shall provide downstream fish passage as previously prescribed by the Department in its prescription dated May 20, 1997, within 3 years after the license is issued. If shown to be necessary by studies of the effectiveness of these measures, but in no case before the expiration of the safe harbor period delimited in Attachment A, Section II(c) of the Lower Penobscot River Multiparty Settlement Agreement, the licensee shall institute nightly shut-downs for downstream eel passage for a two-week period during the downstream eel migration period.
3. The Department hereby reserves its authority under § 18 of the FPA to prescribe such fishways as may be necessary and not inconsistent with the Agreement during the term of the license. This specifically includes authority to prescribe a fish trap, as specified in Attachment A to the Agreement, upon acquisition of the Veazie, Great Works, and Howland Projects.

APPENDIX C

National Oceanographic and Atmospheric Administration
Section 18 Prescriptions

(A) The following are prescriptive measures to provide for the safe and effective downstream passage of diadromous fish species.

1. The licensee shall provide downstream fish passage for all species within 3 years after the license is issued. The licensee shall install trashracks with 1-inch clear opening at the powerhouse turbine intake, and a gated surface and bottom bypass discharging up to 70 cfs during the downstream migration period. If shown to be necessary by studies of the effectiveness of these measures, but in no case before the expiration of the safe harbor period delimited in Attachment A, Section II(c) of the MPA, the licensee shall institute nightly shut-downs for downstream eel passage for a two week period during the downstream eel migration season.
2. The downstream migration period is defined as April 1 to June 30 and November 1 to December 15 for Atlantic salmon, July 1 to December 31 for American shad and alewife, August to December 31 for blueback herring, and August 15 to November 15 (or other time periods determined when adequate information is available, and during any spring run that may occur) for American eel. Downstream facilities are to operate whenever generation occurs during the downstream migration period.
3. Fishways shall be maintained and operated to maximize fish passage effectiveness throughout fish migration period(s) defined above. The licensee shall keep the fishways in proper order and shall keep fishway areas clear of trash, logs, and material that would hinder passage. Anticipated maintenance shall be performed in sufficient time before a migratory period such that fishways can be tested and inspected, and will operate effectively prior to and during the migratory periods.
4. Fishway maintenance and operational plans (including schedules) for all downstream fish passage facilities shall be developed by the licensee in consultation and cooperation with NMFS, the USFWS, the Penobscot Indian Nation (PIN), and other fishery agencies, including the Maine Department of Inland Fisheries and Wildlife (IFW), Maine Department of Marine Resources (DMR), and Maine Atlantic Salmon Commission (MASC). Functional design and final design plans for all fishways shall be developed in consultation and cooperation with NOAA Fisheries, USFWS, PIN, and other fishery agencies.
5. Within six months of the order issuing a new license for Orono, the licensee shall file, for Commission approval, detailed design drawings for the surface and bottom bypasses. This filing shall include but not be limited to: (1) the location and design specifications

of the bypasses; (2) a schedule for installing the facilities within 18 months of a Commission order approving the design drawings; and (3) procedures for operating and maintaining the facilities.

6. The licensee shall include with the filings required by the consultations for fishway maintenance and operation plans and design drawings, copies of agency and PIN comments and recommendations on the plans, schedules, and drawings after they have been prepared and provided to the agencies, and specific descriptions of how the agencies' and PIN's comments and recommendations are accommodated by the licensee's facilities. The licensee shall allow a minimum of 30 days for the agencies and PIN to comment and to make recommendations before filing the drawings, plans, and schedule with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

(B) The following are prescriptive measures to provide for the safe and effective upstream passage of diadromous fish species.

1. The licensee shall provide safe and effective upstream eel passage at the Orono project. The licensee shall assess the appropriate location for the siting of the new upstream eel fishway, and upon approval of its proposed location by NMFS, the USFWS, MDMR and PIN, file, for Commission approval, a plan for the fishway. This filing shall include but not be limited to: (1) the location and design specifications of the passage facilities; (2) a schedule for installing the facilities and completing initial testing prior to the third upstream eel migration season following the effective date of the Lower Penobscot River Multiparty Settlement Agreement (approximately May 1, 2007); and (3) procedures for operating and maintaining the facilities.

2. The upstream migration period shall be defined as April 1 to November 30 for American eel.

3. Fishways shall be maintained and operated to maximize fish passage effectiveness throughout fish migration period. The licensee shall keep the fishways in proper order and shall keep fishway areas clear of trash, logs, and material that would hinder passage. Anticipated maintenance shall be performed in sufficient time before a migratory period such that fishways can be tested and inspected, and will operate effectively prior to and during the migratory periods.

4. Upstream fish passage for species other than American eel is contingent on actions taken under the Settlement Accord.

(a) If Veazie (P-2403), Great Works (P-2312), and Howland (P-2721) Projects are acquired and removed,³⁸ the licensee shall file an amendment to authorize installation and operation of a fish trapping facility at the Orono project's spillway, as outlined in Attachment A of the MPA. The licensee shall consult with and receive approval from the resource agencies and PIN on the design plans prior to filing with the Commission. Trapped fish will be transferred a short distance (i.e., tailwater below the Orono Dam, main stem Penobscot River at the confluence of the Stillwater Branch).

(b) If Veazie, Great Works, and Howland are not acquired, the licensee will implement the existing NMFS (1995) and DOI (1997) prescription for upstream passage by filing the appropriate license amendments. No later than June 25, 2010, as outlined in Attachment A of the MPA, the licensee shall file for approval by the Commission drawings of permanent upstream fish passage. As part of the filing, the licensee shall include plans to have the facility fully operational within 18 months of the Commission's approval of the design drawings.

5. Fishway design, maintenance, and operational plans (including schedules) for all upstream fish passage facilities shall be developed by the licensee in consultation and cooperation with NMFS, USFWS, PIN, and other fishery agencies (IFW, DMR, and MASC). Functional design and final design plans for all fishways shall be developed in consultation and cooperation with NMFS, USFWS, PIN, and other fishery agencies.

6. The licensee shall include with all fishway plans and schedules, documentation of consultation, copies of agency and PIN comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' and PIN's comments and recommendations are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies and PIN to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

(C) The following are requirements for monitoring the effectiveness of the fish passage facilities at Orono:

1. Within 12 months of the deadline established for filing design drawings or a plan for a fish passage device, the licensee shall file with the Commission, for approval, a plan to monitor the effectiveness of all the facilities and flows provided pursuant to the above license conditions that will enable the efficient and safe passage of diadromous fish migrating upstream and downstream. The licensee shall prepare the monitoring plan

³⁸ The Howland Project may be partially removed or a fish bypass constructed under the Settlement Accord.

after consultation with NMFS, USFWS, Maine Fisheries Agencies (IFW, DMR, MASC), the Maine Department of Environmental Protection, and PIN. The results of these monitoring studies shall be submitted to the listed agencies and shall provide a basis for recommending future structural or operational changes at the project.

2. The monitoring plan shall include a schedule for: (1) implementation of the plan; (2) consultation with the appropriate federal, state, and tribal agencies concerning the results of the monitoring; and (3) filing the results, agency comments, and licensee's response to agency comments with the Commission.
3. The licensee shall include with the plan documentation of agency consultation, copies of agency and PIN comments and recommendations on the plan after it has been prepared and provided to them, and specific descriptions of how the agencies' and PIN's comments are accommodated by the licensee's plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.
4. If the results of the monitoring indicate that changes in project structures or operations, including alternative flow releases, are necessary to protect fish resources, the licensee shall first consult with the agencies to develop recommended measures for amelioration and then file its proposal with the Commission for approval. Any such changes will be subject to provisions of Attachment A to the MPA.

(D) Last, the Department hereby reserves its authority under Section 18 of the FPA to prescribe such fishways as may be necessary and consistent with Attachment A of the Lower Penobscot River Multiparty Settlement Agreement during the term of the license. This specifically includes authority to prescribe a fish trap, as specified in Attachment A to the MPA upon acquisition of the Veazie, Great Works, and Howland Projects.

Form L-3
(October, 1975)

FEDERAL ENERGY REGULATORY COMMISSION

**TERMS AND CONDITIONS OF LICENSE FOR CONSTRUCTED
MAJOR PROJECT AFFECTING NAVIGABLE
WATERS OF THE UNITED STATES**

Article 1. The entire project, as described in this order of the Commission, shall be subject to all of the provisions, terms, and conditions of the license.

Article 2. No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: Provided, however, That if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval a revised, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or in part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

Article 3. The project area and project works shall be in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, there shall not be made without prior approval of the Commission any substantial alteration or addition not in conformity with the approved plans to any dam or other project works under the license or any substantial use of project lands and waters not authorized herein; and any emergency alteration, addition, or use so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in project works, or in uses of project lands and waters, or divergence from such approved exhibits may be made if such changes will not result in a decrease in efficiency, in a material increase in cost, in an adverse environmental impact, or in impairment of the general scheme of development; but any of such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct.

Article 4. The project, including its operation and maintenance and any work incidental to additions or alterations authorized by the Commission, whether or not

conducted upon lands of the United States, shall be subject to the inspection and supervision of the Regional Engineer, Federal Energy Regulatory Commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him such information as he may require concerning the operation and maintenance of the project, and any such alterations thereto, and shall notify him of the date upon which work with respect to any alteration will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall submit to said representative a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of any such alterations to the project. Construction of said alterations or any feature thereof shall not be initiated until the program of inspection for the alterations or any feature thereof has been approved by said representative. The Licensee shall allow said representative and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may prescribe from time to time for the protection of life, health, or property.

Article 5. The Licensee, within five years from the date of issuance of the license, shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction maintenance, and operation of the project. The Licensee or its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights or occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

Article 6. In the event the project is taken over by the United States upon the termination of the license as provided in Section 14 of the Federal Power Act, or is transferred to a new licensee or to a non-power licensee under the provisions of Section

15 of said Act, the Licensee, its successors and assigns shall be responsible for, and shall make good any defect of title to, or of right of occupancy and use in, any of such project property that is necessary or appropriate or valuable and serviceable in the maintenance and operation of the project, and shall pay and discharge, or shall assume responsibility for payment and discharge of, all liens or encumbrances upon the project or project property created by the Licensee or created or incurred after the issuance of the license: Provided, That the provisions of this article are not intended to require the Licensee, for the purpose of transferring the project to the United States or to a new licensee, to acquire any different title to, or right of occupancy and use in, any of such project property than was necessary to acquire for its own purposes as the Licensee.

Article 7. The actual legitimate original cost of the project and of any addition thereto or betterment thereof, shall be determined by the Commission in accordance with the Federal Power Act and the Commission's Rules and Regulations thereunder.

Article 8. The Licensee shall install and thereafter maintain gages and stream-gaging stations for the purpose of determining the stage and flow of the stream or streams on which the project is located, the amount of water held in and withdrawn from storage, and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission or its authorized representative. The Commission reserves the right, after notice and opportunity for hearing, to require such alterations in the number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, as are necessary to secure adequate determinations. The installation of gages, the rating of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of the project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision, or cooperation for such periods as may mutually agreed upon. The Licensee shall keep accurate and sufficient records of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe.

Article 9. The Licensee shall, after notice and opportunity for hearing, install additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so.

Article 10. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission any direct in the

interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

Article 11. Whenever the Licensee is directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for such part of the annual charges for interest, maintenance, and depreciation thereof as the Commission shall determine to be equitable, and shall pay to the United States the cost of making such determination as fixed by the Commission. For benefits provided by a storage reservoir or other headwater improvement of the United States, the Licensee shall pay to the Commission the amounts for which it is billed from time to time for such headwater benefits and for the cost of making the determinations pursuant to the then current regulations of the Commission under the Federal Power Act.

Article 12. The United States specifically retains and safeguards the right to use water in such amount, to be determined by the Secretary of the Army, as may be necessary for the purposes of navigation on the navigable waterway affected; and the operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Secretary of the Army may prescribe in the interest of navigation, and as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Secretary of the Army may prescribe in the interest of navigation, or as the Commission may prescribe for the other purposes hereinbefore mentioned.

Article 13. On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission, after notice and opportunity for hearing, in the interests of comprehensive development of the waterway or waterways involved and the conservation and utilization of the water resources of the region for water supply or for the purposes of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation for use of its reservoir or other project properties or parts thereof for such purposes, to include at least full reimbursement for any damages or expenses which the joint use causes the Licensee to incur. Any such compensation shall be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant

possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot concurrently be submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

Article 14. In the construction or maintenance of the project works, the Licensee shall place and maintain suitable structures and devices to reduce to a reasonable degree the liability of contact between its transmission lines and telegraph, telephone and other signal wires or power transmission lines constructed prior to its transmission lines and not owned by the Licensee, and shall also place and maintain suitable structures and devices to reduce to a reasonable degree the liability of any structures or wires falling or obstructing traffic or endangering life. None of the provisions of this article are intended to relieve the Licensee from any responsibility or requirement which may be imposed by any other lawful authority for avoiding or eliminating inductive interference.

Article 15. The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance, and operation of such reasonable facilities, and comply with such reasonable modifications of the project structures and operation, as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing.

Article 16. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of the Licensee's lands and interests in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be reasonably prescribed by the Commission in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

Article 17. The Licensee shall construct, maintain, and operate, or shall arrange for the construction, maintenance, and operation of such reasonable recreational facilities, including modifications thereto, such as access roads, wharves, launching ramps, beaches, picnic and camping areas, sanitary facilities, and utilities, giving consideration to the needs of the physically handicapped, and shall comply with such reasonable modifications of the project, as may be prescribed hereafter by the Commission during the term of this license upon its own motion or upon the recommendation of the Secretary

of the Interior or other interested Federal or State agencies, after notice and opportunity for hearing.

Article 18. So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including fishing and hunting: Provided, That the Licensee may reserve from public access such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property.

Article 19. In the construction, maintenance, or operation of the project, the Licensee shall be responsible for, and shall take reasonable measures to prevent, soil erosion on lands adjacent to streams or other waters, stream sedimentation, and any form of water or air pollution. The Commission, upon request or upon its own motion, may order the Licensee to take such measures as the Commission finds to be necessary for these purposes, after notice and opportunity for hearing.

Article 20. The Licensee shall clear and keep clear to an adequate width lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the periphery of project reservoirs which may die during operations of the project shall be removed. All clearing of the lands and disposal of the unnecessary material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State, and local statutes and regulations.

Article 21. Material may be dredged or excavated from, or placed as fill in, project lands and/or waters only in the prosecution of work specifically authorized under the license; in the maintenance of the project; or after obtaining Commission approval, as appropriate. Any such material shall be removed and/or deposited in such manner as to reasonably preserve the environmental values of the project and so as not to interfere with traffic on land or water. Dredging and filling in a navigable water of the United States shall also be done to the satisfaction of the District Engineer, Department of the Army, in charge of the locality.

Article 22. Whenever the United States shall desire to construct, complete, or improve navigation facilities in connection with the project, the Licensee shall convey to the United States, free of cost, such of its lands and rights-of-way and such rights of passage through its dams or other structures, and shall permit such control of its pools, as may be required to complete and maintain such navigation facilities.

Article 23. The operation of any navigation facilities which may be constructed as a part of, or in connection with, any dam or diversion structure constituting a part of the project works shall at all times be controlled by such reasonable rules and regulations in the interest of navigation, including control of the level of the pool caused by such dam or diversion structure, as may be made from time to time by the Secretary of the Army.

Article 24. The Licensee shall furnish power free of cost to the United States for the operation and maintenance of navigation facilities in the vicinity of the project at the voltage and frequency required by such facilities and at a point adjacent thereto, whether said facilities are constructed by the Licensee or by the United States.

Article 25. The Licensee shall construct, maintain, and operate at its own expense such lights and other signals for the protection of navigation as may be directed by the Secretary of the Department in which the Coast Guard is operating.

Article 26. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and to take any such other action necessary to restore the project waters, lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the Commission's authorized representative, as appropriate, or to provide for the continued operation and maintenance of nonpower facilities and fulfill such other obligations under the license as the Commission may prescribe. In addition, the Commission in its discretion, after notice and opportunity for hearing, may also agree to the surrender of the license when the Commission, for the reasons recited herein, deems it to be the intent of the Licensee to surrender the license.

Article 27. The right of the Licensee and of its successors and assigns to use or occupy waters over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless the Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

Article 28. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

140 FERC ¶ 62,194
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Black Bear Hydro Partners, LLC

Project No. 2710-057

ORDER AMENDING LICENSE AND REVISING ANNUAL CHARGES

(Issued September 14, 2012)

1. On May 18, 2011, Black Bear Hydro Partners, LLC (licensee), filed an application to amend its license for the Orono Project (No. 2710) in order to construct a second powerhouse, raise the impoundment by 0.6 feet, and extend the license term of the project. In addition, the licensee proposes to construct a new downstream fish passage facility and relocate the existing upstream eel passage facility. The application was supplemented on October 7, 2011; January 20, 2012; March 7, 2012; March 14, 2012; and June 5, 8, and 21, 2012. The project is located on the Stillwater Branch of the Penobscot River in Penobscot County, Maine.

Background

2. The license for the Orono Project was issued December 8, 2005.¹ The project consists of: (a) an existing 1,178-foot-long by 15-foot-high dam including a 320-foot-long spillway topped with 2.4-foot-high flashboards; (b) an existing 2.3-mile-long reservoir, which has a surface area of 175 acres at the normal full pond elevation of 72.4 feet National Geodetic Vertical Datum (NGVD); (c) an 866-foot-long concrete penstock; (d) a powerhouse (Powerhouse A) containing four generating units with a total installed generating capacity of 2,780 kW; (e) three existing 325-foot-long, 2.4 kilovolt transmission lines; and (f) appurtenant facilities.

¹ See Order on Offer of Settlement and Issuing New License, 113 FERC ¶ 62,181. The license authorized three 800 to 900-foot-long, 10-foot-diameter penstocks and an installed capacity of 2.332 megawatts. As required by Article 305, the licensee filed revised exhibits to show as-built conditions on April 13, 2009. Although the as-built Exhibit F drawings were approved, the associated Exhibit A was overlooked and the project description and authorized installed capacity were never updated to show as-built project conditions. In this order we consider the as-built project to be existing conditions and revise the project description and annual charges accordingly.

Proposed Action

3. In June 2004, the licensee entered into the Lower Penobscot River Multi-Party Settlement Agreement (Settlement Agreement) with federal and state resource agencies, the Penobscot Indian Nation, several non-governmental organizations, and others. The Settlement Agreement stipulated that three projects within the Penobscot River basin would be decommissioned² and provided the opportunity to increase generation capacity at several other projects in the river basin to make up for the generation capacity lost in the decommissioning of the three projects. The licensee's proposed amendment at the Orono Project is based on the terms of the Settlement Agreement. The licensee simultaneously filed a similar application for a capacity amendment at the Stillwater Project (No. 2712) which is being addressed in a separate order issued today.

A. Proposed Facilities

4. The licensee proposes to construct a second 56-foot-long, 40-foot-wide, 60-foot-high reinforced concrete, corrugated tin, and beam and girder powerhouse enclosing three new 1,246 kW turbine/generator units. The new powerhouse (Powerhouse B) would be located within the existing bypassed reach about 420 feet downstream of the dam and be supplied by a 292-foot-long, 25-foot-wide, 12-foot-high concrete penstock including a surge chamber just upstream of the powerhouse. A new 84-foot-wide, 20-foot-high intake for the proposed powerhouse would be integrated into the existing intake and would share a single 156-foot-wide, 20-foot-high trashrack with 1 inch clear spacing. Powerhouse B would be connected to the distribution system near the existing powerhouse through a new 12.5 kilovolt, 600-foot-long overhead transmission line. The licensee would replace the existing downstream fish passage facility with a new facility that includes bottom and surface entrances and would accommodate a total flow of 153 cubic feet per second (cfs). Finally, the licensee plans to install an upstream trap-and-truck facility, required by ordering paragraphs (D) and (E) of the December 8, 2005 license, while modifying the Orono Project's intake.

B. Proposed Operations

5. The licensee proposes to raise the normal elevation of the Orono Project's reservoir by 0.6 feet, from an elevation of 72.4 to 73 feet NGVD by installing taller flashboards. The impoundment raise would increase the gross storage capacity by 105 acre-feet and would inundate about 4.4 additional acres. The designed failure point of the flashboards would remain at an impoundment elevation of 74.4 feet NGVD to maintain existing elevation conditions during high flows.

² See Order Accepting Surrender of Licenses with Dam Removal and Dismissing Applications for New Licenses, 131 FERC ¶ 62,238 (issued June 16, 2010).

6. The licensee proposes to operate the project in a run-of-river mode and to maintain the reservoir within one foot of the revised normal full pond elevation of 73 feet NGVD. The licensee would reallocate flows between the main stem of the Penobscot River and the Stillwater Branch through operation of its Milford Project (No. 2534), resulting in more water flowing through the Stillwater Branch in order to increase the power generation that would be realized by the proposed amendments at the Stillwater and Orono Projects. The flow reallocation is within the range of operations allowed by the current licenses for the Milford, Stillwater, and Orono Projects.

7. The licensee proposes to continue to maintain the minimum flow required by Article 401 of the license which is 200 cfs. Up to 153 cfs of the minimum flow requirement would be maintained via flow through fish passage facilities. The licensee states that the remainder would be provided through the flashboards or in a manner recommended by the resource agencies. High flows in excess of the hydraulic capacity of the project would spill over the existing flashboards that would be designed to fail when they are overtopped by 1.4 feet of water.

C. License Term Extension

8. As contemplated in the Settlement Agreement, the licensee also proposes to extend the term of the Orono Project license by 3 years so that it would expire in 2048.

D. Proposed Environmental Measures

9. The licensee proposes to construct and operate the project with the following environmental protection, mitigation, and enhancement measures: (1) develop and implement a soil erosion and sediment control plan; (2) develop and implement a blasting plan to address potential effects of construction on fish and aquatic species; (3) implement the Species Protection Plan for Atlantic salmon and the corresponding Atlantic Salmon Passage Study Plan filed June 8, 2012; (4) implement the Sturgeon Handling Plan filed March 7, 2012; (5) implement the Mussel Relocation Plan filed with the amendment application; (6) construct and operate a new downstream fish passage facility consisting of full-depth trashracks with 1-inch-clear spacing and a bypass adjacent to the intake for the proposed new powerhouse which would include surface and bottom entrances; and (7) relocate the upstream eel passage facility adjacent to the new powerhouse.

Consultation

10. Prior to filing its application with the Commission, the licensee consulted with the National Marine Fisheries Service (NMFS), the U.S. Fish and Wildlife Service (FWS), Bureau of Indian Affairs, U.S. Army Corps of Engineers, National Park Service, Penobscot Indian Nation, Maine Department of Environmental Protection (Maine DEP), Maine Department of Conservation, Maine State Historic Preservation Officer (Maine

SHPO), Maine Department of Marine Resources (Maine DMR), Maine Department of Inland Fisheries and Wildlife (Maine DIFW), Maine State Planning Office, Town of Orono, City of Old Town, Penobscot River Restoration Trust, Trout Unlimited, Atlantic Salmon Federation, The Nature Conservancy, Natural Resources Council of Maine, Maine Audubon Society, and American Rivers. The licensee provided these entities with copies of the draft application for comment on October 5, 2010. On October 26, 2010, the licensee held a meeting with the consulted parties to provide them with information and to answer any questions about the proposed amendments.

11. The licensee received comments on its draft application from NMFS, FWS, Penobscot Indian Nation, Maine SHPO, Maine DMR, Maine DEP, and Maine Department of Conservation. The licensee discussed the comments and study requests it received with these entities between October 2010 and April 2011, and addressed comments and recommendations in the final amendment application.

Public Notice and Environmental Assessment

12. On March 30, 2012, the Commission issued public notice that the amendment application was accepted for filing, that the project was ready for environmental analysis, and soliciting comments, recommendations, terms and conditions, and prescriptions. In response, notices of intervention were filed by the Department of the Interior, NMFS, Maine DMR, and Maine DIFW. Motions to intervene were filed by the Penobscot Indian Nation and Douglass H. Watts.³ Comments were filed by the Department of the Interior, NMFS, the Penobscot Indian Nation, the licensee, the Town of Orono, the City of Old Town, Maine Audubon, Trout Unlimited, American Rivers, The Nature Conservancy, the Penobscot River Restoration Trust, as well as several congresspersons. The majority of the commenters expressed support for the amendment application as being consistent with the Settlement Agreement. No entity opposed the licensee's proposed amendment application.

13. On July 25 and 26, 2012, Commission staff visited the projects and met with the licensee, FWS, NMFS, Penobscot Indian Nation, and the Penobscot River Restoration Trust. On July 9, 2012, Commission staff issued an Environmental Assessment (EA) for the proposed amendments at the Stillwater and Orono Projects. Comments on the EA were filed by NMFS, FWS, Maine DMR, and the licensee.

14. Both NMFS and FWS generally had concerns that some staff conclusions in the EA regarding fisheries resources were unsubstantiated due to a lack of information and ongoing concerns about fish passage effectiveness. NMFS and FWS stated that any conclusions regarding the effectiveness or adequacy of the fish passage facilities can only

³ Mr. Watts' late intervention was granted by notice issued June 15, 2012.

be made after effectiveness studies have been completed. Maine DMR stressed the importance of the monitoring studies to determine whether fish passage is effective.

15. NMFS commented that the results of the computational fluid dynamics modeling conducted by the licensee should be taken into account in the design of the fish passage facilities at the Orono Project. NMFS and Maine DMR state that the facilities need to provide a sweeping velocity and a better attraction flow field to enable fish to find the downstream passage entrance.

16. NMFS stated that the finding of no significant impact should be better documented in the analysis and that the EA should address the effects of climate change. NMFS also expressed other concerns regarding project operations and how the license would monitor run-of-river operations and minimum flow requirements.

17. In addition to its comments regarding fish passage, FWS stated that the licensee would have to consult with FWS for any required blasting in the tailrace.

18. In its comments on the EA, the licensee stated that the construction and operation of the upstream trap-and-truck facility is only required if three other projects within the basin have been acquired and removed or bypassed by the Penobscot River Restoration Trust per NMFS' section 18 fishway prescriptions included in the project's license. As all of these projects have not yet been removed or bypassed, the licensee stated that it is not yet required to install the trap-and-truck facility at this project and ongoing consultation regarding the final design of the upstream fish passage facility should not delay Commission action on the proposed amendment.

19. All comments, recommendations, and motions to intervene have been fully considered in determining whether, and under what conditions, to issue this amendment of license.

Water Quality Certification

20. Under section 401(a) of the Clean Water Act (CWA),⁴ the Commission may not authorize construction or operation of a hydroelectric project that may result in a discharge from the project unless the state water quality certifying agency either has issued water quality 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.⁵

⁴ 33 U.S.C. § 1341(a) (2006).

⁵ 33 U.S.C. § 1341(d) (2006).

21. On May 19, 2011, the licensee applied to the Maine DEP, under section 401 of the CWA, for a water quality certification for the proposed amendment. The Maine DEP issued an amended section 401 water quality certification which was filed with the Commission on August 23, 2011. The amended water quality certification is incorporated into the license by ordering paragraph (F) and attached to this order as Appendix A.

Threatened and Endangered Species

22. Section 7(a)(2) of the Endangered Species Act of 1973,⁶ requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species, or result in the destruction or adverse modification of their designated critical habitat. Listed species in the project area include: the Gulf of Maine Distinct Population Segment of Atlantic salmon; shortnose sturgeon; and Atlantic sturgeon.

23. On March 7, 2012, the licensee provided the Commission with its Biological Evaluation (BE) regarding the effects of the proposed amendment on these species. The licensee filed a revised BE on June 8, 2012, which included a revised Species Protection Plan and an Atlantic Salmon Passage Study Plan. The BE determined that the actions proposed at the Orono Project are likely to adversely affect Atlantic salmon due to the potential for causing injury or mortality to a small number of downstream migrating smolts. The BE concluded that the proposed Species Protection Plan and Atlantic Salmon Passage Study Plan would minimize any adverse impacts.

24. The BE also determined that the actions required at the Orono Project are likely to adversely affect shortnose and Atlantic sturgeon due to potential harassment associated with the handling and relocation of sturgeon collected at the trap-and-truck facility or when flows in the bypassed reach are reduced when flashboards are being reinstalled. The BE concluded that these effects would be minimized by the proposed Sturgeon Handling Plan.

25. By letter issued April 27, 2012, Commission staff adopted the licensee's BE as its biological assessment and requested that NMFS initiate formal consultation on the actions contained in the licensee's proposed amendment application. NMFS received the request and initiated formal consultation on May 3, 2012. In addition, on June 27, 2012, Commission staff forwarded the Atlantic Salmon Passage Study Plan to NMFS for inclusion in the formal consultation process.

⁶ 16 U.S.C. § 1536(a) (2006).

26. On August 31, 2012, NMFS filed its Biological Opinion (Opinion) for the proposed amendment application which concluded that the proposed actions in the amendment application may adversely affect but are not likely to jeopardize the continued existence of the Gulf of Maine Distinct Population Segment of Atlantic salmon, shortnose sturgeon, and Atlantic sturgeon. Furthermore, the Opinion concluded that the proposed action would not adversely modify or destroy critical habitat designated for Atlantic salmon. In its Opinion, NMFS issued an incidental take statement and included reasonable and prudent measures and terms and conditions to minimize and monitor incidental take of Atlantic salmon, shortnose sturgeon, and Atlantic sturgeon. The terms and conditions include measures regarding: construction activities; erosion and sedimentation control; fish salvage; reporting of interactions with endangered species; fish passage design; fish passage performance standards and effectiveness monitoring; and access to project facilities. The terms and conditions, as they pertain to the Orono Project, are incorporated into the license by ordering paragraph (G), attached to the license as Appendix B, and referenced in specific articles, where appropriate.

National Historic Preservation Act

27. Under section 106 of the National Historic Preservation Act,⁷ and its implementing regulations,⁸ federal agencies must take into account the effect of any proposed undertaking on properties listed or eligible for listing in the National Register of Historic Places (defined as historic properties) and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking. This generally requires the Commission to consult with the SHPO to determine whether and how a proposed action may affect historic properties, and to seek ways to avoid or minimize any adverse effects. In the event that Indian tribe properties are identified, section 106 requires that the Commission consult with any potentially interested Indian tribes that might attach religious or cultural significance to such properties.

28. The licensee consulted with the Maine SHPO and Penobscot Indian Nation and by letter dated October 13, 2010 (filed with the amendment application), the Maine SHPO stated that no historical or archeological properties would be affected by the proposed action. The Penobscot Indian Nation did not identify any concerns regarding historic properties in the project area.

29. Article 405 of the license contains a discovery provision. Although no cultural resources have been previously identified in the vicinity of the proposed project area,⁹ the

⁷ 16 U.S.C. § 470 (2006) *et seq.*

⁸ 36 C.F.R. Part 800 (2012).

⁹ *See* EA at 8 and 88-90.

potential does exist for the discovery of cultural resources during the proposed construction, operation, and maintenance activities. If a previously undiscovered cultural resource site is identified during construction, operation, and/or maintenance of the facilities, the licensee is reminded that it should immediately cease all work at the site and follow the provisions as set forth in Article 405.

Section 18 Fishway Prescriptions

30. Section 18 of the Federal Power Act (FPA)¹⁰ provides that the Commission shall require the construction, maintenance, and operation by a licensee of such fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce, as appropriate.

31. Ordering paragraph (E) of the December 8, 2005 Orono Project license requires the implementation of fishway prescriptions from NMFS and Interior which include: downstream passage of all fish species, upstream passage of American eel, and upstream passage for species other than American eel. These existing prescriptions would remain requirements of the license.

32. For the proposed amendment, NMFS and FWS, by letters filed May 23, 2012, and May 29, 2012, respectively, request that a reservation of authority to prescribe fishways under section 18 be included in any license amendment issued for the project. Consistent with Commission policy, existing Article 402 reserves the Commission's authority to require fishways that may be prescribed by the Secretaries of Interior or Commerce for the Orono Project in the future.

Magnuson-Stevens Fishery Conservation and Management Act

33. The Magnuson-Stevens Fishery Conservation and Management Act requires federal agencies to consult with NMFS on all actions that may adversely affect Essential Fish Habitat (EFH).

34. The licensee filed its assessment of effects on EFH on October 7, 2011. Commission staff concluded that amending the project licenses would not likely adversely affect EFH for Atlantic salmon. In comments filed August 8, 2012, NMFS stated that it disagrees with staff's conclusion because the construction and operation of the new powerhouse would result in adverse alteration of essential fish habitat; however, NMFS found that the proposed mitigation measures are sufficient and indicated that no further consultation is required.

¹⁰ 16 U.S.C. § 811 (2006).

Recommendations Pursuant to Section 10(j) of the FPA

35. Section 10(j) of the FPA¹¹ requires the Commission to include license conditions based upon recommendations of federal and state fish and wildlife agencies submitted pursuant to the Fish and Wildlife Coordination Act,¹² to "adequately and equitably protect, mitigate damages to, and enhance, fish and wildlife (including related spawning grounds and habitat)" affected by the project. In response to the Commission's March 30, 2012 notice, NMFS and Interior filed on May 23, 2012, and May 29, 2012, respectively, a total of six recommendations under section 10(j) of the FPA. These recommendations include: (1) operate the project run-of-river; (2) develop fish passage effectiveness plans; (3) provide for agency review of fishway design, effectiveness plans, and operation and maintenance plans; (4) provide project access to NMFS to monitor the construction and operation of fish passage facilities; (5) monitor flows in the Stillwater Branch of the Penobscot River; and (6) define the downstream migration seasons for various fish species. Of NMFS' and Interior's six recommendations, we consider the first two of them to fall within the scope of section 10(j). Recommendations (3) through (6) fall outside the scope of section 10(j) because they are not specific measures to protect, mitigate, or enhance fish and wildlife resources and, therefore, we consider them below under section 10(a) of the FPA.

36. NMFS and FWS recommend the project operate in run-of-river mode. Run-of-river operation is a condition of the amended water quality certification and, therefore, a condition of the license as incorporated by ordering paragraph (F).

37. NMFS and FWS recommend the licensee develop an upstream and downstream fish passage effectiveness plan at the project. Article 410 requires the license to revise and implement the proposed Species Protection Plan and Atlantic Salmon Passage Study Plan which include the monitoring and evaluation of the upstream and downstream fish passage effectiveness for Atlantic salmon (see discussion below). We also add Articles 411 and 412 which require the monitoring and evaluation of fish passage effectiveness for other species.

Recommendations Pursuant to Section 10(a) of the FPA

38. Section 10(a) of the FPA¹³ requires that any project for which the Commission issues a license shall be best adapted to a comprehensive plan for improving or

¹¹ 16 U.S.C. § 803(j) (2006).

¹² 16 U.S.C. §§ 661 (2006) *et seq.*

¹³ 16 U.S.C. § 803(a)(1) (2006).

developing a waterway or waterways for the use or benefit of interstate or foreign commerce; for the improvement and utilization of waterpower development; for the adequate protection, mitigation, and enhancement of fish and wildlife; and for other beneficial public uses, including irrigation, flood control, water supply, recreation, and other purposes.

39. The licensee's proposed environmental measures are described above. Below we discuss modifications to these measures as well as measures recommended by agencies, commenters, stakeholders, and Commission staff. We also address the four remaining recommendations made by NMFS under section 10(j) that are not specific measures to protect, mitigate damages to, or enhance fish and wildlife. These four recommendations are discussed and adopted in sections A, B, D, and F.

A. Agency Review of Plans

40. NMFS recommends the licensee allow at least 30 days for the resource agencies to review draft fishway designs, effectiveness plans, and operation and maintenance plans. This recommendation is implemented through the consultation specifications in each article requiring the particular plan.

B. Operation and Flow Compliance Monitoring

41. The proposed amendment would change the means by which the licensee complies with the operating requirements of the license. NMFS recommended that the licensee monitor flow in the Stillwater Branch of the Penobscot River. In addition, in NMFS' comments on the EA, questions arose regarding how the licensee would comply with the flow and operational requirements of the license during maintenance activities;¹⁴ requirements for reporting deviations from the flow and operational requirements; and how minimum flow volumes are calculated and/or verified. In the EA, Commission staff found that revising the Operation and Flow Compliance Monitoring Plan¹⁵ required by Article 401 would enable the Commission to determine compliance with license requirements.¹⁶ A revised plan would also address NMFS' recommendations and the

¹⁴ Staff notes that while the Water Quality Certification allows for the temporary modification of run-of-river operations during "approved maintenance activities," no such modification is permitted for the minimum flow requirement or fish passage flow requirements during the defined migration periods.

¹⁵ See Order Approving Operation and Flow Compliance Monitoring Plan Pursuant to Article 401, 117 FERC ¶ 62,004 (issued October 3, 2006).

¹⁶ See EA at 38-39.

concerns mentioned above. Consequently, ordering paragraph (E) amends Article 401 to require the licensee to file a revised Operation and Flow Compliance Monitoring Plan to replace the project's approved plan.

C. Dissolved Oxygen Monitoring

42. In the EA, Commission staff concluded that increasing the hydraulic capacity of the generating facilities at the Orono Project would reduce spill volumes (even with increased flow in the Stillwater Branch). Reduced spill volumes could contribute to dissolved oxygen (DO) concentrations downstream of the project being below the state water quality standards during the summer and early fall.¹⁷ Article 408 requires the licensee to develop and implement a plan to conduct DO monitoring downstream of the Orono Project for at least the first year of project operation under the amended license.

D. Final Design of Fish Passage

43. The licensee stated that final fish passage designs would be completed in consultation with the resource agencies and Penobscot Indian Nation. NMFS recommended that the downstream migration period be defined as April 1 to June 30 and November 1 to December 15 for Atlantic salmon, July 1 to December 31 for American shad and alewife, August to December 31 for blueback herring, and August 15 to November 15 (or other time periods determined when adequate information is available, and during spring runs that may occur) for American eel. In addition, the terms and conditions of NMFS' Opinion require the licensee to consult with NMFS on fish passage design plans at the 30, 60, and 90 percent design phases.

44. The fish migration periods recommended by NMFS are defined in license Article 406 and required by the existing Section 18 fishway prescriptions. The licensee does not propose any change to these migration periods.

45. Article 409 requires the licensee to finalize the design of the downstream fishway and upstream trap and truck facilities in consultation with NMFS, FWS, Maine DMR, Maine DIFW, and Penobscot Indian Nation on fish passage design plans at the 30, 60, and 90 percent design phases. In addition we require the licensee to finalize the fish passage facilities design in consultation with these entities and allow them a minimum of 30 days to review and comment prior to filing the final designs for Commission approval.

46. Article 409 also requires the licensee to provide a report on the computational fluid dynamics modeling that was conducted to agencies within 30 days from the date of this order. The licensee's final design should be based on the results of the modeling and

¹⁷ See EA at 39-42.

consider alternative measures to improve flow velocities and attraction to the downstream bypass as recommended by NMFS and Maine DMR.

47. In its comments on the EA, the licensee stated that the construction of the upstream trap-and-truck facility is not yet required. Because the facility would be integrated into the intake of Powerhouse B, and is a measure to protect and mitigate impacts of the new and existing powerhouses on fisheries resources, we are requiring the licensee to construct the facility so that it is operational beginning the first upstream passage season following commencement of operation of Powerhouse B.

E. Fish Passage Effectiveness

48. Many of the comments on Commission staff's EA stressed the importance of monitoring and evaluating the effectiveness of the fish passage facilities to ensure the safe and effective passage of fish at the project. In addition, the terms and conditions of the Opinion require certain measures regarding fish passage effectiveness.

49. Conditions of the Water Quality Certification and existing fishway prescriptions (incorporated into the December 8, 2005 license by ordering paragraphs (D) and (E) respectively) require the licensee to file a plan to monitor the effectiveness of the required fish passage facilities and flows. The plan must be developed in consultation with the resource agencies and Penobscot Indian Nation.

50. The Species Protection Plan and corresponding Atlantic Salmon Passage Study Plan, filed June 8, 2012, were proposed by the licensee to establish performance standards for fish passage facilities and to monitor and evaluate the effectiveness of fish passage facilities with respect to Atlantic salmon. The proposed plans are inconsistent with several terms and conditions of the Opinion including the requirements to (1) develop a plan to study downstream kelt passage for three years and (2) meet the fish passage performance standards on an annual basis (rather than on an average of three years as proposed by the licensee). Therefore, we are adding Article 410¹⁸ to the license to require the licensee to revise the above plans to incorporate the terms and conditions of the Opinion. The plans should be revised in consultation with the resource agencies and Penobscot Indian Nation and filed for Commission approval.

¹⁸ On March 7, 2012, the licensee filed proposed license articles which correspond to the provisions of the Species Protection Plan. We note that an article requiring the implementation of the plan serves the same purpose as the proposed articles; in addition, we are requiring the licensee to revise the plans. Therefore, we are not including the proposed articles in this order.

51. In addition, we add Article 411 to require the licensee to file a plan to monitor the effectiveness of the new fishways for diadromous species other than Atlantic salmon.

52. In the EA, Commission staff concluded that the proposed new powerhouse would change the location of the existing upstream eel passage facility and has the potential to change the location where upstream migrating eels would congregate.¹⁹ Therefore, we add Article 412 to require the licensee to develop an Eel Passage Location Study Plan, in consultation with the resource agencies and the Penobscot Indian Nation, to study and verify where eels are congregating in order to locate the new upstream eel passage facility and ensure successful upstream passage. Article 412 also requires the licensee to develop a plan for the design, location, and operation of the fishway based on the results of the location monitoring. In addition, Article 412 requires the licensee to revise the approved American Eel Upstream Assessment Plan,²⁰ as it pertains to the Orono Project, in order to evaluate the effectiveness of the upstream American eel passage facility.

F. Project Access

53. The NMFS also recommends that one of its engineers be allowed access to monitor the construction of fish passage facilities. This is being implemented through Article 413.

G. Bald Eagles

54. In the EA, Commission staff concluded that there are bald eagles that use habitat and are nesting in the project area and therefore, could be harmed (electrocuted) by the proposed new transmission lines.²¹ Article 414 requires the licensee to construct new transmission lines in accordance with Avian Power Line Interaction Committee guidelines in order to minimize raptor electrocutions.

H. Revegetate following Construction

55. Because much of the construction would take place along previously disturbed areas or areas used in construction would become permanent project features, the licensee does not anticipate the need to revegetate any areas following construction. However, in the EA, Commission staff concluded that the disturbance caused by construction activities could create ideal conditions for the colonization and spread of invasive plant

¹⁹ See EA at 57-58.

²⁰ See Order Approving American eel Upstream Assessment Plan under Articles 408, 409, 46 and Paragraph (E), 125 FERC ¶ 62,060, (issued October 16, 2008).

²¹ See EA at 77-78.

species. Staff concluded that measures should be taken to prevent the introduction and spread of invasive species in areas disturbed by construction activities. Article 416 requires the licensee to develop and implement a plan to prevent the spread of invasive species and, if necessary, to revegetate disturbed areas with native species. The plan should be developed in consultation with Maine DIFW and Maine Department of Conservation and filed with the Commission prior to commencing construction activities.

I. Sensitive Species Protection

56. In the EA, Commission staff concluded that a state-listed species of concern, the hyssop-leaved fleabane, occurs in the project area and has the potential to be adversely impacted during construction.²² Article 417 requires the licensee to develop a Sensitive Species Protection Plan to protect these plants.

J. Blasting Plan

57. The licensee proposes to develop and implement a blasting plan in order to avoid and minimize the potential effects of construction on fish and wildlife resources. However, the licensee did not indicate whether it would consult with the resource agencies while developing the plan. Article 306 requires the licensee to consult with Maine DIFW, Maine Department of Conservation, and FWS in the preparation of a blasting plan to avoid or minimize any adverse impacts to fish and wildlife resources, including bald eagles.

K. Fish Salvage during Construction

58. In the EA, Commission staff concluded that fish could potentially become trapped and stranded within the cofferdams and dewatered areas during construction.²³ In addition, the terms and conditions of NMFS' Opinion require the licensee to consult with NMFS regarding fish salvage prior to commencing construction. Article 415 requires the licensee to develop a Fish Salvage Plan to be implemented during construction activities. Cofferdam construction or dewatering of areas should not begin until the plan is filed with the Commission.

L. Sturgeon Handling Plan

59. The licensee filed a Sturgeon Handling Plan on March 7, 2012, which includes measures for the handling of any sturgeon that are found in the trap-and-truck facility. Ordering paragraph (I) approves the plan and requires the licensee to incorporate the

²² See EA at 75-76.

²³ See EA at 48.

relevant incidental take terms and conditions of the Biological Opinion. In addition, the licensee is required to file the annual reports described in the plan with the Commission by December 31 of each year.

M. Mussel Relocation Plan

60. The licensee filed a Mussel Relocation Plan with its application to detail methods for the salvage and relocation of mussels found in dewatered areas. Ordering paragraph (J) approves this plan and requires its implementation.

Other Issues

61. Most of the comments received in response to the EA are resolved in the requirements and discussion above. Outstanding comments are addressed in this section.

62. NMFS and FWS state that absent monitoring results, it is unclear how staff can conclude (in the EA) that the fish passage facilities would ensure minimal delay, mortality, or other adverse effects to fisheries as a result of the proposed amendments. While staff agrees that the rate of mortality, delay, passage, etc, would not be fully known until monitoring and effectiveness studies are complete, the license and this order require these facilities to be effective. If the studies identify that these facilities are not effective, the license and this order require the licensee, in consultation with the resource agencies and Penobscot Indian Nation, to determine what actions are necessary to remedy the issue. Therefore, staff can reasonably conclude that the facilities and associated requirements to monitor the effectiveness and to take action if facilities are found to be ineffective would ensure that these facilities minimize fisheries-related impacts of the project.

63. NMFS states that the EA should address climate change effects and specifically how flow allocations and water temperature may be affected by these changes and any implications for fish passage. Attempting to predict future flow scenarios that may occur due to climate change would be too speculative given the state of the science at this time. The licensee is required to maintain certain minimum flows and fish passage flows and develop a plan to monitor those flows. The plan must include a provision to timely report any deviation from those flows to the resource agencies and the Commission. In addition, the licensee is required to monitor fish passage effectiveness over the life of the license. If there is a future need to modify project operations or facilities to accommodate changes to the flow regime or fish passage facilities because of climate change or other factors, it would be identified in the context of these requirements and the licensee would be required to file an application to amend the project license to modify any approved project facilities or operations.

Comprehensive Plans

64. Section 10(a)(2)(A)²⁴ of the FPA requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving waterways affected by the project.²⁵ Five plans address resources relevant to the Orono Project.²⁶ No conflicts were found.

Applicant's Plans and Capabilities

A. Conservation Efforts

65. Section 10(a)(2)(C) of the FPA requires the Commission to consider the electricity consumption improvement program of the applicant, including its plans, performance, and capabilities for encouraging or assisting its customers to conserve electricity cost effectively, taking into account the published policies, restriction, and requirements of state regulatory authorities.

66. The licensee is an independent power producer, not an electric utility, and, as such, is not required to address the energy efficiency improvement programs as required by Section 10(a)(2) of the FPA.

B. Safe Management, Operation, and Maintenance of the Project

67. Commission staff has reviewed the licensee's management, operation and maintenance of the Orono Project pursuant to the requirements of 18 C.F.R. Part 12 of the Commission's regulations and the Commission's Engineering Guidelines and periodic Independent Consultant Safety Inspection Reports. We have determined that the proposed amendment should not prevent the licensee from safely managing, operating, and maintaining the project.

Project Economics

68. In determining whether to grant the license amendment, which would increase the project's total installed capacity, the Commission considers a number of public interest factors, including the economic benefits of project power. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead*

²⁴ 16 U.S.C. § 803(a)(2)(A) (2006).

²⁵ Comprehensive plans for this purpose are defined at 18 C.F.R. § 2.19 (2012).

²⁶ See EA at 104 for a list of relevant comprehensive plans.

Corporation,²⁷ the Commission uses current costs to compare the costs of the project and likely alternative power with no forecasts concerning potential future inflation, escalation, or deflation beyond the license amendment issuance date. The basic purpose of the Commission's economic analysis is to provide a general estimate of the potential power benefits and the costs of a project, and of reasonable alternatives to project power. The estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license amendment.

69. Commission staff applied this analysis to the proposed Orono amendment. The proposed changes would result in an increase in annual generation of approximately 32,000 megawatt-hours (MWh). When the estimate of average annual generation increase is multiplied by the regional estimated alternative energy value of \$35.68/MWh, the total value of the Orono Project's additional energy would be \$1,728,970 annually. As proposed by the licensee with staff recommended measures and mandatory conditions, the levelized annual cost of implementing the proposed actions would be \$1,653,050.²⁸ To determine whether the proposal is economically beneficial, the cost of the proposal is subtracted from the value of the energy gains. Therefore, the benefit of the licensee's proposal, including total capital costs and generation benefits, would be approximately \$75,920 annually.

Comprehensive Development

70. Sections 4(e) and 10(a)(1) of the FPA,²⁹ require the Commission to give equal consideration to power development purposes and to the purposes of energy conservation, the protection, mitigation of damage to, and enhancement of fish and wildlife, the protection of recreational opportunities, and the preservation of other aspects of environmental quality. Any license issued shall be such as in the Commission's judgment would be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. The decision to issue this license amendment, and the terms and conditions included herein, reflect such consideration.

71. The EA for the licensee's proposal contains background information, analysis of impacts, and support for related license articles. The project would be safe if operated and maintained in accordance with the requirements of the license.

²⁷ 72 FERC ¶ 61,027 (1995).

²⁸ Assuming a 20 year financing period with an interest rate of six percent.

²⁹ 16 U.S.C. §§ 797(e) and 803(a)(1) (2006).

72. Based on staff's independent review and evaluation of the project, recommendations from resource agencies, and the no-action alternative, as documented in the EA, we have selected the licensee's proposal, with the staff-recommended measures, and find that it is best adapted to a comprehensive plan for improving or developing the Penobscot River.

73. We selected this alternative because: (1) issuance of the amendment would serve to maintain a beneficial and dependable source of electric energy; (2) the project with an increased installed capacity of 3,738 kW, would eliminate the need for an equivalent amount of fossil fuel produced energy and capacity, which helps conserve these nonrenewable resources and decreases atmospheric pollution; and (3) the proposed and staff-recommended environmental measures would protect project resources.

Administrative Conditions

A. Annual Charges

74. The licensee proposes to increase the installed capacity at the Orono Project by 3,738 kW. The Commission collects annual charges from licensees for administration of Part I of the FPA. These charges are based on the project's authorized installed capacity and the amendment of such requires the revision of the project's annual charges under Article 201 in each license. In accordance with 18 C.F.R section 11.1(c)(5) of the Commission's regulations, the assessments of annual charges for the additional capacity starts on the date of commencement of construction of such capacity. As such, Article 310 requires the licensee to file a report stating the date of commencement of construction of the authorized additional capacity.

B. Project Description

75. The licensee submitted, with its May 18, 2011 amendment application, a revised Exhibit A that describes the project. The revised Exhibit A conforms to the Commission's rules and regulations and is approved in ordering paragraph (H).

C. Exhibit Drawings

76. The Commission requires licensees to file sets of approved project drawings on microfilm and in electronic file format. The licensee included two revised and five new Exhibit F drawings with the amendment application. These drawings show the proposed powerhouse, intake, penstock, and fish passage facilities. Staff has reviewed these Exhibit F drawings and determined that they conform to the Commission's regulations and will be approved by ordering paragraph (K). Article 206 will require the licensee to file the approved drawings in electronic and aperture card format.

77. The licensee did not submit a revised Exhibit G drawing with the application as it determined it to be unnecessary because the project boundary was not changing. However, the Commission's regulations state an Exhibit G must show the relative locations and physical interrelationships of principal project works and other features described in the Exhibit A. The proposed powerhouse and associated structures are principal project works, described in the Exhibit A, and should accordingly be shown on the Exhibit G drawings. Therefore, Article 207 will require the licensee to file, for Commission approval, a revised Exhibit G drawing(s) showing the proposed structures.

78. In addition, Article 308 requires the licensee to submit as-built Exhibits A, F and G, as appropriate, to reflect the construction of the facilities approved in this order, within 90 days following the completion of construction activities.

D. Review of Final Plans and Specifications

79. Article 306 requires the licensee to provide the Commission's Division of Dam Safety & Inspections-New York Regional Office (D2SI-NYRO) with final contract drawings and specifications – together with a supporting design report consistent with the Commission's engineering guidelines. Article 307 requires the licensee to provide the Commission's D2SI-NYRO with cofferdam construction drawings. Article 309 requires the licensee to notify the Commission's D2SI-NYRO as soon as possible if changes to project facilities or operations are being proposed as a result of environmental requirements.

E. License Term

80. Section 15(e) of the FPA³⁰ provides that a license should be issued for a term that the Commission determines to be in the public interest, but not less than 30 years or more than 50 years. The Commission's general policy is to establish 30-year terms for projects with little or no redevelopment, new construction, or environmental mitigation and enhancement measures; 40-year terms for projects with a moderate amount of such activities; and 50-year terms for projects with extensive measures.

81. A new license was issued for the Orono Project on December 8, 2005, for a period of 40 years because it required a moderate amount of construction and environmental measures. In its application, the licensee proposes to extend the term of the Orono Project license by 3 years so that it would expire in 2048. Adding 3 years to the license term would result in a total license term of 43 years. As described above, the proposed amendment constitutes significant construction and environmental measures.

³⁰ 16 U.S.C. § 808(e).

82. In addition, a 3-year extension will serve to coordinate the expiration of this license with the expiration of the Stillwater Project license. This is consistent with Commission policy regarding the coordination of expiration dates of licenses of projects located in the same river basin.³¹ Coordination of the expiration dates of the Stillwater and Orono Projects will make it possible to maximize future consideration of cumulative impacts of the two projects at the time of license expiration. Therefore, the license term is being extended by 3 years.

Conclusion

83. Commission staff concludes that the proposed amendment for the Orono Project, with the mitigation measures required by this order, would not constitute a major federal action significantly affecting the quality of the human environment. Therefore, the amendment application will be granted, as considered herein.

The Director orders:

(A) The license for the Orono Project No. 2710 is amended as provided by this order, effective the day this order is issued.

(B) The term of the license for the Orono Project No. 2710 is extended to March 31, 2048.

(C) Ordering paragraph (B) of the license is revised, in part, to read as follows:

(2) Project works consisting of: (1) an existing 1,178-foot-long by 15-foot-high dam including a 320-foot-long spillway topped with 3-foot-high flashboards; (2) an existing 2.3-mile-long reservoir, which has a surface area of 180 acres at the normal full pond elevation of 73 feet National Geodetic Vertical Datum; (3) one 866-foot-long, 20-foot-wide, 12-foot-high concrete penstock supplying water to Powerhouse A; (4) one 292-foot-long, 25-foot-wide, 12-foot-high concrete penstock supplying water to Powerhouse B; (5) Powerhouse A containing four generating units with a total installed generating capacity of 2,780 kW; (6) Powerhouse B containing three generating units with a total installed capacity of 3,738 kW (7) three 325-foot-long, 2.4-kilovolt and one 600-foot-long, 12.5-kilovolt transmission lines; and (6) appurtenant facilities.

(D) Article 201 of the license is revised to read as follows:

The licensee shall pay the United States the following annual charges, effective the first day of the month in which the license is issued, and as determined in accordance with provisions of the Commission's regulations in effect from time to time, for the

³¹ 18 C.F.R. § 2.23.

purpose of reimbursing the United States for the cost of administration of Part I of the Federal Power Act. The authorized installed capacity for that purpose is as follows:

- a. 2,780 kilowatts based upon the currently existing capacity.
- b. 6,518 kilowatts upon commencement of construction of the additional capacity authorized in this order.

(E) Article 401 is deleted and replaced in its entirety with the following:

Article 401. Operation and Flow Compliance Monitoring Plan. Within 9 months of issuance of this order, the licensee shall file, for Commission approval, a revised Operation and Flow Compliance Monitoring Plan to replace the existing approved plan. The Operation and Flow Compliance Monitoring Plan shall be developed in consultation with the National Marine Fisheries Service, U.S. Fish and Wildlife Service, Penobscot Indian Nation, Maine Department of Inland Fisheries and Wildlife, Maine Department of Marine Resources, and Maine Department of Environmental Protection.

The plan shall include the following: (1) a detailed description of how the impoundment level, minimum flows, generation flows, and inflows will be measured or calculated in order to comply with the requirements of the license; (2) a maintenance plan to ensure that the methods remain accurate over time; (3) a provision to make flow and impoundment elevation data publicly available; (4) a description of how minimum flows will be maintained at all times and at all impoundment elevations; (5) a description of how fish passage flows will be provided during the passage seasons and at all impoundment elevations; (6) a list and description of maintenance activities which may result in the temporary modification of run-of-river operation, including estimates for the timing, frequency and duration that these activities occur; (7) a provision to notify the Commission, resource agencies, and Penobscot Indian Nation when deviations from license requirements occur; and (8) a provision to provide reports and data to the resource agencies and the Penobscot Indian Nation, the level of detail and timing/frequency of reporting to be determined in consultation with these entities.

Following the development of the plan in consultation with the resource agencies and Penobscot Indian Nation, the licensee shall provide a copy of the proposed plan to these entities and allow them a minimum of 30 days to review and comment on the plan. The final plan filed with the Commission shall include documentation of consultation including copies of any comments received. The licensee shall address all comments and recommendations in its filing. If the licensee does not adopt a recommendation from the resource agencies or Penobscot Indian Nation, the licensee shall include its reasons based on project-specific information. The Commission reserves the right to make changes to the plan in order to ensure compliance with license requirements and protect environmental resources.

The licensee shall continue to implement the approved Operation and Flow Compliance Monitoring Plan until the revised plan is approved by the Commission.

(F) The license shall be subject to the conditions submitted on August 23, 2011, by the Maine Department of Environmental Protection under section 401(a)(1) of the Clean Water Act, 33 U.S.C. §1431(a)(1) (2006), as those conditions are set forth in Appendix A to this order.

(G) The license shall be subject to the incidental take terms and conditions of the Biological Opinion, filed on August 31, 2012, as they pertain to the Orono Project, submitted by the National Marine Fisheries Service under section 7 of the Endangered Species Act, as those conditions are set forth in Appendix B to this order.

(H) The Exhibit A filed with the amendment application on May 18, 2011, superseding the previous Exhibit A, is approved and made part of the license.

(I) The licensee shall implement the Sturgeon Handling Plan, filed March 7, 2012, incorporating the relevant incidental take terms and conditions of the Biological Opinion. The licensee shall file the annual reports described in the plan and required by the Biological Opinion, with the Commission by December 31 of each year.

(J) The licensee's Mussel Relocation Plan, filed with the amendment application on May 18, 2011, is approved and shall be implemented upon commencement of construction.

(K) The following exhibit drawings filed on May 18, 2011, for the Orono Project conform to the Commission's rules and regulations and are approved and made part of the license. The superseded drawings are deleted from the license.

EXHIBIT	FERC DRAWING No.	SUPERSEDED FERC DRAWING No.	FERC DRAWING TITLE
F-1A	P-2710-1010	P-2710-1009	General Plan
F-1B	P-2710-1011	P-2710-1009	Dam Sections
F-4	P-2710-1012	---	Penstock B Plan and Profile
F-5	P-2710-1013	---	New Intake Plan
F-6	P-2710-1014	---	New Intake Section (Looking West)
F-7	P-2710-1015	---	New Intake Section (Looking East)
F-8	P-2710-1016	---	Powerhouse Mill B Plan and Section

(L) The license is subject to the following additional articles:

Article 206. Approved Exhibit Drawings. Within 45 days of the date of issuance of this order, the licensee shall file the approved exhibit drawings in aperture card and electronic file formats.

- a) Three sets of the approved exhibit drawings shall be reproduced on silver or gelatin 35mm microfilm. All microfilm shall be mounted on type D (3-1/4" x 7-3/8") aperture cards. Prior to microfilming, the FERC Project-Drawing Number (i.e., P-2710-1010, etc) shall be shown in the margin below the title block of the approved drawings. After mounting, the FERC Drawing Number shall be typed on the upper right corner of each aperture card. Additionally, the Project Number, FERC Exhibit (i.e., F-1A etc.), Drawing Title, and date of this order shall be typed on the upper left corner of each aperture card (See Figure 1).

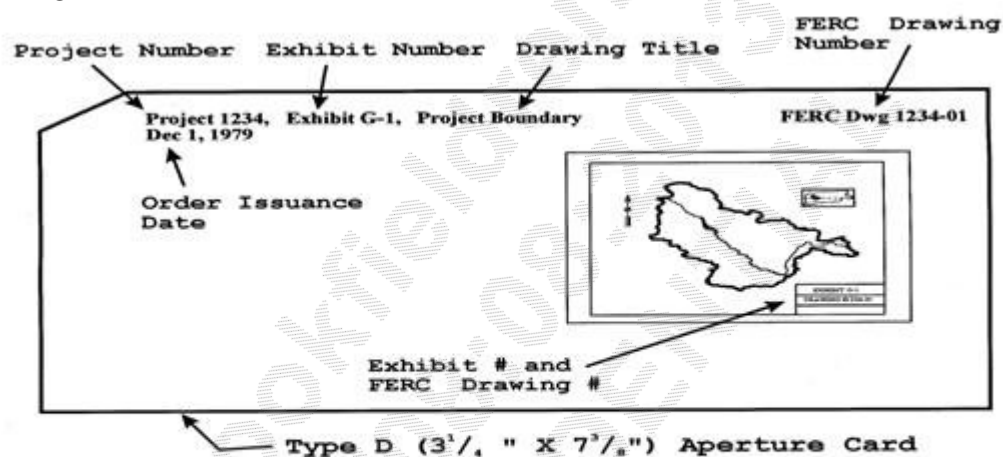


Figure 1 Sample Aperture Card Format

Two of the sets of aperture cards shall be filed with the Secretary of the Commission, ATTN: OEP/DHAC. The third set shall be filed with the Commission's Division of Dam Safety and Inspections New York Regional Office.

- b) The licensee shall file two separate sets of exhibit drawings in electronic raster format with the Secretary of the Commission, ATTN: OEP/DHAC. A third set shall be filed with the Commission's Division of Dam Safety and Inspections New York Regional Office. Exhibit F drawings must be identified as Critical Energy Infrastructure Information material under 18 C.F.R. § 388.113(c)(2012). Each drawing must be a separate electronic file, and the file name shall include: FERC Project-Drawing Number, FERC Exhibit, Drawing Title, date of this order, and file extension in the following format [2710-1010, F-1A, General Plan, MM-DD-YYYY.TIF]. Electronic drawings shall meet the following format specification:

IMAGERY - black & white raster file
FILE TYPE – Tagged Image File Format, (TIFF) CCITT Group 4
RESOLUTION – 300 dpi desired, (200 dpi min)
DRAWING SIZE FORMAT – 24” x 36” (min), 28” x 40” (max)
FILE SIZE – less than 1 MB desired

Article 207. Revised Exhibit G Drawings. Within 60 days of the date of this order, the licensee shall file, for Commission approval, revised Exhibit G drawings showing all principal project works. The drawings must conform to 18 C.F.R. §§ 3.39 and 4.41(h).

Article 306. Contract Plans and Specifications. At least 60 days prior to start of construction, the licensee shall submit one copy of its final contract plans and specifications and supporting design report to the Commission's Division of Dam Safety and Inspections (D2SI) – New York Regional Engineer, and two copies to the Commission (one of these shall be a courtesy copy to the Director, D2SI). The submittal must also include as part of preconstruction requirements: a Quality Control and Inspection Program, Temporary Construction Emergency Action Plan, Soil Erosion and Sediment Control Plan, and Blasting Plan. The Soil Erosion and Sediment Control Plan shall be in compliance with the terms and conditions of the Water Quality Certification and the Biological Opinion. The licensee shall develop the Blasting Plan in consultation and cooperation with the Maine Department of Inland Fisheries and Wildlife, Maine Department of Conservation, and the U.S. Fish and Wildlife Service. The plan shall include measures to avoid or minimize any adverse impacts to fish and wildlife resources, including bald eagles. Following the development of the Blasting Plan in consultation and cooperation with the resource agencies, the licensee shall provide a copy of the proposed plan to these entities and allow them a minimum of 30 days to review and comment on the plan. The final plan shall be filed with the Commission and must include documentation of consultation including copies of any comments received. The licensee may not begin construction until the D2SI – New York Regional Engineer has reviewed and commented on the plans and specifications, determined that all preconstruction requirements have been satisfied, and authorized start of construction.

Article 307. Cofferdam Construction Drawings and Deep Excavations. Before starting construction, the licensee shall review and approve the design of contractor-designed cofferdams and deep excavations and shall make sure construction of cofferdams and deep excavations is consistent with the approved design. At least 30 days before starting construction of the cofferdam, the licensee shall submit one copy to the Commission's Division of Dam Safety and Inspections (D2SI) - New York Regional Engineer and two copies to the Commission (one of these copies shall be a courtesy copy to the Commission's Director, D2SI), of the approved cofferdam construction drawings and specifications and the letters of approval.

Article 308. As-Built Drawings. Within 90 days of completion of all construction activities authorized by this license, the licensee shall file for Commission approval, revised exhibits A, F, and G, as applicable, to describe and show those project facilities as built. A courtesy copy shall be filed with the Commission's Division of Dam Safety and Inspections (D2SI) – New York Regional Engineer; the Director, D2SI; and the Director, Division of Hydropower Administration and Compliance.

Article 309. Project Modification Resulting From Environmental Requirements. The planning and design of any permanent or temporary modification which may affect the project works or operations shall be coordinated as early as feasible with the Commission's Division Dam Safety and Inspections New York Regional Office (D2SI-NYRO). This includes those modifications resulting from license environmental requirements. The licensee shall notify the D2SI-NYRO of the proposed modification at the beginning of the planning and design phase. This schedule is to allow sufficient review time for the Commission to insure that the proposed work does not adversely affect the project works, dam safety or project operation.

Article 310. Commencement of Construction of Additional Capacity. The licensee shall file a report stating the date of commencement of construction of the additional authorized capacity, within 90 days of such date. Such commencement date will be the effective date for the annual charges under license Article 201b.

Article 408. Dissolved Oxygen Monitoring Plan. Within 1 year of issuance of this order, the licensee shall file, for Commission approval, a Dissolved Oxygen Monitoring Plan. The licensee shall develop the plan in consultation and cooperation with the National Marine Fisheries Service, U.S. Fish and Wildlife Service, Penobscot Indian Nation, Maine Department of Inland Fisheries and Wildlife, Maine Department of Marine Resources, and Maine Department of Environmental Protection. The plan shall include, but is not limited to, the following: (1) a provision to monitor dissolved oxygen concentrations downstream of the Orono Project from June 1 through September 30 for at least the first year of operation of the new powerhouse; (2) a description of the monitoring location(s) and equipment to be used; and (3) a schedule for providing the data and a report to the resource agencies and the Commission. If the monitoring results indicate that dissolved oxygen standards are not being met, the report shall include measures for addressing low dissolved oxygen conditions.

Following the development of the plan in consultation with the resource agencies and Penobscot Indian Nation, the licensee shall provide a copy of the proposed plan to these entities and allow them a minimum of 30 days to review and comment on the plan. The final plan filed with the Commission shall include documentation of consultation including copies of any comments received. The licensee shall address all comments and recommendations in its filing. If the licensee does not adopt a recommendation from the resource agencies or Penobscot Indian Nation, the licensee shall include its reasons based

on project-specific information. The Commission reserves the right to make changes to the plan in order to ensure compliance with license requirements and to protect environmental resources.

Article 409. Fish Passage Design. The licensee shall construct and operate a new downstream fishway integrated into the new combined intake for the two powerhouses. The licensee shall operate the fishway during the migration seasons defined in the section 18 fishway prescriptions incorporated into the license by ordering paragraph (E) of the December 8, 2005 license order. The licensee shall construct the trap-and-truck facility, required by the section 18 fishway prescriptions and water quality certificate concurrently with the new powerhouse such that both fishways are operational beginning the first passage season following commencement of operation of Powerhouse B. The licensee shall prepare the design and operations and maintenance plan of the new downstream fishway and the trap-and-truck facility in consultation and cooperation with the National Marine Fisheries Service, U.S. Fish and Wildlife Service, Penobscot Indian Nation, Maine Department of Inland Fisheries and Wildlife, and Maine Department of Marine Resources.

Within 30 days of issuance of this order, the licensee shall provide a report on the computational fluid dynamics modeling to the consulted entities and the Commission. The licensee's final fish passage designs shall take into consideration the results of the modeling and consider alternative measures to improve flow velocities and attraction to the downstream bypass as recommended by the National Marine Fisheries Service and Maine Department of Marine Resources.

Within 4 months of issuance of this order, the licensee shall file, for Commission approval: (1) detailed design drawings for the downstream fishway and trap-and-truck facility; (2) a schedule for installing the facilities so that they are operational during the first passage season that the new powerhouse is operational; and (3) procedures for operating and maintaining the facilities.

The licensee shall consult with the entities identified above at the 30, 60, and 90 percent design phases. After developing the design, schedule, and operations and maintenance procedures in consultation with the resource agencies and Penobscot Indian Nation, the licensee shall provide a copy of the final design, schedule, and operations and maintenance procedures to these entities and allow a minimum of 30 days to review and comment. The final design drawings, schedule, and operations and maintenance procedures filed with the Commission shall include documentation of consultation including the modeling report and copies of any comments received. The licensee shall address all comments and recommendations in its filing. If the licensee does not adopt a recommendation from the resource agencies or Penobscot Indian Nation, the licensee shall include its reasons based on project-specific information. The Commission reserves

the right to make changes to the proposed facilities and schedule in order to ensure compliance with license requirements and protect environmental resources.

The licensee shall not commence construction of the fish passage facilities until the designs have been approved by the Commission. The licensee shall make any modification to constructed facilities required by the approved designs.

Article 410. Species Protection Plan. Within 1 year of issuance of this order, the licensee shall file, for Commission approval, a revised Species Protection Plan, including the Atlantic Salmon Passage Study Plan. The revised plan shall incorporate the terms and conditions of the National Marine Fisheries Service's Biological Opinion and include a schedule for providing data and reports to the consulted entities. The plan shall be revised in consultation with the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, the Penobscot Indian Nation, the Maine Department of Inland Fisheries and Wildlife, and the Maine Department of Marine Resources.

Following the revision of the plan in consultation with the resource agencies and Penobscot Indian Nation, the licensee shall provide a copy of the proposed plan to these entities and allow them a minimum of 30 days to review and comment on the plan. The final plan filed with the Commission shall include documentation of consultation including copies of any comments received. The licensee shall address all comments and recommendations in its filing. If the licensee does not adopt a recommendation from the resource agencies or Penobscot Indian Nation, the licensee shall include its reasons based on project-specific information. The Commission reserves its authority to require the licensee to modify the plan, project structures, or operations in order to protect and enhance aquatic resources.

Article 411. Fish Passage Effectiveness Plan. Within 1 year of issuance of this order, the licensee shall file, for Commission approval, a plan to monitor and evaluate the effectiveness of the fish passage facilities and flows required by Article 409 for the following species: American shad, alewife, blueback herring, and American eel. The results of these monitoring studies shall provide a basis for recommending future structural or operational changes at the project.

The plan shall be developed in consultation and cooperation with the U.S. Fish and Wildlife Service, National Marine Fisheries Service, the Penobscot Indian Nation, Maine Department of Inland Fisheries and Wildlife, and Maine Department of Marine Resources. The plan shall include, but not be limited to: (1) the methods, locations, and equipment used for the monitoring; (2) how effectiveness will be quantified and evaluation criteria for determining if passage is adequate; (3) a provision to provide the data and a report to the consulted entities and a schedule for consultation regarding the results; and (4) a schedule for implementing the plan.

Following the development of the plan in consultation with the resource agencies and Penobscot Indian Nation, the licensee shall provide a copy of the proposed plan to these entities and allow them a minimum of 30 days to review and comment on the plan. The final plan filed with the Commission shall include documentation of consultation including copies of any comments received. The licensee shall address all comments and recommendations in its filing. If the licensee does not adopt a recommendation from the resource agencies or Penobscot Indian Nation, the licensee shall include its reasons based on project-specific information. The Commission reserves the right to make changes to the plan in order to ensure compliance with license requirements and protect environmental resources.

If the results of the monitoring indicate that changes in project structures or operations, including alternative flow releases, are necessary to protect fish resources, the licensee shall first consult with the entities listed above to develop recommended measures, and then file its proposal with the Commission, for approval. The Commission reserves its authority to require the licensee to modify project structures or operations to protect and enhance aquatic resources.

Article 412. Upstream American Eel Passage. Within 1 year of issuance of this order, the licensee shall file, for Commission approval, an Eel Passage Location Study Plan to assess the appropriate location for the siting of the upstream eel fishway. The plan shall be developed in consultation with the U.S. Fish and Wildlife Service, National Marine Fisheries Service, Penobscot Indian Nation, Maine Department of Inland Fisheries and Wildlife, and Maine Department of Marine Resources. The plan shall include, but not be limited to: methods for monitoring the river reach immediately below the project for congregating American eel during at least one full upstream migration season following commencement of Powerhouse B operation; and a provision for reporting the results to the consulted entities within 60 days of completing the study.

Within 6 months of completion of the location study, the licensee shall file, for Commission approval, a Fishway Plan. The Fishway Plan shall include but not be limited to: (1) the location and design specifications of the passage facility based on results of the location monitoring study; (2) a schedule for installing the facility so that it is operational as soon as possible, but no later than prior to the third upstream migration season following commencement of operation of the new powerhouse; and (3) procedures for operating and maintaining the facility. No construction of the upstream American eel fish passage facilities shall begin until the licensee is notified by the Commission that the plan is approved.

Within 90 days of a Commission order approving the Fishway Plan the licensee shall file, for Commission approval, a revised American eel Upstream Assessment Plan, to include a provision to monitor and evaluate the effectiveness of the relocated upstream American eel passage facility.

Following the development of the Eel Passage Study Location Plan, Fishway Plan, and revised American eel Upstream Assessment Plan in consultation with the resource agencies and Penobscot Indian Nation, the licensee shall provide a copy of the proposed plans to these entities and allow them a minimum of 30 days to review and comment on the plan. The final plans filed with the Commission shall include documentation of consultation including copies of any comments received. The licensee shall address all comments and recommendations in its filings. If the licensee does not adopt a recommendation from the resource agencies or Penobscot Indian Nation, the licensee shall include its reasons based on project-specific information. The Commission reserves the right to make changes to the plans in order to ensure compliance with license requirements and protect environmental resources.

Article 413. Project Access. The licensee shall provide access to project lands and project works, including fish passage facilities, to representatives of the National Marine Fisheries Service, U.S. Fish and Wildlife Service, Penobscot Indian Nation, Maine Department of Inland Fisheries and Wildlife, and Maine Department of Marine Resources.

Article 414. Raptor Electrocution Protection. The licensee shall construct new transmission lines in accordance with Avian Power Line Interaction Committee guidelines, “*Suggested Practices for Raptor Protection – State of the Art in 2006*,” in order to minimize raptor electrocutions.

Article 415. Fish Salvage Plan. Prior to commencing construction of the cofferdams or dewatering of any areas, the licensee shall file, with the Commission, a Fish Salvage Plan to be implemented during construction activities. The plan shall be developed in cooperation and consultation with the National Marine Fisheries Service, U.S. Fish and Wildlife Service, Penobscot Indian Nation, Maine Department of Inland Fisheries and Wildlife, and Maine Department of Marine Resources. Cofferdam construction or dewatering of areas shall not begin until the plan is filed with the Commission.

The plan shall incorporate relevant terms and conditions from the National Marine Fisheries Service’s Biological Opinion and include, but is not limited to: (1) procedures for monitoring dewatered areas for stranded fish; (2) procedures for salvaging any stranded fish and transferring them to a safe area for release; and (3) a provision to report any stranded fish and actions taken to the resource agencies and the Penobscot Indian Nation.

Following the development of the plan in consultation with the resource agencies and Penobscot Indian Nation, the licensee shall provide a copy of the proposed plan to these entities and allow them a minimum of 30 days to review and comment on the plan. The final plan filed with the Commission shall include documentation of consultation

including copies of any comments received. The licensee shall address all comments and recommendations in its filing. If the licensee does not adopt a recommendation from the resource agencies or Penobscot Indian Nation, the licensee shall include its reasons based on project-specific information. The Commission reserves the right to make changes to the plan in order to ensure compliance with license requirements and protect environmental resources.

Article 416. *Revegetation and Invasive Species Control Plan.* Prior to commencing construction activities, the licensee shall file, with the Commission, a Revegetation and Invasive Species Control Plan. The plan shall be developed in consultation with Maine Department of Inland Fisheries and Wildlife and Maine Department of Conservation and shall include, but is not limited to: (1) a provision to revegetate disturbed areas using native species; (2) a provision to use weed-free materials for erosion prevention and sediment control measures; (3) measures to prevent the transportation of weeds into the project area on construction vehicles and; (4) conducting post-construction surveys to identify invasive species in areas disturbed by construction activities and implementing measures to control any if found.

Following the development of the plan in consultation with the resource agencies, the licensee shall provide a copy of the proposed plan to these entities and allow them a minimum of 30 days to review and comment on the plan. The final plan filed with the Commission shall include documentation of consultation including copies of any comments received. The licensee shall address all comments and recommendations in its filing. If the licensee does not adopt a recommendation from the resource agencies, the licensee shall include its reasons based on project-specific information. The Commission reserves the right to make changes to the plan in order to ensure compliance with license requirements and protect environmental resources. Construction may not begin until the plan is filed with the Commission.

Article 417. *Sensitive Plant Protection Plan.* Prior to commencing construction activities, the licensee shall file, with the Commission, a Sensitive Species Protection Plan in order to protect the hyssop-leaved fleabane. The plan shall be developed in consultation with the Maine Department of Inland Fisheries and Wildlife and the Maine Department of Conservation and shall include measures to: (1) identify and mark areas to be avoided during construction; (2) educate construction contractors and workers to avoid sensitive areas; (3) consult with Maine Department of Inland Fisheries and Wildlife and Maine Department of Conservation to determine if there are low-cost, effective means to recover/transplant affected plants; (4) conduct a post-construction survey for sensitive plants one year following project completion; and (5) determine whether, and at what threshold, additional mitigation would be necessary.

Following the development of the plan in consultation with the resource agencies, the licensee shall provide a copy of the proposed plan to these entities and allow them a

minimum of 30 days to review and comment on the plan. The final plan filed with the Commission shall include documentation of consultation including copies of any comments received. The licensee shall address all comments and recommendations in its filing. If the licensee does not adopt a recommendation from the resource agencies, the licensee shall include its reasons based on project-specific information. The Commission reserves the right to make changes to the plan in order to ensure compliance with license requirements and protect environmental resources. Construction may not begin until the plan is filed with the Commission.

(M) The licensee shall serve copies of any Commission filing required by this order on any entity specified in this order to be consulted on matters related to that filing. Proof of service on these entities must accompany the filing with the Commission.

(N) This order constitutes final agency action. Any party may file a request for rehearing of this order within 30 days from the date of its issuance, as provided in section 313(a) of the Federal Power Act, 16 U.S.C. § 8251 (2006), and the Commission's regulations at 18 C.F.R. § 385.713 (2012). The filing of a request for rehearing does not operate as a stay of the effective date of this order, or of any other date specified in this order. The licensee's failure to file a request for rehearing shall constitute acceptance of this order.

Steve Hocking
Chief, Environmental Review Branch
Division of Hydropower Administration
and Compliance

APPENDIX A

STATE OF MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

401 WATER QUALITY CERTIFICATION AMENDMENT FOR THE ORONO PROJECT (FERC NO. 2710)

Filed August 23, 2011

1. STANDARD CONDITIONS

The Standard Conditions of Approval for projects under the Maine Waterway Development and Conservation Act, a copy attached.

2. EXISTING CERTIFICATION CONDITIONS

All existing conditions in the water quality certification for the rehabilitation and operation of the Orono Hydroelectric Project, as contained in Department Order #L-21917-33-A-N dated December 14, 2004, including any subsequent amendments, modifications and condition compliances, shall remain in effect, except for Condition 1(A) which is modified to read as follows:

A. Except as temporarily modified by (1) approved maintenance activities, (2) extreme hydrologic conditions, as defined below, or (3) emergency electrical system conditions, as defined below, or (4) agreement between the applicant, appropriate state and/or federal agencies, and the Penobscot Indian Nation, beginning within 60 days of FERC approval of the flow and water level monitoring plan described in Condition I (E) below, or upon such other schedule as established by FERC, the Orono Project shall be operated in a run of river mode, with outflow approximately equal to inflow on an instantaneous basis except for flashboard failure or replacement, and impoundment levels maintained within one foot of full pond (elevation 73.0 feet msl). During times of flashboard failure, the applicant will maintain water levels at or above the spillway crest. During those times when flashboards are being replaced, the applicant will maintain water levels within one foot of the spillway crest.

3. EROSION CONTROL

A. The applicant shall prepare, submit, and implement a final erosion and sedimentation control plan for all approved construction activities. This plan shall

be reviewed by and must receive approval of the Department prior to the initiation of in-stream activities.

B. In addition to any specific erosion and sedimentation control measures that are included in the plan approved by the Department under Part A of this condition, the applicant and its agents shall take all necessary measures to ensure that their activities do not result in erosion or sedimentation into the river during or following the approved activities.

4. SPOILS DISPOSAL

All spoils removed from the construction area shall be reused or otherwise disposed of in accordance with the Maine Solid Waste Management Regulations.

5. CONCRETE CURING

Concrete shall be precast and cured at least three weeks before placing in the water, or where necessary, shall be placed in forms and shall cure at least one week prior to contact with surface water. No washing of tools, forms, etc. shall occur in or adjacent to the waterway.

6. TEMPORARY FILL SPECIFICATIONS

Temporary fill placed in the waterway or within the 100-year floodway boundaries of the waterway to provide temporary equipment access shall consist of clean granular material free from vegetable matter, lumps or balls of clay and other deleterious substances. That portion passing a 3-inch (No. 200) sieve shall not exceed 10% fines, by weight. Those portions of the fill that come into contact with moving water shall be protected by filter fabric and/or riprap. All temporary fill shall be removed from the waterway following completion of the approved construction activities.

7. MINIMUM FLOW RELEASES

The minimum flow release stipulated in the Department's water quality certification for the Orono Hydroelectric Project (Department Order #L-21917-33-A-N dated December 14, 2004) shall be maintained at all times during and following the approved construction activities.

MAINE WATERWAY DEVELOPMENT AND CONSERVATION ACT
STANDARD CONDITIONS OF APPROVAL APPLICABLE TO ALL PERMITS

1. Limits of Approval. This approval is limited to and includes the proposals and plans contained in the application and supporting documents submitted and affirmed to by the applicant. All variances from the plans and proposals contained in said documents are subject to the review and approval of the Department of Environmental Protection prior to implementation.
2. Noncompliance. Should the project be found, at any time, not to be in compliance with any of the conditions of this approval, or should the permittee construct or operate this project in any way other than specified in the application or supporting documents, as modified by the conditions of this approval, then the terms of this approval shall be considered to have been violated.
3. Compliance with all Applicable Laws. The permittee shall secure and appropriately comply with all applicable federal, state and local licenses, permits, authorizations, conditions, agreements, and orders prior to or during construction and operation.
4. Inspection and Compliance. Authorized representatives of the Department of Environmental Protection or the Attorney General shall be granted access to the premises of the permittee at any reasonable time for the purpose of inspecting the construction or operation of the project and assuring compliance by the permittee with the conditions of this approval.
5. Initiation and Completion of Construction. If construction is not commenced within 3 years and completed within 7 years from the date of issuance of this permit, this approval shall lapse, unless a request for an extension of these deadlines has been approved by the Department of Environmental Protection.
6. Construction Schedule. Prior to construction, the permittee shall submit a final construction schedule for the project to the Department of Environmental Protection.
7. Approval Included in Contract Bids. A copy of this approval must be included in or attached to contract bid specifications for the project.
8. Approval Shown to Contractor. Work done by a contractor pursuant to this approval shall not begin before a copy of this approval has been shown to the contractor by the permittee.
9. Notification of Project Operation. The permittee shall notify the Department of Environmental Protection of the commencement of commercial operation of the project within 10 days prior to such commencement.

10. Assignment or Transfer of Approval. This approval shall expire upon the assignment or transfer of the property covered by this approval unless written consent to transfer this approval is obtained from the Department of Environmental Protection. A "transfer" is defined as the sale or lease of property which is the subject of this approval, or the sale of 50 percent or more of the stock of or interest in a corporation or a change in a general partner of a partnership which owns the property subject to this approval.

APPENDIX B

DEPARTMENT OF COMMERCE
NATIONAL MARINE FISHERIES SERVICEREASONABLE AND PRUDENT MEASURES
AND TERMS AND CONDITIONS OF THE INCIDENTAL TAKE STATEMENT
AS PART OF THE BIOLOGICAL OPINION FOR THE
ORONO PROJECT (FERC NO. 2710)

Filed August 31, 2012

Reasonable and Prudent Measures

1. FERC must ensure, through enforceable conditions of the project licenses, that Black Bear minimize incidental take from all in-water and near-water activities by applying best management practices to the proposed action that avoid or minimize adverse effects to water quality and aquatic resources.
2. To minimize incidental take from project operations, FERC must require that Black Bear measure and monitor the performance standards contained in the June 7, 2012 Species Protection Plan (SPP) in a way that is adequately protective of listed Atlantic salmon.
3. FERC must ensure, through enforceable conditions of the project licenses, that Black Bear complete an annual monitoring and reporting program to confirm that Black Bear is minimizing incidental take and reporting all project-related observations of dead or injured salmon or sturgeon to NMFS.
4. If the new Milford upstream fish lift is not operational prior to the Veazie Dam removal, or if it is proven ineffective during upstream monitoring studies, FERC must require Black Bear to install a broodstock collection device at the existing Denil fishway.

Terms and Conditions

1. To implement reasonable and prudent measure #1, FERC and ACOE must require Black Bear to do the following:
 - a. Hold a pre-construction meeting with the contractor(s) to review all procedures and requirements for avoiding and minimizing impacts to Atlantic salmon and to emphasize the importance of these measures for protecting salmon.

- b. Black Bear must notify NMFS one week before in-water work begins.
- c. Use Best Management Practices that will minimize concrete products (dust, chips, larger chunks) mobilized by construction activities from entering flowing or standing waters. Best practicable efforts shall be made to collect and remove all concrete products prior to rewatering of construction areas.
- d. Employ erosion control and sediment containment devices at the Stillwater, Orono and Milford Dams construction sites. During construction, all erosion control and sediment containment devices shall be inspected weekly, at a minimum, to ensure that they are working adequately. Any erosion control or sediment containment inadequacies will be immediately addressed until the disturbance is minimized.
- e. Provide erosion control and sediment containment materials (e.g., silt fence, straw bales, aggregate) in excess of those installed, so they are readily available on site for immediate use during emergency erosion control needs.
- f. Ensure that vehicles operated within 150 feet (46 m) of the construction site waterways will be free of fluid leaks. Daily examination of vehicles for fluid leaks is required during periods operated within or above the waterway.
- g. During construction activities, ensure that BMPs are implemented to prevent pollutants of any kind (sewage, waste spoils, petroleum products, etc.) from contacting water bodies or their substrate.
- h. In any areas used for staging, access roads, or storage, be prepared to evacuate all materials, equipment, and fuel if flooding of the area is expected to occur within 24 hours.
- i. Perform vehicle maintenance, refueling of vehicles, and storage of fuel at least 150 feet (46 m) from the waterway, provided, however, that cranes and other semi-mobile equipment may be refueled in place.
- j. At the end of each work shift, vehicles will not be stored within, or over, the waterway.
- k. Prior to operating within the waterway, all equipment will be cleaned of external oil, grease, dirt, or caked mud. Any washing of equipment shall be conducted in a location that shall not contribute untreated wastewater to any flowing stream or drainage area.

- l. Use temporary erosion and sediment controls on all exposed slopes during any hiatus in work exceeding seven days.
 - m. Place material removed during excavation only in locations where it cannot enter sensitive aquatic resources.
 - n. Minimize alteration or disturbance of the streambanks and existing riparian vegetation to the greatest extent possible.
 - o. Remove undesired vegetation and root nodes by mechanical means only. No herbicide application shall occur.
 - p. Mark and identify clearing limits. Construction activity or movement of equipment into existing vegetated areas shall not begin until clearing limits are marked.
 - q. Retain all existing vegetation within 150 feet (46 m) of the edge of the bank to the greatest extent practicable.
2. To implement reasonable and prudent measure #2, FERC and ACOE must require Black Bear to do the following:
- a. Contact NMFS within 24 hours of any interactions with Atlantic salmon, Atlantic sturgeon or shortnose sturgeon, including non-lethal and lethal takes (Jeff Murphy: by email (Jeff.Murphy@noaa.gov) or phone (207) 866-7379 and the Section 7 Coordinator (incidental.take@noaa.gov))
 - b. In the event of any lethal takes, any dead specimens or body parts must be photographed, measured, and preserved (refrigerate or freeze) until disposal procedures are discussed with NMFS.
 - c. Notify NMFS of any changes in project and fishway operations (including maintenance activities such as flashboard replacement and draft tube dewatering) at the Orono, Stillwater, Milford, West Enfield, and Medway Projects.
 - d. Submit a fish evacuation protocol to NMFS at least two weeks prior to the commencement of in-water work. Daily visual surveys will be conducted by qualified personnel to verify that there are no Atlantic salmon within the project area during the installation and removal of any in-water cofferdam or bypass structure. If cofferdams overtop due a high flow event, the

cofferdam will be resurveyed for adult Atlantic salmon prior to dewatering. If any Atlantic salmon are observed within the enclosed cofferdam they should be removed, either by herding or by capture. Handling should be minimized to the extent possible.

3. To implement reasonable and prudent measure #3, the FERC must require that Black Bear do the following:
 - a. Require Black Bear to measure the survival performance standard for downstream migrating Atlantic salmon smolts and kelts at the Orono, Stillwater, Milford, and West Enfield Projects of 96% (within the lower and upper 75% confidence limit) using a scientifically acceptable methodology.
 - i. That is, 96% of downstream migrating smolts and kelts approaching the dam structure survive passing the project, which would include from 200 meters upstream of the trashracks and continuing downstream to the point where delayed effects of passage can be quantified. Black Bear must coordinate with NMFS in selecting an adequate location for the downstream receivers.
 - ii. Passage must occur within 24 hours of a smolt or kelt approaching within 200 meters of the trashracks for it to be considered a successful passage attempt that can be applied towards the performance standard.
 - iii. The survival standard is considered achieved if each year of a three year study period achieves at least 96%, based on a 75% confidence interval, at each project. A Cormack-Jolly-Seber (CJS) model must be used to determine if the survival standard has been achieved and present 75% error bounds around survival estimates.
 - iv. Black Bear must consult with NMFS concerning the application of appropriate statistical methodology and must provide an electronic copy of the CJS model(s) and data to NMFS.
 - b. All tags released in the system should have codes that are not duplicative of tags used by other researchers in the river, including university, state, federal and international tagging programs.
 - c. Submit a study plan for a one year adult upstream study at the West Enfield Project to be conducted ten years post implementation of the SPP.
 - d. Submit a study plan for a three year downstream kelt study at the Orono, Stillwater, Milford, and West Enfield Projects.
4. To implement reasonable and prudent measure #4, the FERC must require that Black Bear do the following:

- a. Require that Black Bear seek comments from NMFS on any fish passage design plans at the 30%, 60%, and 90% design phase. Also, allow NMFS to inspect fishways at the projects at least annually.
- b. Submit annual reports at the end of each calendar year summarizing the results of proposed action and any takes of listed sturgeon or Atlantic salmon to NMFS by mail (to the attention of the Section 7 Coordinator, NMFS Protected Resources Division, 55 Great Republic Drive, Gloucester, MA 01930 and to incidental.take@noaa.gov).

Jon.elmer@brookfieldrenewable.com
Black Bear/08:08:2013 12:28
CONFIDENTIAL

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: James J. Hoecker, Chairman;
Vicky A. Bailey, William L. Massey,
Linda Breathitt, and Curt Hébert, Jr.

Bangor Hydro-Electric Company) Project No. 2712-004

ORDER ISSUING NEW LICENSE

(Issued April 20, 1998)

On December 23, 1991, Bangor Hydro-Electric Company (Bangor Hydro) filed an application with the Federal Energy Regulatory Commission (Commission) under Part I of the Federal Power Act 11/ (FPA) for a new license authorizing the continued operation and maintenance of the 1.95-megawatt (MW) Stillwater Hydroelectric Project No. 2712, located on the Stillwater Branch of the Penobscot River in the city of Old Town, Penobscot County, Maine. 12/ The Commission issued an original license for this project to Bangor Hydro in 1978, effective April 1, 1962. 13/ The original license expired on December 31, 1993, and since then Bangor Hydro has operated the project under an annual license.

Bangor Hydro proposes no major construction or project modifications. For the reasons discussed below, we will issue a new license to Bangor Hydro for a period of 40 years.

BACKGROUND

1/ 16 U.S.C. §807.

2/ The Stillwater Branch of the Penobscot River is a navigable waterway of the United States. 1 FERC ¶ 61,104 (1977). Therefore the Stillwater Project is required to be licensed pursuant to § 23(b) (1) of the FPA.

3/ 4 FERC ¶ 61,157 (1978).

Notice of the application for the Stillwater Project was published. 14/ Four parties filed timely and unopposed motions to intervene in this proceeding: Maine FLOW, Maine State Planning Office, U.S. Department of the Interior (Interior), and the Penobscot Indian Nation (Penobscot Nation). These motions were granted automatically under Rule 214(c)(1) of the Commission's Rules of Practice and Procedure. 15/ American Rivers' motion to intervene was opposed by Bangor Hydro. We are granting its motion.

Comments on the application were filed by the U.S. Fish and Wildlife Service (FWS), Atlantic Sea Run Salmon Commission, U.S. Army Corps of Engineers (Corps), Maine Department of Marine Resources, Maine Department of Environmental Protection (MDEP), U.S. Department of the Interior (Interior), Maine State Planning Office, National Marine Fisheries Service (NMFS), and the Penobscot Nation.

On November 15, 1994, the Commission's staff issued the Lower Penobscot River Basin Draft Environmental Impact Statement (Draft EIS), analyzing the Basin Mills, Milford, and Stillwater hydroelectric projects, and requesting public comment. The Commission received comment letters from Bangor Hydro; Atlantic Salmon Federation; Maine Council of Atlantic Salmon Federation; American Rivers, Inc.; Maine Audubon Society; Sportsman's Alliance of Maine; Trout Unlimited; Maine Council of Trout Unlimited; the Corps; Department of Commerce; Interior; U.S. Geological Survey; U.S. Environmental Protection Agency; Penobscot Nation; and the Penobscot River Coalition. The Commission's staff considered these comments in preparing the Final Environmental Impact Statement (Final EIS).

Concurrently with this order, we are issuing an Order on Applications for New and Original Licenses, which discusses issues common to three projects on the Penobscot and Stillwater Rivers. The discussion in that order is incorporated by reference herein.

PROJECT DESCRIPTION

4/ 58 FR 5,966 (January 25, 1993).

5/ 18 C.F.R. §385.214(c)(1) (1993).

The Stillwater Project's principal features are a meandering dam approximately 1,720 feet long, consisting of 13 sections, a concrete and wooden powerhouse, an impoundment about 3.1 miles long with a surface area of about 300 acres, and appurtenant facilities.

The existing project has a total nameplate generator capacity of 1.95 MW and an average annual generation of about 13.1 gigawatthours (GWh). The maximum hydraulic capacity of the Stillwater Project is 1,700 cubic feet per second (cfs). Flows in the Stillwater Branch exceed the maximum hydraulic capacity of the project 60 percent of the time. A more detailed project description is contained in ordering paragraph B(2).

WATER QUALITY CERTIFICATION

Under Section 401(a)(1) of the Clean Water Act, 33 U.S.C. § 1341(a)(1), the Commission may not issue a license for a hydroelectric project unless the state's certifying agency has issued a water quality certification for the project or has waived certification. ^{1/} On October 23, 1992, the Maine Department of Environmental Protection granted water quality certification for the project, subject to certain conditions. The water quality certification contains 11 conditions, which are attached in full as Appendix A to this order.

APPLICANT'S PLANS AND CAPABILITIES

In accordance with Sections 10(a)(2)(C) and 15(a) of the FPA, we have evaluated Bangor Hydro's record as a Licensee with respect to the following: (1) consumption improvement program; (2) compliance history and ability to comply with the new license; (3) safe management, operation, and maintenance of the project; (4) ability to provide efficient and reliable electric service; (5) need

^{6/} Section 401(a)(1) requires an applicant for a federal license or permit to conduct any activity which may result in any discharge into navigable waters to obtain from the state in which the discharge originates certification that any such discharge will comply with applicable water quality standards.

for power; (6) transmission services; (7) cost effectiveness of plans; and (8) actions affecting the public.

1. Consumption Improvement Program

Section 10(a)(2)(C) of the FPA, 16 U.S.C. § 803(a)(2)(C), requires the Commission, in acting on a license application, to consider the extent of electricity consumption efficiency improvement programs in the case of license applicants primarily engaged in the generation or sale of electric power. Bangor Hydro submitted a comprehensive and detailed report, entitled "1988 Annual Narrative - Energy Management Services," that covers programs designed to improve the consumption efficiency and to reduce peak demands of metered customers.

We have reviewed the report cited and conclude that Bangor Hydro has made in good faith a satisfactory effort to establish and maintain efficiency improvement and load management programs that comply with Section 10 (a)(2)(c) of the FPA and to support the objectives of the Electric Consumers Protection Act of 1986.

2. Compliance History and Ability to Comply with the New License

We have reviewed Bangor Hydro's license application and its record of compliance with the existing license in an effort to judge its ability to comply with the articles, terms, and conditions of any license issued, and with other applicable provisions of this part of the FPA.

Based on our review of Bangor Hydro's compliance record, we find that Bangor Hydro has complied in good faith with all articles, terms, and conditions of its current license. As a result of our review of its compliance record and the license application, we believe Bangor Hydro can satisfy the conditions of a new license.

3. Safe Management, Operation, and Maintenance of the Project

Bangor Hydro ensures safe management, operation, and maintenance by holding periodic meetings for maintenance and management personnel to review and update safety procedures and

maintain a comprehensive safety policy. This includes displaying warning signs and buoys and installing and maintaining safety equipment.

Although Stillwater is exempt from FERC's five-year inspections, Bangor Hydro retains an independent consultant to inspect the project facilities every five years. In addition, the facility is inspected annually, and remedial/monitoring programs are developed as necessary.

As a result of our review of Bangor Hydro's plans, we conclude that it will be able to manage, operate, and maintain the Stillwater Project in a safe manner.

4. Ability to Provide Efficient and Reliable Electric Service

We reviewed Bangor Hydro's plans and its ability to operate and maintain the project in a manner most likely to provide efficient and reliable electric service.

Bangor Hydro evaluated four alternatives for the Stillwater Project, ranging from life extension of the original units to construction of a new powerhouse on the opposite side of the river.

Bangor Hydro's economic analysis of the alternatives determined that none of the upgrade/expansion alternatives are presently feasible; therefore, Bangor Hydro is proposing no increase in either installed capacity or energy generation.

There are no personnel stationed at the project. Roving operators make a minimum of three trips to the plant during each shift for three shifts a day. During each of these plant visits, an operator takes water readings and makes adjustments to keep the impoundment level as constant as possible. The operator also checks the equipment, the plant, and its surrounding grounds including the substation and takes a full set of readings that are reported to the System Operator.

Bangor Hydro is refining the project operation to protect or enhance the project area's natural resources, such as passing minimum flows. Bangor Hydro also maintains and improves the project through various programs and refinements.

Based on our review of the information, we conclude that Bangor Hydro has been operating the project efficiently within the constraints of the existing license and that it would continue to provide efficient and reliable electric services in the future.

5. Need for Power

Bangor Hydro is an investor-owned electric utility serving more than 110,000 customers in the central and southern counties of Maine.

As licensed herein, the Stillwater Project will generate an average of 13.1 gigawatthours (GWh) of energy annually for Bangor Hydro.

To assess the need for power, we reviewed not only Bangor Hydro's use and need for the project power, but also the needs in the operating region in which the project is located. The Stillwater Project is located in the New England Power Pool (NEPOOL) area of the Northeast Power Coordinating Council region of the North American Electric Reliability Council (NERC). NERC annually forecasts electrical supply and demand in the nation and the region for a ten-year period.

NERC's most recent report ^{1/} on annual supply and demand projections indicates that, for the period 1995-2004, loads in the NEPOOL area will grow faster than planned capacity additions. The project displaces nonrenewable fossil-fired generation and contributes to diversification of the generation mix in the NEPOOL area. We conclude that the project's power, its low cost, its displacement of nonrenewable fossil-fired generation, and its contribution to a diversified generation mix will help meet a need for power in the NEPOOL area.

6. Transmission Service

We find that licensing the project to continue its current operations will have no significant effect on the licensee's existing or planned transmission system.

^{1/} NERC's Electricity Supply and Demand Database, Data set 1995-2004.

7. Cost Effectiveness of Plans

Bangor Hydro has no plans for making other significant project changes, except for those periodically required to ensure the project's safety. Based on the license application and past practice, we conclude that Bangor Hydro's plans for constructing fish and recreation facilities, as well as its continued operation of the project, will be achieved in a cost-effective manner.

8. Actions Affecting the Public

Constructing fish passage facilities and additional recreational facilities and releasing minimum flows will increase benefits to fisheries and recreation opportunities and, therefore, will benefit the public.

FISH PASSAGE

Bangor Hydro contends that prescriptions filed by Interior and Commerce should not be given mandatory status, because they were filed after the deadline established in the public notice that the project was ready for environmental analysis. 1/

8/ See 18 C.F.R. § 4.43(b). As discussed in the lead order issued today in this proceeding, 83 FERC ¶ 61,039 (1998), we decline to address Bangor's arguments with respect to whether Interior is authorized to prescribe a fishway for the fish species at issue in this proceeding.

Interior and Commerce both filed requests that the Commission include in the license a reservation of their authority to prescribe fishways. 1/ Interior subsequently submitted a fishway prescription on February 17 and revised the prescription on June 22, 1995, and May 20, 1997; and Commerce submitted a prescription on February 16, 1995. A request for a reservation of prescription authority is not itself a prescription. 1/ And since the request is that a reservation of authority be included in the license, the reservation request cannot be invoked before the license is issued, and thus cannot make an untimely pre-license prescription timely. 1/

In any event, the agencies' late prescriptions were analyzed in the EIS as recommendations pursuant to FPA Section 10(a) and, as described below, we adopt most of those recommendations.

Article 405 requires that Bangor Hydro construct, operate and maintain fishways for the design populations of the species specified by Interior and to provide personnel of the U.S. Fish and Wildlife Service access to the project site and pertinent project records for the purpose of inspecting the fishways to determine compliance with the fishway conditions of the license. 1/

9/ The notice that the Stillwater application was ready for environmental analysis set March 15, 1993, as the deadline for submitting Section 18 prescriptions.

10/ See Niagara Mohawk Power Corp., 83 FERC ¶ 61,036 (1998).

11/ This result is of limited import, as there remain the agencies' requests for reservation of their prescription authority, which we grant, pursuant to our policy. See Niagara Mohawk, supra.

12/ We have not included Interior's recommendation that all fishways be operational within three years as a condition of the license. Construction schedules are an element which must be included in the final design plans which Bangor Hydro must file with the Commission. Bangor Hydro must consult with Interior in preparing the design plans; however, the authority to determine the timing of the construction of project works, including fishways, rest exclusively with the Commission. See Niagara Mohawk Power Corp. 67 FERC ¶ 61,300 at p. 62, 039 (1994).

Articles 406 (addressing downstream fishways) 1/ and 407 (addressing upstream fishways) require that the licensee install and operate fish passage facilities at the project. These articles specify the migration periods during which the facilities must be operated. These articles also require Bangor Hydro to file and implement fishway maintenance and operational plans and to modify the fishways if the effectiveness studies required by Article 408 indicate that modifications are needed. 1/

Article 408 requires Bangor Hydro to file and implement a plan to study the effectiveness of the fishways required by Article 406 and 407. If the study indicates that changes in the project's structures or operations, including flow, are necessary, Article 408 requires Bangor Hydro to file and implement a plan to improve the effectiveness of the fishways.

Article 409 contains a reservation of authority for the prescriptions of fishways under Section 18 of the Federal Power Act by the Secretary of the Interior. 1/

13/ Article 406 also requires that Bangor Hydro install trashracks with a one-inch clear opening at the powerhouse turbine intake and gated surface and bottom bypasses discharging up to 70 cfs during the downstream migration period.

14/ We have not adopted Commerce's recommendation prohibiting trapping and trucking as a permanent means of fish passage. We have also not adopted Commerce's recommendation to prohibit the inclusion of fish pumps in fish passage design. Commerce's objections to these measures can be addressed during consultation, if they are proposed. We do not believe it is appropriate to categorically exclude either of these measures from consideration.

15/ Interior and Commerce recommended several alternative design types for the new fishways. Their preferences for the type of fishways to be constructed can be addressed during the consultation required during the design process or through the exercise of Interior's reservation of prescription authority contained in Article 409.

RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES

Section 10(j) of the FPA requires the Commission, when issuing a license, to include conditions based on recommendations of federal and state fish and wildlife agencies submitted pursuant to the Fish and Wildlife Coordination Act, 1/ to "adequately and equitably protect, mitigate damages to, and enhance fish and wildlife (including related spawning grounds and habitat)" affected by the project.

Pursuant to Section 10(j) of the FPA, we evaluated each recommendation of the federal and state fish and wildlife agencies for consistency with the purpose and requirements of Part I of the FPA or other applicable law. By executive order of the Governor of the State of Maine, the terms and conditions contained in Maine's 401 Water Quality Certifications represent the state's official recommendations regarding the application and supersede all preliminary recommendations by individual state agencies.

16/ 16 U.S.C. § 661 et al.

The draft EIS stated that Interior's recommendations concerning a recreation monitoring plan was an inappropriate fish and wildlife recommendation, 1/ and that a 230-cfs minimum flow in the Stillwater bypassed reach may be inconsistent with the balancing provisions of Section 4(e) and 10(a) of the FPA. Under Section 10(j)(2) of the FPA, whenever the Commission believes that any recommendations of the federal and state fish and wildlife agencies may be inconsistent with the FPA or other applicable law, the Commission shall attempt to resolve such inconsistencies. In a Section 10(j) meeting held on February 9, 1996, the Commission's staff requested that Interior consider specifying the habitat goals it sought and allow permanent flows to be within the range of 70 cfs, as specified in the water quality certification, up to 230 cfs, as originally sought by Interior. The required flow would be that amount sufficient to achieve the habitat goals after the berm is modified. Interior's subsequently provided revised minimum flows are incorporated in Articles 402 and 404.

COMPREHENSIVE PLANS

Section 10(a)(2) of the FPA requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project. Under Section 10(a)(2), federal and state agencies filed a total of 18 plans. Of these, we identified eight as relevant to the project. 1/ No conflicts were found.

17/ Recommendations that are not specific measures to protect, mitigate, or enhance fish and wildlife resources are not subject to the Section 10(j) process. These recommendations, however, have been evaluated under Section 10(a) of the FPA and are discussed in the final EIS for the project.

18/ Strategic Plan for Management of Atlantic Salmon in the State of Maine, 1984, Atlantic Sea-Run Salmon Commission; Maine Rivers Study, 1982, Maine Department of Conservation and National Park Service; State Comprehensive River Management Plan, 1987, Maine State Planning Office; State Comprehensive Outdoor Recreation Plan, 1988, Maine State Planning Office; Penobscot River Alewife and American Shad Restoration Plan, 1984, Maine Department of Marine Resources; Inland Fisheries River Management Plan, 1982,

Maine Department of Inland Fisheries and Wildlife; Species Assessments and Strategic Plans, 1991, Maine Department of Inland Fisheries and Wildlife; Gulf of Maine Rivers Ecosystem Plan, 1994, U.S. Fish and Wildlife Service.

COMPREHENSIVE DEVELOPMENT

Sections 4(e) and 10(a)(1) of the FPA, 16 U.S.C. §§ 797(e) and 803(a)(1) require the Commission, in acting on applications for license, to give equal consideration to the power and development purposes and to the purposes of energy conservation, the protection, mitigation of damage to, and enhancement of fish and wildlife, the protection of recreational opportunities, and the preservation of other aspects of environmental quality. Any license issued shall be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. The decision to license this project, and the terms and conditions included herein, reflect such consideration.

The EIS analyzed the effects associated with the issuance of the new license for the Stillwater Project. It recommends a number of measures to protect and enhance environmental resources, which we adopt, as discussed herein. These measures will provide improved fish passage at the dam, protect fish and wildlife resources by requiring run-of-river operation, and enhance recreational resources in the project area.

In determining whether a proposed project will be best adapted to a comprehensive plan for developing a waterway for beneficial public purposes, pursuant to Section 10(a)(1) of the FPA, the Commission considers several public interest factors, including the economic benefits of project power.

Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in Mead Corporation, Publishing Paper Division, 1/ the Commission employs an analysis that uses current costs to compare the costs of the project and likely alternative power with no forecasts concerning potential future inflation, escalation, or deflation beyond the license issuance date. The basic purpose of the Commission's economic analysis is to provide a general estimate of the potential power benefits and the costs of a project, and reasonable alternatives to project power.

The estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license. In making its decision, the Commission considers the project power benefits both with the applicant's proposed mitigation and enhancement measures and with the Commission's proposed modifications and additions to the applicant's proposal.

19/ 72 FERC ¶ 61,027 (1995).

In addition, certain economic factors related to project decommissioning impinge on the decision to issue a new license that are not present in the licensing of new projects. If an existing project is not issued a new license, or if the Licensee declines to accept the new license, the project probably will have to be retired in one form or another. This could range from simply removing the generator at the project to major environmental restoration varying from minor measures to dam removal.

As licensed by the Commission, the Stillwater Project will produce an average of about 12.208 GWh of energy, at an annual cost of about \$552,300 (45.2 mills/kWh). The current annual value of the project's power would be \$376,800 (30.9 mills/kWh). We base this value on the cost of alternative resources, which in this case is the cost of a new combined cycle combustion turbine plant and the regional cost of natural gas. ^{1/} To determine whether the proposed project is currently economically beneficial, we subtract the project's cost from the value of the project's power. Thus based on current costs, the project, as licensed by the Commission would cost about \$175,500 (about 14.3 mills/kWh) more than the current cost of alternative power.

As described above, our evaluation of the economics of the project shows that the power it generates costs more than alternative power. However, as explained in Mead, the economic analysis is by necessity inexact, and project economics is only one of many public interest factors considered in determining whether or not, and under what conditions, to issue a license. ^{1/} Bangor Hydro is ultimately responsible and best able to determine whether continued operation

^{20/} Our estimate of the value of power is more completely described in the EIS.

^{21/} In analyzing public interest factors, we consider the fact that hydroelectric projects offer unique electric utility system operational benefits and that proposed projects may provide substantial benefits not directly related to utility operations, benefits that would be lost if a license were denied solely on economic grounds. See City of Augusta, et al., 72 FERC ¶ 61,114, at p. 61,599, n. 57 (1995).

of the existing project, with the conditions adopted herein, is a reasonable decision in these circumstances.

Based on our review of the comments on this project filed by agencies and the public, our review of the staff's evaluation of the environmental and economic effects of the proposed project and its alternatives, and our analysis pursuant to Sections 4(e) and 10(a)(1), we find that the Stillwater Project, with our mitigative and enhancement measures, will be best adapted to the comprehensive development of the Stillwater River for beneficial public uses.

LICENSE TERM

Section 15(e) of the FPA specifies that any license issued under Section 15 shall be for a term that the Commission determines to be in the public interest, but not less than 30 years, nor more than 50 years. The Commission's policy is to establish 30-year terms for projects that propose little or no redevelopment, new construction, or new capacity; 40-year terms for projects that propose moderate redevelopment, new construction, or new capacity; and 50-year terms for projects that propose extensive redevelopment, new construction, or new capacity.

In our policy statement on cumulative impacts and license reopeners, we stated that we would endeavor to coordinate the expiration dates of licenses for projects located in the same river basin to the maximum extent feasible, consistent with our commitment to considering the cumulative impacts of projects in the same river basin collectively at relicensing. ^{1/} Issuing a license for the Stillwater Project with the same expiration date as for the Milford and Veazie Projects would further this policy by ensuring that these licenses expire simultaneously. Therefore, we will issue a license for a 40-year term for the Stillwater Project, effective the first day of the month in which this license is issued.

^{22/} Use of Reserved Authority in Hydropower Licenses to Ameliorate Cumulative Impacts, 59 Fed. Reg. 66718 (December 28, 1994), FERC Statutes and Regulations ¶ 31,010 at p. 31,219 (1994). This policy is codified at 18 C.F.R. § 2.23 (1996). See also Central Maine Power Company, 73 FERC ¶ 61,149 at p. 61,422 (1995); Duke Power Company, 73 FERC ¶ 61,335 at p. 61,940 (1995).

SUMMARY OF FINDINGS

The EIS issued for this project includes background information, analysis of effects, discussion of enhancement measures, and support for related license articles. The project will not produce any major, long-term adverse environmental effects.

The design of this project is consistent with the engineering standards governing dam safety. The project will be safe if operated and maintained in accordance with the requirements of this license.

We conclude that the project will not conflict with any planned or authorized development and will be best adapted to the comprehensive development of the lower Penobscot River Basin for beneficial public uses.

The Commission orders:

(A) This license is issued to Bangor Hydro-Electric Company (Licensee) for a period of 40 years, effective the first day of the month in which this order is issued, to operate and maintain the Stillwater Hydroelectric Project. This license is subject to the terms and conditions of the Federal Power Act, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the Federal Power Act.

(B) The project consists of:

(1) All lands, to the extent of the Licensee's interest in those lands, enclosed by the project boundary shown by exhibit G:

<u>Exhibit-G</u>	<u>FERC Drawing No.</u>	<u>Showing</u>
1	2712-1001	Stillwater Hydro Project General Map - Project Area (sheet 1 of 4)
2	2712-1002	Stillwater Hydro Project Detail Map

Project No. 2712-004

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		Reservoir (sheet 2 of 4)
3	2712-1003	Stillwater Hydro Project Detail Map Reservoir (sheet 3 of 4)
4	2712-1004	Stillwater Hydro Project Detail Map Reservoir (sheet 4 of 4)

(2) Project works consisting of:

(a) A main concrete gravity dam, totaling about 1,720 feet long, with a maximum height of 22 feet at crest elevation 91.65 feet National Geodetic Vertical Datum (NGVD), consisting of 13 sections: a non-overflow section, totaling 63 feet long, which serves as an abutment and wingwall, containing a 6-footwide unused stoplog sluice gate; a 381-foot-long primary spillway section, with a maximum height of 22 feet at a crest elevation of 91.65 feet NGVD, topped with 2.0-foot-high pin-supported flashboards; an 85-foot-long by 2-foot-wide by 2.5-foot-high leveling concrete course; a 43-foot-long concrete sill section on top of a ledge island; a 174-foot-long ogee section, with varying heights from 4 to 20 feet, topped with 2.0-foot-high pin-supported flashboards; a 52-foot-long ogee section, with a maximum height of 9 feet, topped with a concrete curb, 15 inches wide by 25 inches high; a 105-foot-long spillway section, with an average height of 6 feet; a 42-foot-long spillway section, with a maximum height of 8 feet, topped with 1-foot-high pin-supported flashboards; a 73.5-foot-long abutment section, with an average height of 4 feet; a 187-foot-long non-overflow section, with varying heights from 3 to 12 feet, which abuts an abandoned powerhouse; a 63-foot-long non-overflow section, which is part of the abandoned powerhouse's foundation; a 197.5-foot-long section, with varying heights from 2 to 4 feet, abutting the old and existing powerhouses; and a 162.5-foot-long non-overflow section, with a downstream-facing earth backfill, having a maximum height of 12 feet,

topped with a 2-foot-high concrete curb and a driveway on top of the earth backfill;

(b) A concrete and wooden powerhouse, about 83.5 feet long by 32 feet wide by 45 feet high, equipped with four horizontal hydroelectrical generating units: three of which are rated at 450-kilowatts (Kw) each, with a net head of 18 feet and a hydraulic capacity range from 380 to 1,140 cubic feet per (cfs); and one rated at 600 Kw, with a net head of 18 and a hydraulic capacity of 560 cfs; all totaling a rated capacity of 1,950 Kw; a hydraulic capacity range from 380 to 1,700 cfs; an average annual generation of about 13,120,000 kWh; and each having a net head of 18 feet;

(c) An impoundment, about 3.1 miles long, having a surface area of about 300 acres (AC); a gross storage capacity of 3,040 acre-feet (AF); a negligible useable storage capacity; a normal headwater surface elevation of about 93.65 feet NGVD; and a normal tailwater surface elevation of about 73.65 feet NGVD; and

(d) Appurtenant facilities.

The project works generally described above are more specifically shown and described by those portions of Exhibits A and F shown below.

Exhibit A: The following sections of Exhibit A filed December 23, 1991:

Pages A-1 through A-11, including Table A-1 describing the existing mechanical, electrical and transmission equipment.

<u>Exhibit F</u>	<u>FERC Drawing No.</u>	<u>Showing</u>
F-1	2712-1005	Stillwater Hydro Project General Plan and Dam Sections.
F-2	2712-1006	Stillwater Hydro Project Power House Plan and Sections.

(3) All of the structures, fixtures, equipment, or facilities used to operate or maintain the project and located within the project boundary, all portable property that may be employed in connection with the project and located within or outside the project boundary, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) The Exhibits A, F, and G described above are approved and made part of the license.

(D) This license is subject to the articles set forth in Form L-3 (October 1975), entitled "Terms and Conditions of License for Constructed Major Project Affecting Navigable Waters of the United States", and the following additional articles:

Article 201. The Licensee shall pay the United States the following annual charges, effective as of the first day of the month in which this license is issued, for the purposes of reimbursing the United States for the costs of administering Part I of the Federal Power Act, a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized installed capacity for that purpose is 1,920 kilowatts.

Article 202. Within 45 days of the date of issuance of the license, the licensee shall file an original set and two duplicate sets of aperture cards of the approved drawings. The set of originals must be reproduced on silver or gelatin 35 mm microfilm. The duplicate sets are copies of the originals made on diazo-type microfilm. All microfilm must be mounted on type D (3-1/4 x 7-3/8") aperture cards.

Prior to microfilming, the FERC Drawing Number (2712-1001 through 2712-1006) shall be shown in the margin below the title block of the approved drawing. After mounting, the FERC Drawing Number must be typed on the upper right corner of each aperture card. Additionally, the Project Number, FERC Exhibit (e.g., F-1, G-1, etc.), Drawing Title, and date of this license must be typed on the upper left corner of each aperture card.

The original and one duplicate set of aperture cards must be filed with the Secretary of the Commission, ATTN: DPCA/ERB. The remaining duplicate set of aperture cards shall be filed with the Commission's New York Regional Office.

Article 203. Pursuant to Section 10(d) of the FPA, a specified reasonable rate of return upon the net investment in the project shall be used for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. The Licensee shall set aside in a project amortization reserve account at the end of each fiscal year one half of the project surplus earnings, if any, in excess of the specified rate of return per annum on the net investment.

To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year, the Licensee shall deduct the amount of that deficiency from the amount of any surplus earnings subsequently accumulated, until absorbed. The Licensee shall set aside one-half of the remaining surplus earnings, if any, cumulatively computed, in the project amortization reserve account. The Licensee shall maintain the amounts established in the project amortization reserve account until further order of the Commission.

The specified reasonable rate of return used in computing amortization reserves shall be calculated annually based on current capital ratios developed from an average of 13 monthly balances of amounts properly included in the Licensee's long-term debt and proprietary capital accounts as listed in the Commission's Uniform System of Accounts. The cost rate for such ratios shall be the weighted average cost of long-term debt and preferred stock for the year, and the cost of common equity shall be the interest rate on 10-year government bonds (reported as the Treasury Department's 10 year constant maturity series) computed on the monthly average for the year in question plus four percentage points (400 basis points).

Article 401. The Licensee shall operate the Stillwater Project in a run-of-river mode for the protection of fisheries resources and recreational opportunities in the Stillwater Branch of the Penobscot River. Except as temporarily modified by approved maintenance activities, inflows to the project area, or operating emergencies beyond the Licensee's control, the Licensee shall

maintain water levels in the Stillwater impoundment within one foot of normal full pond elevation of 93.65 feet NGVD while flashboards are in place.

The Licensee shall at all times act to minimize the fluctuation of the reservoir surface elevation by maintaining a discharge from the project so that, at any point in time, outflows, as measured immediately downstream from the project tailrace, approximate the sum of inflows to the project reservoir.

Run-of-river operation may be temporarily modified if required by operating emergencies beyond the control of the Licensee, and for short periods upon mutual agreement between the Licensee and the Maine Department of Environmental Protection. If the flow is so modified, the Licensee shall notify the Commission as soon as possible, but no later than 10 days after each such incident.

The Licensee shall prepare a plan in consultation with the Maine Department of Environmental Protection to monitor the water levels in Stillwater Impoundment and file the plan with the Commission, for approval, no later than 180 days after the issuance of this license. The Commission reserves the right to require changes to the water level monitoring plan. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

Article 402. The Licensee shall release from the Stillwater Project an interim minimum flow of 40 cubic feet per second (cfs) into the so-called west bypass channel and an interim minimum flow of 190 cfs into the so-called east bypass channel, as measured at a location determined in consultation with the Maine Department of Environmental Protection, the U.S. Department of the Interior, the U.S. Geological Survey, and the Penobscot Indian Nation, or inflow to the project reservoir, whichever is less, for the protection and enhancement of fish and wildlife resources, water quality, and recreation opportunities on the Stillwater Branch of the Penobscot River.

This flow may be temporarily modified if required by operating emergencies beyond the control of the Licensee, and for short periods upon mutual agreement between the Licensee and the Maine Department of Environmental Protection. If the flow is so modified, the

Licensee shall notify the Commission as soon as possible, but no later than 10 days after each such incident.

Article 403. The Licensee shall, in consultation with the Maine Department of Inland Fisheries and Wildlife, the Maine Department of Marine Resources, the Atlantic Sea Run Salmon Commission, the U.S. Fish and Wildlife Service and the Penobscot Indian Nation, prepare a plan to make physical modifications to the gravel/cobble berm separating sections 1 and 3 of the Stillwater bypassed reach to improve fish habitat availability. The Licensee shall file the plan with the Commission, for approval, no later than 180 days after issuance of this license.

The plan shall be reviewed by the state and federal fisheries agencies and the Maine Department of Environmental Protection Bureau of Land Quality Control. The Commission reserves the right to require changes to the berm modification plan. Activities shall not begin until the Licensee is notified by the Commission that these plans are approved. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

Article 404. The Licensee shall, in consultation with the Maine Department of Inland Fisheries and Wildlife, the Maine Department of Marine Resources, the Atlantic Sea Run Salmon Commission, the U.S. Fish and Wildlife Service and the Penobscot Indian Nation, prepare a plan to study various minimum flow releases between leakage and 40 cfs in the west bypassed reach and between leakage and 190 cfs on the habitat in sections 1, 2, and 3, of the east bypassed reach, following berm modification. The purpose of the study will be to determine the permanent minimum flow in the east and west channels of the Stillwater bypassed reach. The target habitat units of the combined areas of the east bypassed reach are an additional 80.6 salmon nursery habitat units, 176.6 smallmouth bass spawning/incubation habitat units, 268 smallmouth bass young-of-year habitat units, 434.9 smallmouth bass juvenile habitat units, 311.4 smallmouth bass adult habitat units, 60 shad spawning/incubation habitat units, and 328.2 shad larvae/juvenile habitat units. These target habitat units are to be attained with flows into the bypassed reach no greater than 230 cfs and no less than 70 cfs.

The plan shall be reviewed by the state and federal fisheries agencies and the Maine Department of Environmental Protection Bureau

of Land Quality Control. The Licensee shall file the plan with the Commission, for approval, no later than 180 days after issuance of this license.

Results from the minimum flow study and the Licensee's plans for maintenance of the berm and long-term minimum flow releases that will adequately maintain fish habitat in sections 1, 2, and 3 shall be submitted to the Maine Department of Environmental Protection Bureau of Land Quality Control and the Commission within 18 months of license issuance for the project.

The Commission reserves the right to require changes to the berm maintenance plan and minimum flow study. Activities shall not begin until the Licensee is notified by the Commission that these plans are approved. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

Article 405. Fishways shall be constructed, operated, and maintained at the Stillwater Project to provide effective (safe, timely, and convenient) passage for the mainstem Penobscot River design populations of Atlantic salmon, American shad, alewives, and unquantified numbers of blueback herring and American eels at the Licensee's expense. The quantified design populations for the mainstem Penobscot River for each target species is: 2.1 million Atlantic salmon; 250,000 American shad; up to 12,000 alewife. The fishways for the Stillwater Project should be sized appropriately for the migrating populations that use this portion of the river.

The Licensee shall provide personnel of the U.S. Fish and Wildlife Service, and other Service designated representatives, access to the project site and to pertinent project records for the purpose of inspecting the fishways to determine compliance with the fishway prescriptions.

Article 406. The Licensee shall install and operate permanent downstream fish passage facilities at the Stillwater Project. Fishways shall be maintained and operated to maximize fish passage effectiveness throughout fish migration period(s) as defined below. The downstream migration period is defined as April 1 to June 30 for Atlantic salmon, July 1 to December 31 for American shad and alewife, August to December 31 for blueback herring, and August 15 to November 15 (or other time periods determined when adequate information is available, and during any spring run that may occur)

for American eel. Downstream facilities are to operate whenever generation occurs during the downstream migration period. The Licensee shall keep the fishways in proper order and shall keep fishway areas clear of trash, logs, and material that would hinder passage. Anticipated maintenance shall be performed in sufficient time before a migratory period such that fishways can be tested and inspected and will operate effectively prior to and during the migratory periods.

Fishway maintenance and operational plans (including schedules) for all fish passage facilities shall be developed by the Licensee in consultation and cooperation with the U.S. Fish and Wildlife Service (FWS), the Penobscot Indian Nation (Penobscot Nation), and other fishery agencies (including the Maine Department of Inland Fisheries and Wildlife, Maine Department of Marine Resources, and the National Marine Fisheries Service). Functional design and final design plans for all fishways shall be developed in consultation and cooperation with the FWS, Penobscot Nation, and other fishery agencies.

Downstream fishways shall consist of installation of trashracks with 1" clear opening at the powerhouse turbine intake and gated surface and bottom bypasses discharging up to 70 cfs during the downstream migration period.

Within 180 days after the date of license issuance, the Licensee shall file, for Commission approval, detailed design drawings of the Licensee's proposed permanent downstream fish passage facilities. This filing shall include but not be limited to: (1) the location and design specifications of the passage facilities; (2) a schedule for installing the facilities; and (3) procedures for operating and maintaining the facilities.

The Licensee shall include with the filing documentation of consultation, copies of agency comments and recommendations on the drawings, plans, and schedule after they have been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the Licensee's facilities.

The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the drawings, plans, and schedule with the Commission. If the Licensee does not

adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the proposed facilities and schedule. No construction of downstream fish passage facilities shall begin until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval, the Licensee shall implement the proposal, including any changes required by the Commission.

Article 407. The Licensee shall install and operate permanent upstream fish passage facilities at the Stillwater Project. Fishways shall be maintained and operated to maximize fish passage effectiveness throughout fish migration period(s) as defined below.

The upstream migration period is defined as April 15 to November for Atlantic salmon, May 1 to June 30 for American shad and alewife, June 1 to July 31 for blueback herring, and April 1 to November 30 for American eel. The Licensee shall keep the fishways in proper order and shall keep fishway areas clear of trash, logs, and material that would hinder passage. Anticipated maintenance shall be performed in sufficient time before a migratory period such that fishways can be tested and inspected and will operate effectively prior to and during the migratory periods.

Fishway design, maintenance and operational plans (including schedules) for all fish passage facilities shall be developed by the Licensee in consultation and cooperation with the U.S. Fish and Wildlife Service (FWS), the Penobscot Indian Nation (Penobscot Nation), and other fishery agencies (including the Maine Department of Inland Fisheries and Wildlife, Maine Department of Marine Resources, and the National Marine Fisheries Service). Functional design and final design plans for all fishways shall be developed in consultation and cooperation with the FWS, Penobscot Nation, and other fishery agencies. Upstream fishways must be designed to operate at mainstem Penobscot River flows up to 40,000 cfs (as measured for the Penobscot River at the U.S. Geological Survey gaging station at Eddington) during any upstream migration period designated herein. An attraction flow of up to 50 cfs at the fishway entrance shall be provided.

Within 180 days after the date of license issuance, the Licensee shall file, for Commission approval, detailed design drawings for

permanent upstream fish passage facilities. This filing shall include but not be limited to: (1) the location and design specifications of the passage facilities; (2) a schedule for installing the facilities; and (3) procedures for operating and maintaining the facilities.

The Licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the proposed facilities and schedule. No land-disturbing or land-clearing activities related to upstream fish passage shall begin until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval, the Licensee shall implement the proposal, including any changes required by the Commission.

Article 408. Within 18 months after license issuance, the Licensee shall file with the Commission, for approval, a plan to monitor the effectiveness of all the facilities and flows provided pursuant to Articles 406 and 409 of this license that will enable the efficient and safe passage of anadromous fish migrating upstream and downstream. The results of these monitoring studies shall be submitted to the agencies listed below and shall provide a basis for recommending future structural or operational changes at the project.

The monitoring plan shall include a schedule for: (1) implementation of the plan; (2) consultation with the appropriate federal and state agencies concerning the results of the monitoring; and (3) filing the results, agency comments, and Licensee's response to agency comments with the Commission.

The Licensee shall prepare the monitoring plan after consultation with the U.S. Fish and Wildlife Service, Maine Department of Marine Resources, the Maine Department of Environmental

Protection, the Penobscot Indian Nation, and the National Marine Fisheries Service.

The Licensee shall include with the plan documentation of agency consultation, copies of agency comments and recommendations on the plan after it has been prepared and provided to them, and specific descriptions of how the agencies' comments are accommodated by the Licensee's plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the proposed plan. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

If the results of the monitoring indicate that changes in project structures or operations, including alternative flow releases, are necessary to protect fish resources, the Licensee shall first consult with the agencies listed above to develop recommended measures for amelioration and then file its proposal with the Commission, for approval. The Commission reserves its authority to require the Licensee to modify project structures or operations to protect and enhance aquatic resources.

Article 409. Authority is reserved by the Commission to require the Licensee 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 under Section 18 of the Federal Power Act.

Article 410. Within one year of license issuance, the Licensee shall construct and provide for the operation and maintenance of the following recreational facilities:

- (1) provide fencing around the parking area on the east bank of the Stillwater dam and signs warning against launching canoes and walking out on to the dam;

- (2) provide gravel fill to the University of Maine to be used to create parking areas and one hand-carry boat and canoe access site;
- (3) provide surfacing materials for handicapped access to the northern cove in the University Forest adjacent to the Stillwater impoundment; and
- (4) designate a visitor parking area at the Stillwater powerhouse and continue to provide and maintain the portage trail around Stillwater dam, providing safety booms and hazard warning signs near the Stillwater dam, and assess the demand for additional recreational opportunities in conjunction with FERC Form 80 surveys.

The Licensee shall construct these facilities after consultation with the Maine Department of Conservation and the Maine Department of Environmental Protection Bureau Land Quality Control. These facilities shall be shown on the as-built drawings filed pursuant to this license.

The Licensee shall file a report with the as-built drawings, which shall include the entity responsible for operation and maintenance of the facilities, documentation of consultation, copies of comments and recommendations on the report after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the report. The Licensee shall allow a minimum of 30 days for the agencies to comment before filing the report with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

Article 411. The Licensee, after consultation with the Town of Orono, National Park Service, Penobscot Indian Nation, Maine Department of Environmental Protection, and Maine Department of Conservation, shall monitor recreation and Indian cultural use of the project area to determine whether existing recreation facilities are meeting recreation and Indian cultural use needs. Monitoring studies shall begin within six years of the issuance date of this license. Monitoring studies, at a minimum, shall include collection of annual recreation use data.

Every six years during the term of the license, the Licensee shall file a report with the Commission on the monitoring results. This report shall include:

- (1) annual recreation and Indian cultural use figures;
- (2) a discussion of the adequacy of the Licensee's recreation facilities at the project site to meet recreation demand;
- (3) a description of the methodology used to collect all study data;
- (4) if there is need for additional facilities, the licensee's design of recreational facilities and how such design takes into account the national standards established by the Architectural and Transportation Barriers Compliance Board pursuant to the Americans with Disabilities Act of 1990;
- (5) documentation of agency consultation and agency comments on the report after it has been prepared and provided to the agencies; and
- (6) specific descriptions of how the agency comments are accommodated by the report.

The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations prior to filing the report with the Commission.

Article 412. The Licensee shall implement the "Programmatic Agreement Among the Federal Energy Regulatory Commission, the Advisory Council on Historic Preservation, and the Maine State Historic Preservation Officer, for Managing Historic Properties That May Be Affected By A License Issuing To Bangor Hydro-Electric Company To Continue Operating The Stillwater Hydroelectric Project In Maine", executed on August 8, 1997, including but not limited to the Cultural Resources Management Plan for the Project. In the event that the

Programmatic Agreement is terminated, the Licensee shall implement the provisions of its approved Cultural Resources Management Plan.

The Commission reserves the authority to require changes to the Cultural Resources Management Plan at any time during the term of the license. If the Programmatic Agreement is terminated prior to Commission approval of the Cultural Resources Management Plan, the Licensee shall obtain Commission approval before engaging in any ground disturbing activities or taking any other action that may affect any historic properties within the Project's area of potential effect.

Article 413. (a) In accordance with the provisions of this license, the Licensee shall 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 Licensee 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 Licensee shall 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 license. If a permitted use and occupancy violates any condition of this license or any other condition imposed by the Licensee 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 license is violated, the Licensee shall 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 water for which the Licensee 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 watercraft 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 Licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The Licensee shall 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 Licensee shall: (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 reservoir shoreline.

To implement this paragraph (b), the Licensee 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 Licensee's costs of administering the permit program. The Commission reserves the right to require the Licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The Licensee 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 reservoir.

No later than January 31 of each year, the Licensee shall file three copies of 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.

(d) The Licensee 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 watercraft 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 Exhibit R or 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 Licensee must submit a letter to the Director, Office of Hydropower Licensing, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked exhibit G or K 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 Director, within 45 days from the filing date, requires the Licensee to file an application for prior approval, the Licensee 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 Licensee shall 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 Licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved exhibit R or approved report on recreational resources of an exhibit E; or, if the project does not have an approved exhibit R or 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 shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee shall take all reasonable precautions to insure 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 shall not unduly restrict public access to project waters.

(4) The Commission reserves the right to require the Licensee to take reasonable remedial action to correct any violation of the terms and conditions of this license, 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 license does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this license only upon approval of revised exhibit G or K drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this license 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 license from the project shall be consolidated for consideration when revised exhibit G or K drawings would be filed for approval for other purposes.

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

(E) The Licensee shall serve copies of any Commission filing required by this order on any entity specified in this order to be consulted on matters related to that filing. Proof of service on these entities must accompany the filing with the Commission.

(F) The motion to intervene filed by American Rivers is granted.

(G) This order is final unless a request for rehearing is filed within 30 days from the date of its issuance, as provided in Section 313(a) of the FPA. The filing of a request for rehearing does not operate as a stay of the effective date of this license or of any other date specified in this order, except as specifically ordered by the Commission. The Licensee's failure to file a request for rehearing shall constitute acceptance of this license.

By the Commission.

(S E A L)

Linwood A. Watson, Jr.,
Acting Secretary.

THEREFORE, the Department GRANTS certification that there is a reasonable assurance that the continued operation of the Stillwater Hydro Project, as described above, will not violate applicable water quality standards, SUBJECT TO THE FOLLOWING CONDITIONS:

1. INTERIM MINIMUM FLOWS

- A. Except as temporarily modified by operating emergencies beyond the applicant's control, as defined below, the facility shall be operated as run-of-river (outflow equals inflow) while passing an interim minimum flow of 20 cfs in the so-called west bypass channel and an interim minimum flow of 50 cfs in the east bypass channel.
- B. Operating emergencies beyond the applicant's control include, but may not be limited to, equipment failure or other temporary abnormal operating condition, generating unit operation or interruption under power supply emergencies, and orders from local, state, or federal law enforcement or public safety authorities.
- C. The applicant shall, in accordance with the schedule established in a new FERC license for the project, submit plans for providing and monitoring the minimum flow required by Part A of this condition. These plans shall be reviewed by and must receive approval of the DEP Bureau of Land Quality Control.

2. BERM MODIFICATION AND MINIMUM FLOW STUDY

- A. The applicant shall make physical modifications to the gravel/cobble berm separating habitat sections 1 and 3 and conduct a minimum flow study to determine habitat availability for the life stages of the target fish species previously evaluated.
- B. The applicant shall, in consultation with the Department of Inland Fisheries and Wildlife, the Department of Marine Resources, the Atlantic Sea Run Salmon Commission, and the Penobscot Indian Nation, prepare a plan to make physical modifications to the gravel/cobble berm separating section 1 and 3 as seen on Exhibit #3, and to conduct a study assessing the impact of various minimum flow releases between leakage and 190 cfs, on the habitat in sections 1, 2, and 3. The plan shall be reviewed by and must receive approval of state and federal fisheries agencies and the DEP Bureau of Land Quality Control.

- C. The results of the minimum flow study and the applicant's proposals for maintenance of the berm and long-term minimum flow releases that will adequately maintain fish habitat in sections 1, 2, and 3 shall be submitted to the DEP Bureau of Land Quality Control within one full field season following the issuance of a new FERC license for the project. After reviewing the study results, the applicant's proposal, and agency comments, the Department shall order such continuation or modification of the interim minimum flow established by this approval as is deemed necessary to maintain adequate fish habitat in section 1, 2, and 3 and in the west bypass channel.

3. WATER LEVELS

- A. Except as temporarily modified by normal maintenance activities or by inflows to the project area or by operating emergencies beyond the applicant's control, as defined below, water levels in the Stillwater impoundment shall be maintained within one foot of normal full pond elevation of 93.65 feet (NGVD) while flashboards are in place.
- B. Operating emergencies beyond the applicant's control include, but may not be limited to, equipment failure or other temporary abnormal operating conditions, generating unit operation or interruption under power supply emergencies, and orders from local, state, or federal law enforcement or public safety authorities.
- C. The applicant shall, in accordance with the schedule established in a new FERC license for the project, submit plans for providing and monitoring the water levels in the Stillwater impoundment as required in Part A of this condition. These plans shall be reviewed by and must be receive approval of the DEP Bureau of Land Quality Control.

4. FISH PASSAGE FACILITIES

- A. The applicant shall install and operate permanent upstream and downstream fish passage facilities at the Stillwater Project as proposed in the application.
- B. The applicant shall, in accordance with the schedule established in a new FERC license for the project, submit functional design drawings, a construction schedule, and operating and maintenance plans for all fish passage facilities required by Part A of this condition, prepared in consultation with state and federal fisheries agencies and the Penobscot Indian Nation. These submittals shall be reviewed by and must receive

approval of state and federal fisheries agencies, FERC and the DEP Bureau of Land Quality Control prior to facilities construction.

5. FISH PASSAGE STUDIES

- A. The applicant shall, in consultation with state and federal fisheries agencies and the Penobscot Indian Nation, conduct a study to monitor and evaluate the effectiveness of all fish passage facilities constructed pursuant to Condition 4 of this certification.
- B. The applicant shall, within 1 year following the issuance of a new FERC license for the project, submit a fish passage study plan and schedule, prepared in consultation with state and federal fisheries agencies and the Penobscot Indian Nation. This plan and schedule shall be reviewed by and must receive approval of state and federal fisheries agencies, FERC, and the DEP Bureau of Land Quality Control.
- C. The applicant shall, in accordance with the schedule established in a new FERC license for the project, submit the results of the fish passage study, along with any recommendations for structural, operational changes, or additional fishways, based on the results of the study, to the DEP Bureau of Land Quality Control and to all consulting agencies. The Department reserves the right, after opportunity for hearing, and after reviewing the comments and recommendations for the consulting fishery agencies and the Penobscot Indian Nation, to require reasonable structural and/or operational changes to the existing fish passage facilities, or require additional fishways, as may be necessary to effectively pass anadromous fish through the project area. Any such changes or new fishways must also be approved by FERC.

6. RECREATIONAL FACILITIES AND ACCESS

- A. The applicant shall: provide fencing around the parking area on the east bank of the Stillwater Dam and provide warning signs; provide gravel fill and surfacing materials as agreed to in the Memorandum of Understanding between the applicant and the University of Maine; designate a visitor's parking area at the Stillwater powerhouse; continue to maintain the portage trail around the Stillwater Dam; continue to provide safety booms and hazard warning signs in the vicinity of the Stillwater Dam; and continue to assess the demand for additional recreational opportunities.
- B. The applicant shall, in accordance with the schedule established in a new FERC license for the project, submit a schedule for implementing Part A

of this condition. This schedule shall be reviewed by the Department of Conservation and must receive approval of the DEP Bureau of Land Quality Control.

7. LIMITS OF APPROVAL

This approval is limited to and includes the proposals and plans contained in the application and supporting documents submitted and affirmed to by the applicant. All variances from the plans and proposals contained in said documents are subject to the review and approval of the Board or Department prior to implementation.

8. COMPLIANCE WITH ALL APPLICABLE LAWS

The applicant shall secure and appropriately comply with all applicable federal, state and local licenses, permits, authorizations, conditions, agreements and orders required for the operation of the project.

9. EFFECTIVE DATE

This water quality certification shall be effective on the date of issuance of a new hydropower project license by the Federal Energy Regulatory Commission (FERC) and shall expire with the expiration of this FERC license.



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

ORIGINAL

JOHN ELIAS BALDACCI
GOVERNOR

DAWN R. GALLAGHER
COMMISSIONER

COMMENTS

January 13, 2005

Magalie R. Salas, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

FILED
OFFICE OF THE
SECRETARY
2005 JAN 24 P 4: 10
FEDERAL ENERGY
REGULATORY COMMISSION

RE: Application for Amendment of License
Stillwater Hydro Project
FERC No. 2712

Dear Secretary Salas:

This is in response to the Application for Amendment of License of PPL Maine LLC for the existing Stillwater Hydro Project, FERC No. 2712, located on the Stillwater Branch of the Penobscot River in the City of Old Town, Penobscot County, Maine.

On December 22, 2004, the Maine Department of Environmental Protection (MDEP) issued a draft Maine Waterway Development and Conservation Act (MWDCA) Permit and Water Quality Certification, with conditions, for the proposed modification of the Stillwater Project. The draft order reflected an impoundment level increase of one foot and reduced minimum bypass flow requirements and incorporated all appropriate terms and conditions of the June 25, 2004 Lower Penobscot River Basin Comprehensive Settlement Accord.

The MDEP has now issued a final MWDCA Permit and Water Quality Certification for the proposed modification of the Stillwater Project. The final permit and certification reflects the comments received by the MDEP on the draft Order. A copy of the Department Order approving the modification is attached.

In summary, the proposed modification of the Stillwater Project has been certified as meeting applicable water quality standards, subject to the following conditions:

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688
RAY BLDG., HOSPITAL ST.

BANGOR
106 HOGAN ROAD
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1215 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769-2094
(207) 764-0477 FAX: (207) 764-1507

Comments Re: Stillwater Hydro Project
FERC No. 2712
January 13, 2005
Page 2

- The Standard Condition of Approval for projects under the Maine Waterway Development and Conservation Act.
- All existing permit conditions for the Stillwater Project as contained in Department Order #L-16773-33-A-N dated December 29, 1992, subject to any subsequent amendments, modifications and condition compliances, shall remain in effect except as specifically modified by this approval.
- Except as temporarily modified by specified conditions, the project shall be operated as run-of-river (outflow equals inflow) while passing minimum flows of 20 cfs into the west bypass channel and 50 cfs into the east bypass channel.
- Except as temporarily modified by specified conditions, water levels in the project impoundment shall be maintained within one foot of full pond elevation (94.65 feet msl) when flashboards are in place, and within one foot of spillway crest elevation when flashboards are not in place.
- The applicant shall provide upstream and downstream eel passage and downstream fish passage and shall establish a Contingent Mitigation Fund in accordance with the terms of the Lower Penobscot River Multiparty Settlement Agreement.
- The applicant shall conduct studies to determine the effectiveness of all required interim and permanent upstream and downstream fish passage facilities and/or operational measures. The MDEP reserves the right to require such reasonable changes in fish passage design and/or operation as are warranted by the results of the studies.

We recommend that the forgoing conditions be included in the Articles of the Amendment of License issued for the Stillwater Hydro Project, in compliance with the provisions of Sections 401 (a) and (d) of the Clean Water Act.

By Executive order of the Governor of the State of Maine, the terms and conditions in the attached Water Quality Certification represent the State's official recommendations regarding the subject Application for New License, superceding all preliminary recommendations by individual State agencies.

Comments Re: Stillwater Hydro Project

FERC No. 2712

January 13, 2005

Page 3

Please direct any questions regarding these comments to Dana Murch of the MDEP staff at 207-287-7784.

Sincerely,



Andrew C. Fisk, Director
Bureau of Land & Water Quality

Attachment

cc: Scott Hall, PPL Maine
Jay Clement, COE
Clem Fay, PIN
John Banks, PIN
Betsy Elder, SPO
Todd Burrowes, SPO
Kathy Eickenberg, DOC
Norm Dube, ASC
Pat Keliher, ASC
Steve Timpano, IF&W (Augusta)
Mike Smith, IF&W-Region F (Fisheries)
Kevin Stevens, IF&W-Region F (Wildlife)
Gordon Russell, USF&WS
Ron Kreisman, Esq.
Art Spiess, MHPC
Gail Wippelhauser, DMR
Tom Squiers, SMR
Laura Rose Day, NRCM
John Burrows, ASF
Jeff Reardon, TU
Sarah Verville, Esq.
Maureen Winters, DTA
Andy Fisk, DEP
Mark Margerum, DEP
Paul Mitnik, DEP
Leon Tsomides, DEP



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
STATE HOUSE STATION 17 AUGUSTA, MAINE 04333

DEPARTMENT ORDER

IN THE MATTER OF

PPL MAINE LLC	) MAINE WATERWAY DEVELOPMENT AND
Old Town, Maine	) CONSERVATION ACT and
Penobscot County	) WATER QUALITY CERTIFICATION
STILLWATER HYDRO PROJECT)
FLASHBOARD REPLACEMENT	) FINDINGS OF FACT AND ORDER
#L-16773-33-F-M (APPROVAL)	) PERMIT MODIFICATION

Pursuant to the provisions of 38 MRSA Sections 464 *et seq.* and Sections 630 *et seq.*, 06-096 CMR 450 (Administrative Rules for Hydropower Projects, effective date September 1, 1987), and Section 401 of the Federal Water Pollution Control Act (a.k.a. Clean Water Act), the Department of Environmental Protection has considered the application of PPL MAINE, LLC with its supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

1. APPLICATION SUMMARY

- A. Application. The applicant proposes to replace the existing flashboard system, modify the minimum bypass flow requirements, and modify the fish passage requirements of the existing Stillwater Hydro Project, located on the Stillwater Branch of the Penobscot River in the City of Old Town, Penobscot County, Maine. The applicant also proposes to comply with the requirements of the Lower Penobscot River Basin Comprehensive Settlement Accord (Accord), dated June 25, 2004, as they apply to the Stillwater Project.
- B. Existing Project. The existing Stillwater Project consists of a dam, an old abandoned powerhouse, a working powerhouse, an impoundment, and appurtenant facilities. The dam and powerhouse were originally constructed in 1902.

The Stillwater dam is a 1,712 foot long concrete gravity dam consisting of several different sections varying in length and configuration. The old powerhouse forms part of the dam's non-overflow section. Only parts of the walls and foundation of the old powerhouse remain. The dam ranges in height from a few inches to 22 feet. Two foot high wooden flashboards are attached to spillway portions of the dam by metal pins.

The dam is located upstream of the Orono Project on the Stillwater Branch of the Penobscot River in the City of Old Town. The dam creates an impoundment with a surface area of about 184 acres at a normal full pond elevation of 93.65 feet with the present flashboards. The impoundment extends upstream about 3 miles to a point just below the Gilman Falls Dam, which is part of the Milford Hydro Project.

The project powerhouse contains four turbine-generator units with a total rated generating capacity of 1,950 KW at a gross head of 18.0 feet. The maximum hydraulic capacity of the generating units is 1,700 cubic feet per second (cfs).

The operation of the Stillwater Project was approved by the DEP in Department Order #L-16773-33-A-N, dated December 29, 1992. Minimum flows to the bypassed reach were subsequently modified in Department Order #L-16773-33-E-M, dated June 18, 2001. The project is operated as a hydroelectric generating facility under the terms of FERC License No. 2712.

- C. Summary of Proposed Modifications. The applicant proposes to install new flashboards which will be one foot taller, in place of the existing flashboards on the three sections of the project which are currently equipped with flashboards. In addition, five other sections that are not currently equipped with flashboards will have flashboards installed. The new flashboard system has been designed to allow failure when overtopped by one foot of water, at elevation 95.65 feet NGVD, which is the same elevation at which the existing flashboards are designed to fail (when overtopped by two feet of water). Additionally, the flashboards will fail at a lower flow. The new flashboard system will be installed in the same manner as the existing flashboards. The replacement will not require any instream construction activity.

The applicant also proposes to modify the minimum bypass flow requirements at the project by reducing from 40 cfs to 20 cfs the release to the west bypassed channel and by reducing from 155 cfs to 50 cfs the release to the east bypassed channel. These changes in minimum bypass flows will be accomplished by reducing the openings in the flashboard system on the main dam, and the section of dam above the east channel bypass, to allow passage of the modified flows on a continuous basis. These changes are subject to the provisions of the contingent mitigation fund as described in the Lower Penobscot River Basin Comprehensive Settlement Accord.

The applicant also proposes to modify the fish passage requirements at the project to make them consistent with the Lower Penobscot River Basin Comprehensive Settlement Accord.

- D. Summary of Proposed Project Operation. The applicant proposes to continue to operate the project in a run-of-river mode, with outflows approximately equal to inflows. The normal impoundment elevation at the dam will be raised from 93.65 feet to 94.65 feet. This elevation will continue to be maintained when river flows are at or below the hydraulic capacity of the turbines. The impoundment surface area of approximately 184 acres will be increased by seven acres to approximately 191 acres. Due to prominent hydraulic controls at the upstream end of the impoundment the length of the project impoundment will not increase appreciably.

2. JURISDICTION

A. Hydropower Project Permit. The proposed flashboard replacement qualifies as the "construction, reconstruction or structural alteration of a hydropower project" under the Maine Waterway Development and Conservation Act (MWDCA), 38 MRSA Section 630 et seq. The proposed modifications of project operation qualifies as a change in the terms and conditions of the MWDCA permit currently in effect for the project that must be approved by the Department.

B. Water Quality Certification. The proposed flashboard replacement and modification of project operation qualify as an "activity...which may result in (a) discharge into the navigable water (of the United States)" under the Clean Water Act (CWA), 33 USC 1251 et seq. Section 401 of the CWA requires that any applicant for a federal license or permit to conduct such an activity will comply with applicable State water quality standards.

The applicant has filed an Application for Amendment of License for the Stillwater Hydroelectric Project with the Federal Energy Regulatory Commission to authorize the proposed new flashboard system and modifications of project operation.

C. Terms and Conditions. Section 401 (d) of the CWA provides that a water quality certification shall set forth any limitations necessary to assure that an applicant for a federal license or permit will comply with any appropriate requirement of state law, and that such limitations shall become a condition on the federal license or permit issued for the activity. As discussed above, a permit is required under the MWDCA for the proposed new flashboard system and modifications of project operation. The MWDCDA is a state water quality-related law. Consequently, the terms and conditions of any permit issued for this project constitute appropriate and necessary limitations to be set forth in any certification issued for the project.

3. APPLICABLE WATER QUALITY STANDARDS

A. Classification. The waters of the Stillwater Branch and the Penobscot River affected by the Stillwater Project are currently classified as follows: Penobscot River, from the West Enfield Dam, including the Stillwater Branch, to the Veazie Dam, including all impoundments – Class B. 38 MRSA § 467(7)(A)(5).

B. Designated Uses. Class B waters shall be of such quality that they are suitable for the designated uses of drinking water supply after treatment; fishing; recreation in and on the water; industrial process and cooling water supply; hydroelectric power generation; navigation; and as habitat for fish and other aquatic life. The habitat of Class B waters shall be characterized as unimpaired. 38 MRSA Section 465(3)(A).

C. Numeric Standards. The numeric standards for the receiving waters are as follows.

The dissolved oxygen content of Class B waters shall be not less than 7 parts per million or 75% of saturation, whichever is higher, except that for the period from October 1st to May 14th, in order to ensure spawning and egg incubation of indigenous fish species, the 7-day mean dissolved oxygen concentration shall not be less than 9.5 parts per million and the 1-day minimum dissolved oxygen concentration shall not be less than 8.0 parts per million in identified fish spawning areas. 38 MRSA Section 465(3)(B).

D. Narrative Standards. The narrative standards for the receiving waters are as follows.

Discharges to Class B waters shall not cause adverse impact to aquatic life in that the receiving waters shall be of sufficient quality to support all aquatic species indigenous to the receiving water without detrimental changes in the resident biological community. 38 MRSA Section 465(3)(C).

The habitat characteristics and aquatic life criteria of Class B are deemed to be met in existing impoundments classified as B if the impounded waters satisfy Class C aquatic life criteria (the receiving waters shall be of sufficient quality to support all species of fish indigenous to the receiving waters and maintain the structure and function of the resident biological community), provided that any reasonable changes are implemented that do not significantly affect existing energy generation capability and would result in improvement in the habitat and aquatic life of the impounded waters, and further provided that, when the actual quality of the impounded waters attains any more stringent habitat characteristic or aquatic life criteria than required under Class C standards, that water quality must be maintained and protected. 38 MRSA Section 464(10).

E. Antidegradation. The Department may only approve water quality certification if the standards of classification of the waterbody and the requirements of the State's antidegradation policy will be met. The Department may approve water quality certification for a project affecting a waterbody in which the standards of classification are not met if the project does not cause or contribute to the failure of the waterbody to meet the standards of classification. 38 M.R.S.A. § 464(4)(F).

4. DISSOLVED OXYGEN

The Department has developed a water quality model for the Penobscot River. This model has been calibrated and verified with data collected in 1997 and 2001. The Department has reviewed the proposed increase in impoundment level using this model to predict expected changes in dissolved oxygen. The model predicts that no lowering of dissolved oxygen levels should occur in the Stillwater impoundment as a result of the change in water level. Based on this review, the Department finds that the proposed impoundment level change will not have any adverse impact on dissolved oxygen conditions in the project waters.

5. AQUATIC LIFE

The proposed increase in impoundment full pond level and reductions in minimum flows to the bypassed reach are not expected to have any adverse impact on aquatic life in the project waters. An instream flow study was conducted in 1991 in association with the relicensing of the project (BHE 1991). The weighted usable area (WUA) for target species and lifestages was determined for both channels, at various flows. The proposed minimum flows would provide 71 and 80 percent of total maximum WUA in the west and east channels, respectively.

6. FISHERY RESOURCES

A. Comprehensive Settlement Accord. The Lower Penobscot River Basin Comprehensive Settlement Accord (Accord), dated June 25, 2004, established a comprehensive settlement governing fisheries restoration for numerous anadromous and catadromous species to assist in the restoration of these species in the lower Penobscot River Basin. The Accord was designed to accomplish the following:

- The sale by PPL of the Veazie, Great Works, and Howland dams to the Penobscot River Restoration Trust (Trust), the decommissioning and removal of Veazie and Great Works, and the decommissioning and bypassing of Howland;
- The upgrading of fish passage at the remaining PPL dams in the lower Penobscot River Basin;
- The provision for increased power production at remaining PPL dams to replace power lost by removals/bypass;
- The provision for continued public outreach and other appropriate steps to address local concerns;
- The settlement of outstanding litigation regarding Basin Mills, Milford and other projects and resolution of the pending Great Works and Howland licensing proceedings; and,
- The provision of a Contingent Mitigation Fund (Mitigation Fund) in the event that the Veazie and Great Works dams are not purchased and removed by the Trust.

The Accord includes the Lower Penobscot River Multiparty Settlement Agreement, dated June 2004 (MPA). The MPA is intended to: significantly enhance fishery restoration efforts in the Penobscot River Basin and resolve to the Parties' satisfaction all pending fish passage issues associated with the Veazie, Great Works, and Howland Projects ("Designated Projects") and other hydroelectric projects in the Penobscot River Basin currently owned or operated by PPL Maine. The MPA is also intended to resolve to the Parties' satisfaction all issues raised in the requests for rehearing filed by PPL Maine's predecessor in interest, Department of the Interior, Penobscot Indian Nation, Atlantic Salmon Federation, Maine Audubon Society, Maine Council of the Atlantic Salmon

Foundation and Trout Unlimited of the Federal Energy Regulatory Commission's April 30, 1998, orders for Basin Mills, Veazie, Milford, Orono, and Stillwater projects.

B. Applicant's proposals. The applicant proposes to comply with the Lower Penobscot River Multiparty Settlement Agreement as it applies to the Stillwater Project. The only provision for fish passage currently in place at the project is a downstream bypass. Under the MPA, PPL is obligated to make the following provisions relating to the Stillwater Project:

- Continue to operate the existing downstream passage facilities, reducing the trashrack spacing to 1-inch no later than one year from the Effective Date of the Agreement.
- Add 2-week shutdowns at night for downstream eel migration if shown to be necessary by effectiveness studies, but in no case earlier than the expiration of the safe harbor period established in the MPA;
- Install an upstream fishway for eels, to be operational prior to the beginning of the third upstream eel migration season (approximately May 1) following the Effective Date of the Agreement;
- In the event the option to purchase the Veazie, Great Works, and Howland projects is exercised and those projects are acquired by the Trust, implement, to the extent not already implemented, the downstream fish passage measures contained in the current DOI Prescription in accordance with the terms of the MPA;
- In the event Veazie, Great Works, and Howland are not acquired in accordance with the Accord, implement the May 20, 1997, DOI prescription for upstream fish passage as described in the Accord;
- In the event the option to purchase the Veazie, Great Works, and Howland projects is not exercised or Veazie and Great Works are not decommissioned and removed by the Trust, provide monetary compensation in accordance with the MPA to mitigate for the impacts to habitat that may be caused by the implementation of the headpond increase and reduced minimum bypass flows at the Stillwater project; and,
- Conduct effectiveness studies of all interim and permanent fish passage facilities installed at the Stillwater Project.

C. Discussion. The Department finds that the applicant's proposals to continue to provide passage for anadromous and catadromous fish at the Stillwater Project and provide contingent mitigation support for fisheries resources in accordance with the Lower Penobscot River Multiparty Settlement Agreement will be adequate to ensure that project waters are suitable for the designated use of habitat for fish.

7. PUBLIC ACCESS AND RECREATION

The proposed increase in impoundment full pond level is not expected to have any adverse impact on public access to or recreational uses of the project waters.

8. HISTORIC AND ARCHAEOLOGICAL RESOURCES

The Maine Historic Preservation Commission has commented, in a letter dated March 15, 2004, that the proposed increase in normal impoundment level will have no effect upon historic properties, architectural or archaeological resources.

9. SOIL STABILITY, WETLANDS AND WILDLIFE

The proposed increase in impoundment full pond level is not expected to have any adverse impact on soil stability, wetlands and wildlife in the project area.

10. FLOOD CONTROL

The new flashboard system has been designed to allow failure when overtopped by one foot of water, at elevation 95.65 feet NGVD, which is the same elevation at which the existing flashboards are designed to fail (when overtopped by two feet of water). Thus, by maintaining the same flashboard failure point, the dam's flood flow discharge capacity will be maintained, and there will be no change in upstream water levels during high-flow periods. With the new flashboards installed the frequency of flashboard outages is not expected to appreciably increase. The existing flashboards currently fail approximately once per year, typically in the spring. The new flashboards are expected to fail only slightly more often, or for a short additional period each spring, failing a few hours or days earlier than the existing flashboards would otherwise have failed.

11. HYDROELECTRIC POWER GENERATION

The proposed increase in impoundment level and reductions in minimum flows will increase average annual generation at the Stillwater Project by 1,688,000 kilowatt hours per year. This is equivalent to the electricity that would be produced by burning 2,813 barrels of oil or 782 tons of coal each year.

12. OTHER ISSUES; REVIEW COMMENTS

No other significant issues involving any statutory criteria of the Maine Waterway Development and Conservation Act have been identified. No objections to the proposed activity have been raised by State review agencies or the affected municipalities.

BASED on the above Findings of Fact, and the evidence contained in the application and supporting documents, and subject to the Conditions listed below, the Department makes the following CONCLUSIONS:

1. The applicant has the financial capacity and technical ability to undertake the project.

PPL MAINE LLC	)	MAINE WATERWAY DEVELOPMENT AND
STILLWATER HYDRO PROJECT	)	CONSERVATION ACT
#L-16773-33-F-M (APPROVAL)	)	WATER QUALITY CERTIFICATION

page 8

2. The applicant has made adequate provision for protection of public safety.
3. The project will result in significant economic benefits to the public.
4. The applicant has made adequate provision for traffic movement.
5. The proposed activity is not located within the jurisdiction of the Land Use Regulation Commission.
6. The applicant has made reasonable provisions to realize the environmental benefits and to mitigate the adverse environmental impacts of the project provided that:
 - a. All existing permit conditions remain in effect except as specifically modified by this approval;
 - b. Following the installation of the new flashboard system, impoundment levels are maintained within one foot of the new flashboard elevation of 94.65 feet msl;
 - c. Minimum flows are provided below the project as proposed;
 - d. The applicant complies with the fish passage and contingent mitigation fund requirements of the Lower Penobscot River Multiparty Settlement Agreement, as applicable to the Stillwater Project.
7. The advantages of the project are greater than the direct and cumulative adverse impacts over the life of the project provided that the project is undertaken in accordance with the provisions of Conclusion #6 above.
8. There is reasonable assurance that the project will not violate applicable state water quality standards.

THEREFORE, the Department APPROVES the above noted application of PPL Maine, LLC to install new flashboards and make other modifications to project operation at the Stillwater Hydro Project, as described above, SUBJECT TO THE ATTACHED CONDITIONS, and all applicable standards and regulations:

1. STANDARD CONDITIONS

The Standard Conditions of Approval for projects under the Maine Waterway Development and Conservation Act, a copy attached.

2. EXISTING PERMIT CONDITIONS

All existing permit conditions for the Stillwater Project as contained in Department Order #L-16773-33-A-N, dated December 29, 1992, subject to any subsequent amendments, modifications and condition compliances, shall remain in effect except as specifically modified by this approval. The following conditions are specifically modified:

PPL MAINE LLC
STILLWATER HYDRO PROJECT
#L-16773-33-F-M (APPROVAL)

) MAINE WATERWAY DEVELOPMENT AND
) CONSERVATION ACT
) WATER QUALITY CERTIFICATION

Condition 1 of Department Order #L-16773-35-A-N dated December 29, 1992, as previously modified by Department Order #L-16773-33-E-M dated June 18, 2001 is modified to read:

1. MINIMUM FLOWS

- A. Except as temporarily modified by (1) approved maintenance activities, (2) extreme hydrologic conditions, as defined below, (3) emergency electrical system conditions, as defined below, or (4) agreement between the applicant and appropriate state and/or federal agencies, the project shall be operated as run-of-river (outflow equals inflow) while passing minimum flows of 20 cfs into the west bypass channel and 50 cfs into the east bypass channel.
- B. "Extreme Hydrologic Conditions" means the occurrence of events beyond the Licensee's control, such as, but not limited to, abnormal precipitation, extreme runoff, flood conditions, ice conditions or other hydrologic conditions such that the operational restrictions and requirements contained herein are impossible to achieve or are inconsistent with the safe operation of the project.
- C. "Emergency Electrical System Conditions" means operating emergencies beyond Licensee's control which require changes in flow regimes to eliminate such emergencies which may in some circumstances include but are not limited to equipment failure or other abnormal temporary operating condition, generating unit operation or third-party mandated interruptions under power supply emergencies; and orders from local, state or federal law enforcement or public safety authorities.

Condition 3 of Department Order #L-16773-35-A-N dated December 29, 1992, is modified to read:

3. WATER LEVELS

- A. Except as temporarily modified by (1) approved maintenance activities, (2) extreme hydrologic conditions, as defined below, (3) emergency electrical system conditions, as defined below, or (4) agreement between the applicant, appropriate state and/or federal agencies, and the Penobscot Indian Nation, water levels in the Stillwater project impoundment shall be maintained within one foot of full pond elevation of 94.65 feet msl when flashboards are in place. During times of flashboard failure, the applicant will maintain water levels at or above the spillway crest. During those times when flashboards are being replaced, the applicant will maintain water levels within one foot of the spillway crest.
- B. "Extreme Hydrologic Conditions" means the occurrence of events beyond the Licensee's control, such as, but not limited to, abnormal precipitation, extreme runoff,

flood conditions, ice conditions or other hydrologic conditions such that the operational restrictions and requirements contained herein are impossible to achieve or are inconsistent with the safe operation of the project.

- C. "Emergency Electrical System Conditions" means operating emergencies beyond Licensee's control which require changes in flow regimes to eliminate such emergencies which may in some circumstances include but are not limited to equipment failure or other abnormal temporary operating condition, generating unit operation or third-party mandated interruptions under power supply emergencies; and orders from local, state or federal law enforcement or public safety authorities.

Condition 4 of Department Order #L-16773-35-A-N dated December 29, 1992, is modified to read:

4. FISH PASSAGE

A. UPSTREAM EEL PASSAGE

The applicant shall install and operate an upstream fishway for eels at the Stillwater Project, in accordance with the terms of the Lower Penobscot River Multiparty Settlement Agreement, dated June 2004.

B. DOWNSTREAM FISH PASSAGE

(1) The applicant shall continue to operate the existing downstream passage facilities, in accordance with the terms of the Lower Penobscot River Multiparty Settlement Agreement, dated June 2004, and shall reduce the trashrack spacing to 1-inch no later than one year from the Effective Date of the Agreement.

(2) Upon Acquisition of Designated Projects by the Trust. In the event the option to purchase the Veazie, Great Works, and Howland projects is exercised and those projects are acquired by the Trust, the applicant shall implement, to the extent not already implemented, the downstream fish passage measures contained in the May 20, 1997, DOI Fishway Prescription, in accordance with the terms of the Lower Penobscot River Multiparty Settlement Agreement, dated June 2004.

C. DOWNSTREAM EEL PASSAGE

If shown to be necessary by effectiveness studies conducted in accordance with condition 5 below, the applicant shall implement 2-week shutdowns at night for downstream eel migration. This shutdown shall not be required earlier than the expiration of the Safe Harbor period described in the Lower Penobscot River Multiparty Settlement Agreement, dated June 2004.

PPL MAINE LLC
STILLWATER HYDRO PROJECT
#L-16773-33-F-M (APPROVAL)

) MAINE WATERWAY DEVELOPMENT AND
) CONSERVATION ACT
) WATER QUALITY CERTIFICATION

D. UPSTREAM FISH PASSAGE

In the event the Veazie, Great Works, and Howland projects are not acquired by the Trust, the applicant shall install upstream fish passage facilities in accordance with the terms of the Lower Penobscot River Multiparty Settlement Agreement, dated June 2004. These fish passage facilities shall be as prescribed by the May 20, 1997 DOI Fishway Prescription.

E. CONTINGENT MITIGATION FUND

In the event that the option to purchase the Veazie and Great Works projects is not exercised or is terminated, or if, subsequent to the exercise of the option, the Veazie and Great Works projects are not acquired and removed, the applicant shall participate in the establishment of and shall provide funds to a Contingent Mitigation Fund, in accordance with the terms of the Lower Penobscot River Multiparty Settlement Agreement, dated June 2004.

F. FISH PASSAGE FACILITIES PLANS

The applicant shall, in accordance with the terms of the Lower Penobscot River Multiparty Settlement Agreement, dated June 2004, or upon such other schedule(s) as established by FERC, submit final design and operational plans for all upstream and downstream fish passage facilities and/or operational measures required by this approval, prepared in consultation with state and federal fisheries agencies and the Penobscot Indian Nation. These plans shall include a schedule for facilities construction and operation. These plans shall be reviewed by and must receive approval of the DEP prior to construction.

Condition 5 of Department Order #L-16773-35-A-N dated December 29, 1992, is modified to read:

5. FISH PASSAGE EFFECTIVENESS STUDIES AND RESULTS

- (1) Studies. The applicant shall, in consultation with state and federal fisheries agencies and the Penobscot Indian Nation, conduct a study or studies to determine the effectiveness of all interim and permanent upstream and downstream fish passage facilities and/or operational measures required by this approval.
- (2) Study plans. The applicant shall, in accordance with the schedule(s) established by FERC, submit plans for a study or studies to determine the effectiveness of all interim and permanent upstream and downstream fish passage facilities and/or operational measures required by this approval, prepared in consultation with state and federal fisheries agencies and the Penobscot Indian Nation. These plans shall be reviewed by and must receive approval of the DEP prior to implementation.

PPL MAINE LLC	)	MAINE WATERWAY DEVELOPMENT AND
STILLWATER HYDRO PROJECT	)	CONSERVATION ACT
#L-16773-33-F-M (APPROVAL)	)	WATER QUALITY CERTIFICATION

page 12

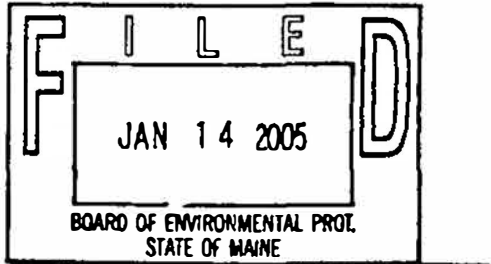
(3) Results of studies. The applicant shall, in accordance with the terms of the Lower Penobscot River Multiparty Settlement Agreement, dated June 2004, or the schedule(s) established by FERC, submit the results of any fish passage effectiveness study or studies, along with any recommendations for changes in the design and/or operation of any interim or permanent upstream or downstream fish passage facilities constructed and/or operated pursuant to this approval. The Department reserves the right, after notice and opportunity for hearing, to require reasonable changes in the design and/or operation of these fish passage facilities as may be deemed necessary to adequately pass anadromous fish through the project site. Any such changes must be approved by FERC prior to implementation.

DONE AND DATED AT AUGUSTA, MAINE, THIS 13th DAY OF JAN., 2005.

By: *Dawn R. Galagher*
 Dawn R. Galagher, Commissioner

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of receipt of application: 6/14/04
 Date application accepted for processing: 6/25/04



Date filed with the Board of Environmental Protection:

This Order prepared by Mark Margerum, Bureau of Land and Water Quality
 L-16773-33-F-M

STANDARD CONDITIONS OF APPROVAL TO BE ATTACHED TO ALL HYDROPOWER PERMITS

1. Limits of Approval. This approval is limited to and includes the proposals and plans contained in the application and supporting documents submitted and affirmed to by the applicant. All variances from the plans and proposals contained in said documents are subject to the review and approval of the Board or Commission prior to implementation.
2. Noncompliance. Should the project be found, at any time, not to be in compliance with any of the conditions of this approval, or should the permittee construct or operate this project in any way other than specified in the application or supporting documents, as modified by the conditions of this approval, then the terms of this approval shall be considered to have been violated.
3. Compliance with all Applicable Laws. The permittee shall secure and appropriately comply with all applicable federal, state and local licenses, permits, authorizations, conditions, agreements, and orders prior to or during construction and operation.
4. Inspection and Compliance. Authorized representatives of the Board, Commission or the Attorney General shall be granted access to the premises of the permittee at any reasonable time for the purpose of inspecting the construction or operation of the project and assuring compliance by the permittee with the conditions of this approval.
5. Initiation and Completion of Construction. If construction is not commenced within 3 years and completed within 7 years from the date of issuance of this permit, this approval shall lapse, unless a request for an extension of these deadlines has been approved by the Board or Commission.
6. Construction Schedule. Prior to construction, the permittee shall submit a final construction schedule for the project to the Commissioner or Director.
7. Approval Included in Contract Bids. A copy of this approval must be included in or attached to contract bid specifications for the project.
8. Approval Shown to Contractor. Work done by a contractor pursuant to this approval shall not begin before a copy of this approval has been shown to the contractor by the permittee.
9. Notification of Project Operation. The permittee shall notify the Commissioner or Director of the commencement of commercial operation of the project within 10 days prior to such commencement.
10. Assignment or Transfer of Approval. This approval shall expire upon the assignment or transfer of the property covered by this approval unless written consent to transfer this approval is obtained from the Board or Commission. A "transfer" is defined as the sale or lease of property which is the subject of this approval, or the sale of 50 percent or more of the stock of or interest in a corporation or a change in a general partner of a partnership which owns the property subject to this approval.

Effective 3/3

DEP LW149



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION
AUGUSTA, ME 04333

DEPARTMENT ORDER

IN THE MATTER OF

BLACK BEAR HYDRO PARTNERS, LLC) MAINE WATERWAY DEVELOPMENT AND
OLD TOWN, PENOBSCOT COUNTY) CONSERVATION ACT
STILLWATER HYDROELECTRIC PROJECT) WATER QUALITY CERTIFICATION
L-16773-33-O-M (approval)) MINOR REVISION

Pursuant to the provisions of the *Water Classification Program*, 38 M.R.S. §§ 464–470, the *Maine Waterway Development and Conservation Act*, 38 M.R.S. §§ 630–637, the *Administrative Rules For Hydropower Projects*, 06-096 CMR 450 (effective November 2, 2017), and Section 401 of the Federal Water Pollution Control Act (a.k.a. Clean Water Act), the Department of Environmental Protection has considered the application of BLACK BEAR HYDRO PARTNERS, LLC with the supportive data, agency review comments, and other related materials on file and finds the following facts:

1. APPLICATION SUMMARY:

A. Project Description

The Stillwater Hydroelectric Project (SHP or Project) is operated by Black Bear Hydro Partners, LLC (BBHP or Black Bear) and is located on the Stillwater Branch of the Penobscot River in the City of Old Town, Maine. The dam is a 1,712-foot-long concrete gravity dam consisting of several different sections varying in length and configuration, including the west and east bypass channels, which are separated by a small island. The dam ranges from a few inches to 22 feet in height. The Project creates an impoundment with a surface area of approximately 191 acres at normal full pond elevation of 94.65 feet, which includes flashboard modifications made in 2005. The impoundment extends upstream approximately 3 miles.

B. Summary

In Department Order #L-16773-33-F-M, dated January 13, 2005, the Department approved replacing the existing flashboards, modifying the minimum bypass flow requirements and modifying the fish passage requirements of the existing SHP. Special Condition #1.A. of the Order reads as follows, in pertinent part:

“1. Minimum Flows

- A. Except as temporarily modified by (1) approved maintenance activities, (2) extreme hydrological conditions, as defined below, (3) emergency electrical system conditions, as defined below, or (4) agreement between the applicant and appropriate state and/or federal agencies, the project shall be operated as run-of-river (outflow equals inflow) while passing minimum flows of 20 cfs into the west bypass channel and 50 cfs into the east bypass channel.”

Special Condition #1.A. provides minimum flows into both the east and west bypass channels downstream of the Stillwater dam. Black Bear's Operation and Flow Compliance Monitoring Plan submitted to FERC on June 14, 2013, indicated that the 20 cfs minimum flow to the west bypass channel would be conveyed by a 1.6-foot-wide notch in the flashboards, while the 50 cfs flow to the east bypass channel would be provided via the downstream fishway at Stillwater Powerhouse B or by operating at least one unit at Powerhouse B when the fish passage was not in operation.

On May 31, 2017, with support from the National Marine Fisheries Service (NMFS), the US Fish and Wildlife Service (USFWS), the Maine Department of Marine Resources (MDMR), and the Maine Department of Inland Fisheries and Wildlife (MDIFW), known collectively as the resource agencies, as well as The Penobscot Indian Nation (PIN), BBHP requested a temporary variance in minimum flow requirements at the Project in order to reduce flows in the vicinity of the upstream eel ladder and to perform upstream eel passage studies. The goal of this variance was to reduce flow through the flashboard gap at the west channel and to minimize associated false attraction of juvenile eels, thereby better directing eels to the entrance of the upstream eel ladder. Additionally, other alterations were made to the upstream eel passage with the intent of improving passage effectiveness. Upstream passage through the eel ladder markedly improved in 2017 following these flow modifications.

In response to Special Condition # 1.A, BBHP submitted an application to modify the minimum flow requirements associated with the SHP, proposing to eliminate specific minimum flow location requirements and direct the entire 70 cfs total minimum flow through the Stillwater B downstream fishway or powerhouse located in the east channel. The proposal would eliminate the requirement to pass 20 cfs at the west channel bypass in order to eliminate false attraction and improve flow conditions around the upstream eel passage entrance.

The applicant proposes to modify Condition #1.A as follows:

“1. Minimum Flows

- A. Except as is temporarily modified by (1) approved maintenance activities, (2) extreme hydrological conditions, as defined below, (3) emergency electrical system conditions, as defined below, or (4) agreement between the applicant and appropriate state and/or federal agencies, the project shall be operated as run-of-river (outflow equals inflow) while passing a minimum flow of 70 cfs into the bypass area below the Stillwater Dam.”

2. FINDINGS:

The proposed flow modification at the SHP is a minor change and will not significantly affect any issues identified during previous Department reviews of the project site. The Project application with supporting materials was reviewed by the Division of Environmental Assessment (DEA) staff who had no comment or concerns regarding changes to minimum flows at the Project. From 2013 through 2019 the applicant conducted studies and worked in

consultation with the NMFS, USFWS, the PIN, MDMR, and the MDIFW to develop the flow modifications proposed for the Project. The modifications were agreed to by the resource agencies and the PIN.

Based on its review of the application, the Department finds the requested minor revision to be in accordance with all relevant Departmental standards.

THEREFORE, the Department APPROVES the application of BLACK BEAR HYDRO PARTNERS, LLC to modify minimum flow location requirements at the Stillwater Hydroelectric Project SUBJECT TO THE FOLLOWING CONDITIONS and all applicable standards and regulations:

1. The Standard Conditions of Approval, a copy attached.
2. Severability. The invalidity or unenforceability of any provision, or part thereof, of this License shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.
3. All other Findings of Fact, Conclusions and Conditions remain as approved in Department Order #L-16773-33-F-M, and subsequent orders, and are incorporated herein.

DONE AND DATED IN AUGUSTA, MAINE, THIS 28th DAY OF October, 2019.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: 
Gerald D. Reid, Commissioner

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.
CS/L#16773-33-O-M/ATS#85133



Maine Waterways Development and Conservation Act

Standard Conditions of Approval

1. **Limits of Approval.** This approval is limited to and includes the proposals and plans contained in the application and supporting documents submitted and affirmed to by the applicant. All variances from the plans and proposals contained in said documents are subject to the review and approval of the Board or Commissioner prior to implementation.
2. **Noncompliance.** Should the project be found, at any time, not to be in compliance with any of the conditions of this approval, or should the permittee construct or operate this project in any way other than specified in the application or supporting documents, as modified by the conditions of this approval, then the terms of this approval shall be considered to have been violated.
3. **Compliance with all Applicable Laws.** The permittee shall secure and appropriately comply with all applicable federal, state and local licenses, permits, authorizations, conditions, agreements, and orders prior to or during construction and operation.
4. **Inspection and Compliance.** Authorized representatives of the Board, Commission or the Attorney General shall be granted access to the premises of the permittee at any reasonable time for the purpose of inspecting the construction or operation of the project and assuring compliance by the permittee with the conditions of this approval.
5. **Initiation and Completion of Construction.** If construction is not commenced within 3 years and completed within 7 years from the date of issuance of this permit, this approval shall lapse, unless a request for an extension of these deadlines has been approved by the Board or Commission.
6. **Construction Schedule.** Prior to construction, the permittee shall submit a final construction schedule for the project to the Commissioner or Director.
7. **Approval Included in Contract Bids.** A copy of this approval must be included in or attached to contract bid specifications for the project.
8. **Approval Shown to Contractor.** Work done by a contractor pursuant to this approval shall not begin before a copy of this approval has been shown to the contractor by the permittee.
9. **Notification of Project Operation.** The permittee shall notify the Commissioner or director of the commencement of commercial operation of the project within 10 days prior to such commencement.
10. **Assignment or Transfer of Approval.** This approval shall expire upon the assignment or transfer of the property covered by this approval unless written consent to transfer this approval is obtained from the board or Commission. To obtain approval of transfer, the permittee shall notify the Board or Commission 30 days prior to assignment or transfer of property which is subject to this approval Pending Board or Commission determination on the application for a

transfer or assignment of ownership of this approval, the person(s) to whom such property is assigned or transferred shall abide by all of the terms and conditions of this approval. To obtain the Board's or Commission's approval of transfer, the proposed assignee or transferee must demonstrate the financial capability and technical ability to (1) comply with all terms and conditions of this approval and (2) satisfy all other applicable statutory criteria. A "transfer" is defined as the sale or lease of property which is the subject of this approval or the sale of 50 percent or more of the stock of or interest in a corporation or a change in a general partner of a partnership which owns the property subject to this approval.



DEP INFORMATION SHEET

Appealing a Department Licensing Decision

Dated: November 2018

Contact: (207) 287-2452

SUMMARY

There are two methods available to an aggrieved person seeking to appeal a licensing decision made by the Department of Environmental Protection's (DEP) Commissioner: (1) an administrative process before the Board of Environmental Protection (Board); or (2) a judicial process before Maine's Superior Court. An aggrieved person seeking review of a licensing decision over which the Board had original jurisdiction may seek judicial review in Maine's Superior Court.

A judicial appeal of final action by the Commissioner or the Board regarding an application for an expedited wind energy development (35-A M.R.S. § 3451(4)) or a general permit for an offshore wind energy demonstration project (38 M.R.S. § 480-HH(1)) or a general permit for a tidal energy demonstration project (38 M.R.S. § 636-A) must be taken to the Supreme Judicial Court sitting as the Law Court.

This information sheet, in conjunction with a review of the statutory and regulatory provisions referred to herein, can help a person to understand his or her rights and obligations in filing an administrative or judicial appeal.

I. ADMINISTRATIVE APPEALS TO THE BOARD

LEGAL REFERENCES

The laws concerning the DEP's *Organization and Powers*, 38 M.R.S. §§ 341-D(4) & 346; the *Maine Administrative Procedure Act*, 5 M.R.S. § 11001; and the DEP's *Rules Concerning the Processing of Applications and Other Administrative Matters* ("Chapter 2"), 06-096 C.M.R. ch. 2.

DEADLINE TO SUBMIT AN APPEAL TO THE BOARD

The Board must receive a written appeal within 30 days of the date on which the Commissioner's decision was filed with the Board. Appeals filed more than 30 calendar days after the date on which the Commissioner's decision was filed with the Board will be dismissed unless notice of the Commissioner's license decision was required to be given to the person filing an appeal (appellant) and the notice was not given as required.

HOW TO SUBMIT AN APPEAL TO THE BOARD

Signed original appeal documents must be sent to: Chair, Board of Environmental Protection, 17 State House Station, Augusta, ME 04333-0017. An appeal may be submitted by fax or e-mail if it contains a scanned original signature. It is recommended that a faxed or e-mailed appeal be followed by the submittal of mailed original paper documents. The complete appeal, including any attachments, must be received at DEP's offices in Augusta on or before 5:00 PM on the due date; materials received after 5:00 pm are not considered received until the following day. The risk of material not being received in a timely manner is on the sender, regardless of the method used. The appellant must also send a copy of the appeal documents to the Commissioner of the DEP; the applicant (if the appellant is not the applicant in the license proceeding at issue); and if a hearing was held on the application, any intervenor in that hearing process. All of the information listed in the next section of this information sheet must be submitted at the time the appeal is filed.

INFORMATION APPEAL PAPERWORK MUST CONTAIN

Appeal materials must contain the following information at the time the appeal is submitted:

1. *Aggrieved Status.* The appeal must explain how the appellant has standing to maintain an appeal. This requires an explanation of how the appellant may suffer a particularized injury as a result of the Commissioner's decision.
2. *The findings, conclusions, or conditions objected to or believed to be in error.* The appeal must identify the specific findings of fact, conclusions regarding compliance with the law, license conditions, or other aspects of the written license decision or of the license review process that the appellant objects to or believes to be in error.
3. *The basis of the objections or challenge.* For the objections identified in Item #2, the appeal must state why the appellant believes that the license decision is incorrect and should be modified or reversed. If possible, the appeal should cite specific evidence in the record or specific licensing requirements that the appellant believes were not properly considered or fully addressed.
4. *The remedy sought.* This can range from reversal of the Commissioner's decision on the license or permit to changes in specific permit conditions.
5. *All the matters to be contested.* The Board will limit its consideration to those matters specifically raised in the written notice of appeal.
6. *Request for hearing.* If the appellant wishes the Board to hold a public hearing on the appeal, a request for public hearing must be filed as part of the notice of appeal, and must include an offer of proof in accordance with Chapter 2. The Board will hear the arguments in favor of and in opposition to a hearing on the appeal and the presentations on the merits of an appeal at a regularly scheduled meeting. If the Board decides to hold a public hearing on an appeal, that hearing will then be scheduled for a later date.
7. *New or additional evidence to be offered.* If an appellant wants to provide evidence not previously provided to DEP staff during the DEP's review of the application, the request and the proposed evidence must be submitted with the appeal. The Board may allow new or additional evidence, referred to as supplemental evidence, to be considered in an appeal only under very limited circumstances. The proposed evidence must be relevant and material, and (a) the person seeking to add information to the record must show due diligence in bringing the evidence to the DEP's attention at the earliest possible time in the licensing process; or (b) the evidence itself must be newly discovered and therefore unable to have been presented earlier in the process. Specific requirements for supplemental evidence are found in Chapter 2 § 24.

OTHER CONSIDERATIONS IN APPEALING A DECISION TO THE BOARD

1. *Be familiar with all relevant material in the DEP record.* A license application file is public information, subject to any applicable statutory exceptions, and is made easily accessible by the DEP. Upon request, the DEP will make application materials available during normal working hours, provide space to review the file, and provide an opportunity for photocopying materials. There is a charge for copies or copying services.
2. *Be familiar with the regulations and laws under which the application was processed, and the procedural rules governing your appeal.* DEP staff will provide this information on request and answer general questions regarding the appeal process.
3. *The filing of an appeal does not operate as a stay to any decision.* If a license has been granted and it has been appealed, the license normally remains in effect pending the processing of the appeal. Unless a stay of the decision is requested and granted, a license holder may proceed with a project pending the outcome of an appeal, but the license holder runs the risk of the decision being reversed or modified as a result of the appeal.

WHAT TO EXPECT ONCE YOU FILE A TIMELY APPEAL WITH THE BOARD

The Board will formally acknowledge receipt of an appeal, and will provide the name of the DEP project manager assigned to the specific appeal. The notice of appeal, any materials accepted by the Board Chair as supplementary evidence, any materials submitted in response to the appeal, and relevant excerpts from the DEP's application review file will be sent to Board members with a recommended decision from DEP staff. The appellant, the license holder if different from the appellant, and any interested persons are notified in advance of the date set for Board consideration of an appeal or request for public hearing. The appellant and the license holder will have an opportunity to address the Board at the Board meeting. With or without holding a public hearing, the Board may affirm, amend, or reverse a Commissioner decision or remand the matter to the Commissioner for further proceedings. The Board will notify the appellant, the license holder, and interested persons of its decision.

II. JUDICIAL APPEALS

Maine law generally allows aggrieved persons to appeal final Commissioner or Board licensing decisions to Maine's Superior Court (see 38 M.R.S. § 346(1); 06-096 C.M.R. ch. 2; 5 M.R.S. § 11001; and M.R. Civ. P. 80C). A party's appeal must be filed with the Superior Court within 30 days of receipt of notice of the Board's or the Commissioner's decision. For any other person, an appeal must be filed within 40 days of the date the decision was rendered. An appeal to court of a license decision regarding an expedited wind energy development, a general permit for an offshore wind energy demonstration project, or a general permit for a tidal energy demonstration project may only be taken directly to the Maine Supreme Judicial Court. See 38 M.R.S. § 346(4).

Maine's Administrative Procedure Act, DEP statutes governing a particular matter, and the Maine Rules of Civil Procedure must be consulted for the substantive and procedural details applicable to judicial appeals.

ADDITIONAL INFORMATION

If you have questions or need additional information on the appeal process, for administrative appeals contact the Board's Executive Analyst at (207) 287-2452, or for judicial appeals contact the court clerk's office in which your appeal will be filed.

Note: The DEP provides this INFORMATION SHEET for general guidance only; it is not intended for use as a legal reference. Maine law governs an appellant's rights.



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Maine Ecological Services Field Office

P. O. Box A

East Orland, ME 04431

Phone: (207) 469-7300 Fax: (207) 902-1588

<http://www.fws.gov/mainefieldoffice/index.html>

In Reply Refer To:

May 27, 2020

Consultation Code: 05E1ME00-2020-SLI-1142

Event Code: 05E1ME00-2020-E-03908

Project Name: Orono and Stillwater LIHI

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies the threatened, endangered, candidate, and proposed species and designated or proposed critical habitat that may occur within the boundary of your proposed project or may be affected by your proposed project. This species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC Web site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the Endangered Species Consultation Handbook at: <http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

This species list also identifies candidate species under review for listing and those species that the Service considers species of concern. Candidate species have no protection under the Act but are included for consideration because they could be listed prior to completion of your project. Species of concern are those taxa whose conservation status is of concern to the Service (i.e., species previously known as Category 2 candidates), but for which further information is needed.

If a proposed project may affect only candidate species or species of concern, you are not required to prepare a Biological Assessment or biological evaluation or to consult with the Service. However, the Service recommends minimizing effects to these species to prevent future conflicts. Therefore, if early evaluation indicates that a project will affect a candidate species or species of concern, you may wish to request technical assistance from this office to identify appropriate minimization measures.

Please be aware that bald and golden eagles are not protected under the Endangered Species Act but are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.). Projects affecting these species may require development of an eagle conservation plan: http://www.fws.gov/windenergy/eagle_guidance.html Information on the location of bald eagle nests in Maine can be found on the Maine Field Office Web site: <http://www.fws.gov/mainefieldoffice/Project%20review4.html>

Additionally, wind energy projects should follow the wind energy guidelines: <http://www.fws.gov/windenergy/> for minimizing impacts to migratory birds and bats. Projects may require development of an avian and bat protection plan.

Migratory birds are also a Service trust resource. Under the Migratory Bird Treaty Act, construction activities in grassland, wetland, stream, woodland, and other habitats that would result in the take of migratory birds, eggs, young, or active nests should be avoided. Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g.,

cellular, digital television, radio, and emergency broadcast) can be found at:
<http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm> and at:
<http://www.towerkill.com>; and at:
<http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Maine Ecological Services Field Office

P. O. Box A

East Orland, ME 04431

(207) 469-7300

Project Summary

Consultation Code: 05E1ME00-2020-SLI-1142

Event Code: 05E1ME00-2020-E-03908

Project Name: Orono and Stillwater LIHI

Project Type: DAM

Project Description: Hydropower Projects

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/44.91624407137411N68.68920122819236W>



Counties: Penobscot, ME

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Fishes

NAME	STATUS
Atlantic Salmon <i>Salmo salar</i> Population: Gulf of Maine DPS There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2097	Endangered

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Atlantic Salmon <i>Salmo salar</i> https://ecos.fws.gov/ecp/species/2097#crithab	Final

From: [Settele, Rebecca](#)
To: [Bernier, Kevin](#)
Cc: [Perry, John](#); [Caron, Mark](#)
Subject: RE: Request for state-listed species
Date: Wednesday, October 28, 2020 11:45:50 AM

Hi Kevin,

The following Endangered, Threatened, and Special Concern species have been documented in the general vicinity of the Orono Hydroelectric Project on the Stillwater River.

Yellow Lampmussel (State Threatened)
Wood Turtle (Special Concern)

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)

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

MDIFW databases do not indicate the presence of other State-listed Endangered, Threatened, or Special Concern Species in project area; however, to our knowledge no, or limited, formal surveys have been conducted. It is possible that other rare species may be resident or transient in the project area based on location, habitats present, and life history requirements, including one or more rare species of migratory birds during spring and fall migrations. Therefore, the list above should not be considered all-inclusive.

Let us know if you need additional information.

Please send all future requests to IFWEnvironmentalreview@maine.gov.

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](https://www.facebook.com) | [twitter](https://twitter.com)

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From: Bernier, Kevin <Kevin.Bernier@brookfieldrenewable.com>
Sent: Friday, October 23, 2020 4:02 PM
To: Caron, Mark <Mark.Caron@maine.gov>; Webb, Nathan <Nathan.Webb@maine.gov>
Subject: Request for state-listed species

EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Nathan/Mark - Brookfield Renewable is seeking information on state-listed fauna at three of its hydro project areas on the Penobscot River, including the Medway Project on the lower West Branch of the Penobscot River, and the Stillwater and Orono Projects on the Stillwater Branch of the Penobscot River. The purpose of collecting this information is for the continued certification of these Projects through the Low Impact Hydropower Institute. Attached are maps showing the project areas. The Maine Natural Areas Program (see e-mails below) has provided information (attached) on botanical features, but they indicated that MDIFW should be contacted for rare and exemplary zoological features at these Projects. Please let me know if there are any fees regarding this request, or if you need any additional information.

Thank you.

Kevin Bernier
Senior Compliance Specialist

Brookfield Renewable
1024 Central Street, Millinocket, ME 04462
C 207 951 5006
kevin.bernier@brookfieldrenewable.com
www.brookfieldrenewable.com



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From: St.Hilaire, Lisa <Lisa.St.Hilaire@maine.gov>
Sent: Tuesday, October 20, 2020 5:25 PM

To: Bernier, Kevin <Kevin.Bernier@brookfieldrenewable.com>
Cc: Maloney, Kelly <Kelly.Maloney@brookfieldrenewable.com>
Subject: RE: site review

Hi Kevin,

MNAP comments for the three hydro recertifications are attached. Thank you.

Lisa St. Hilaire

Information Manager | Maine Natural Areas Program
Department of Agriculture, Conservation and Forestry
177 State House Station | Augusta, ME 04333 (**NEW** mailing address)
90 Blossom Lane | Augusta, ME 04333 (**NEW** physical address)
PHONE 207-287-8044 (Same phone!)
FAX 287-7548 (**NEW** FAX)

From: Bernier, Kevin <Kevin.Bernier@brookfieldrenewable.com>
Sent: Monday, October 19, 2020 1:34 PM
To: St.Hilaire, Lisa <Lisa.St.Hilaire@maine.gov>
Cc: Maloney, Kelly <Kelly.Maloney@brookfieldrenewable.com>
Subject: RE: site review

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Yes please.

From: St.Hilaire, Lisa <Lisa.St.Hilaire@maine.gov>
Sent: Monday, October 19, 2020 1:25 PM
To: Bernier, Kevin <Kevin.Bernier@brookfieldrenewable.com>
Cc: Maloney, Kelly <Kelly.Maloney@brookfieldrenewable.com>
Subject: RE: site review

OK, thanks! We have stuff mapped along the Stillwater, though I haven't looked at the others yet. There should be no issues.

Do you want three separate responses?

Lisa St. Hilaire

Information Manager | Maine Natural Areas Program
Department of Agriculture, Conservation and Forestry
177 State House Station | Augusta, ME 04333 (**NEW** mailing address)
90 Blossom Lane | Augusta, ME 04333 (**NEW** physical address)
PHONE 207-287-8044 (Same phone!)
FAX 287-7548 (**NEW** FAX)

From: Bernier, Kevin <Kevin.Bernier@brookfieldrenewable.com>

Sent: Monday, October 19, 2020 1:23 PM
To: St.Hilaire, Lisa <Lisa.St.Hilaire@maine.gov>
Cc: Maloney, Kelly <Kelly.Maloney@brookfieldrenewable.com>
Subject: RE: site review

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Lisa - no, the request is for continued certification of the Medway, Stillwater, and Orono Projects through the Low Impact Hydro Institute, and no, there are no changes being proposed to flows or impoundment levels.

Thank you, and please let me know if you have any additional questions.

Kevin Bernier

From: St.Hilaire, Lisa <Lisa.St.Hilaire@maine.gov>
Sent: Monday, October 19, 2020 1:05 PM
To: Bernier, Kevin <Kevin.Bernier@brookfieldrenewable.com>
Cc: Maloney, Kelly <Kelly.Maloney@brookfieldrenewable.com>
Subject: RE: site review

Hi Kevin,

Is this request for relicensing? Will there be any changes to flows or impoundments? Thanks,

Lisa St. Hilaire

Information Manager | Maine Natural Areas Program
Department of Agriculture, Conservation and Forestry
177 State House Station | Augusta, ME 04333 (**NEW** mailing address)
90 Blossom Lane | Augusta, ME 04333 (**NEW** physical address)
PHONE 207-287-8044 (Same phone!)
FAX 287-7548 (**NEW** FAX)

From: Bernier, Kevin <Kevin.Bernier@brookfieldrenewable.com>
Sent: Tuesday, October 6, 2020 12:57 PM
To: NAP, Maine <Maine.NAP@maine.gov>
Cc: Maloney, Kelly <Kelly.Maloney@brookfieldrenewable.com>
Subject: site review

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Brookfield Renewable is seeking information on rare and exemplary botanical features in three of its hydro project areas on the Penobscot River, including the Medway Project on the lower West Branch of the Penobscot River, and the Stillwater and Orono Projects on the Stillwater Branch of the Penobscot River. The purpose of collecting this information is for the continued certification of these Projects through the Low Impact Hydropower Institute. Attached are maps showing the project areas. Please let me know if there are any fees regarding this request, or if you need any additional information.

Thank you.

Kevin Bernier

Senior Compliance Specialist

Brookfield Renewable

1024 Central Street, Millinocket, ME 04462

C 207 951 5006

kevin.bernier@brookfieldrenewable.com

www.brookfieldrenewable.com



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From: [Settele, Rebecca](#)
To: [Bernier, Kevin](#)
Cc: [Perry, John](#)
Subject: RE: Request for state-listed species
Date: Tuesday, November 10, 2020 8:57:40 AM

Hi Kevin,

The following Endangered, Threatened, and Special Concern species have been documented in the general vicinity of the Stillwater Hydroelectric Project on the Stillwater River.

Yellow Lampmussel (State Threatened)
Tidewater Mucket (State Threatened)
Brook Floater (State Threatened)

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)

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.

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

MDIFW databases do not indicate the presence of other State-listed Endangered, Threatened, or Special Concern Species in project area; however, to our knowledge no, or limited, formal surveys have been conducted. It is possible that other rare species may be resident or transient in the project area based on location, habitats present, and life history requirements, including one or more rare species of migratory birds during spring and fall migrations. Therefore, the list above should not be considered all-inclusive.

Please let us know if you need additional information.

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](#)

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From: Bernier, Kevin <Kevin.Bernier@brookfieldrenewable.com>

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To: Caron, Mark <Mark.Caron@maine.gov>; Webb, Nathan <Nathan.Webb@maine.gov>

Subject: Request for state-listed species

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Thank you.

Kevin Bernier

Senior Compliance Specialist

Brookfield Renewable

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Cc: Maloney, Kelly <Kelly.Maloney@brookfieldrenewable.com>

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Information Manager | Maine Natural Areas Program
Department of Agriculture, Conservation and Forestry
177 State House Station | Augusta, ME 04333 (**NEW** mailing address)
90 Blossom Lane | Augusta, ME 04333 (**NEW** physical address)
PHONE 207-287-8044 (Same phone!)
FAX 287-7548 (**NEW** FAX)

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Sent: Monday, October 19, 2020 1:34 PM
To: St.Hilaire, Lisa <Lisa.St.Hilaire@maine.gov>
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Thank you, and please let me know if you have any additional questions.

Kevin Bernier

From: St.Hilaire, Lisa <Lisa.St.Hilaire@maine.gov>
Sent: Monday, October 19, 2020 1:05 PM
To: Bernier, Kevin <Kevin.Bernier@brookfieldrenewable.com>
Cc: Maloney, Kelly <Kelly.Maloney@brookfieldrenewable.com>
Subject: RE: site review

Hi Kevin,

Is this request for relicensing? Will there be any changes to flows or impoundments? Thanks,

Lisa St. Hilaire

Information Manager | Maine Natural Areas Program
Department of Agriculture, Conservation and Forestry
177 State House Station | Augusta, ME 04333 (**NEW** mailing address)
90 Blossom Lane | Augusta, ME 04333 (**NEW** physical address)
PHONE 207-287-8044 (Same phone!)
FAX 287-7548 (**NEW** FAX)

From: Bernier, Kevin <Kevin.Bernier@brookfieldrenewable.com>
Sent: Tuesday, October 6, 2020 12:57 PM
To: NAP, Maine <Maine.NAP@maine.gov>
Cc: Maloney, Kelly <Kelly.Maloney@brookfieldrenewable.com>
Subject: site review

EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Brookfield Renewable is seeking information on rare and exemplary botanical features in three of its hydro project areas on the Penobscot River, including the Medway Project on the lower West Branch of the Penobscot River, and the Stillwater and Orono Projects on the Stillwater Branch of the Penobscot River. The purpose of collecting this information is for the continued certification of these Projects through the Low Impact Hydropower Institute. Attached are maps showing the project areas. Please let me know if there are any fees regarding this request, or if you need any additional information.

Thank you.

Kevin Bernier

Senior Compliance Specialist

Brookfield Renewable

1024 Central Street, Millinocket, ME 04462

C 207 951 5006

kevin.bernier@brookfieldrenewable.com

www.brookfieldrenewable.com



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STATE OF MAINE
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177 STATE HOUSE STATION
 AUGUSTA, MAINE 04333

JANET T. MILLS
 GOVERNOR

AMANDA E. BEAL
 COMMISSIONER

October 19, 2020

Kevin Bernier
 Brookfield Renewables
 1024 Central Street
 Millinocket, ME 04452

Via email: kevin.bernier@brookfieldrenewable.com

Re: Rare and exemplary botanical features in proximity to: Orono Hydroelectric Project FERC No. 2710 Relicensing, Stillwater River, Orono, Maine

I have searched the Maine Natural Areas Program’s Biological and Conservation Data System files in response to your request received October 6, 2020 for information on the presence of rare or unique botanical features documented from the vicinity of the project in Orono, 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 is a population of Hyssop-leaved Fleabane at the mouth of the Stillwater River near the dam with the Penobscot River. Please see the attached map and factsheet for more information about this feature. MNAP understands that this request is for recertification of the Orono Hydroelectric Project, and that there will be no changes to current impoundments or river flows. Therefore, MNAP has no concerns with the recertification for the Orono Hydroelectric Project and the mapped botanical features along this stretch of the Stillwater River.

Feature	State Status	State Rank	Global Rank	Occurrence Rank	Site
Hyssop-leaved Fleabane <i>Erigeron hyssopifolius</i>	SC	S2	G5	E Extant	Orono Dam

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.

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

MOLLY DOCHERTY, DIRECTOR
 MAINE NATURAL AREAS PROGRAM
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Letter to Brookfield
Comments RE: Orono Hydro Recertification, Orono
October 19, 2020
Page 2 of 2

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 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,

A handwritten signature in cursive script, appearing to read "Kristen Puryear".

Kristen Puryear | Ecologist | Maine Natural Areas Program
207-287-8043 | kristen.puryear@maine.gov

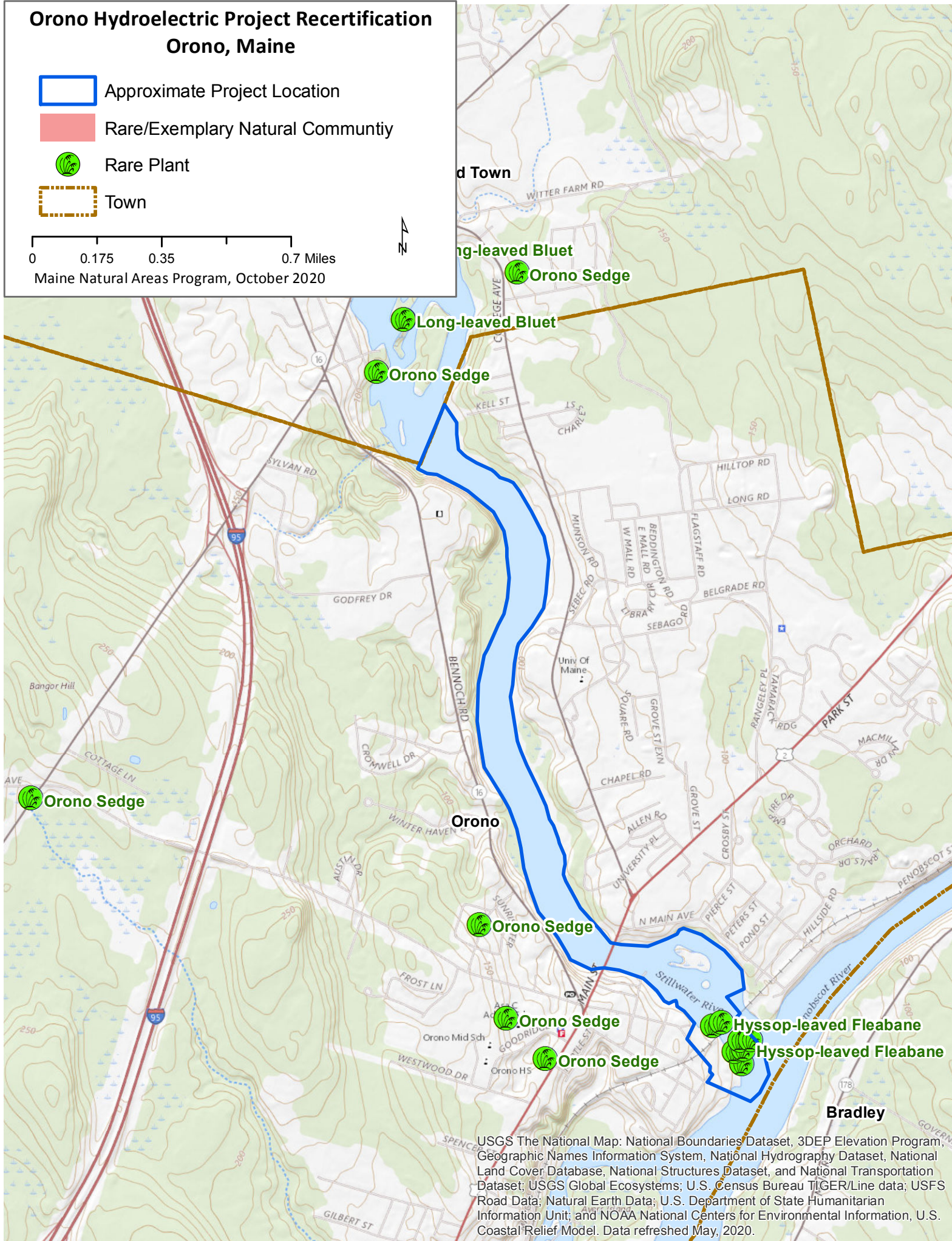
Orono Hydroelectric Project Recertification

Orono, Maine

-  Approximate Project Location
-  Rare/Exemplary Natural Community
-  Rare Plant
-  Town

0 0.175 0.35 0.7 Miles

Maine Natural Areas Program, October 2020



USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed May, 2020.

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Maine Natural Areas Program

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- [State Rank](#): S2
- [Global Rank](#): G5
- [State Status](#): Special Concern

Habitat: Calcareous rocks, talus and gravels. [Non-tidal rivershore (non-forested, seasonally wet); Rocky summits and outcrops (non-forested, upland)]

Range: Newfoundland to Mackenzie, south to New Brunswick and northern New England, and west to Michigan.

Aids to Identification: A low (up to 20 cm) herbaceous plant growing in tufts. The leaves are very narrow (linear), about 2-3 cm long, alternate on the stem, and both stem and leaves are hairless or nearly so. The stems often bear axillary tufts. The flower-heads generally resemble the common fleabanes, *E. strigosus* (daisy-like); they are up to 2 cm broad, with 15-30 white or purplish rays. Another aster-like plant, *Ionactis liniifolius*, can grow in the same habitat: it has rigid leaves and lacks axillary tufts of leaves. The other rare fleabane in Maine, [Erigeron acris var. kamtschatica](#) or [bitter fleabane](#), is taller (3-8 dm).



Ecological characteristics: A perennial, growing from slender rootstocks directly out of rock crevices. In Maine, it grows only along some rivershores in the northern half of the state. Where habitat is suitable, the plants are often abundant. Competition from other plants appears to be limited, possibly because of the severity of the habitat, which is subjected to annual ice scouring and flooding.

Phenology: In Maine, begins flowering in early July. Fruits often remain on plant through August.

Family: Asteraceae

Synonyms: Amazingly, this Asteraceae plant has not had any name changes!

Known Distribution in Maine: This rare plant has been documented from a total of 19 town(s) in the following

county(ies): Aroostook, Penobscot, Piscataquis, Somerset.

Reason(s) for rarity: At southern limit of range; natural scarcity of calcareous substrate in Maine.

Conservation considerations: Unknown; little current information on this species. Its habitat appears subject

to little threat except for recreational use, which in the past has not been heavy where it grows.



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177 STATE HOUSE STATION
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JANET T. MILLS
 GOVERNOR

AMANDA E. BEAL
 COMMISSIONER

October 19, 2020

Kevin Bernier
 Brookfield Renewables
 1024 Central Street
 Millinocket, ME 04452

Via email: kevin.bernier@brookfieldrenewable.com

Re: Rare and exemplary botanical features in proximity to: Stillwater Hydroelectric Project FERC No. 2712 Relicensing, Stillwater River, Old Town, Maine

I have searched the Maine Natural Areas Program’s Biological and Conservation Data System files in response to your request received October 6, 2020 for information on the presence of rare or unique botanical features documented from the vicinity of the project in Old Town, 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 several mapped rare plant populations and two mapped natural communities along the Stillwater River between Stillwater Dam Ledges and Gilman Falls. Please see the attached map and factsheets for more information about these features. MNAP understands that this request is for recertification of the Stillwater Hydroelectric Project, and that there will be no changes to current impoundments or river flows. Therefore, MNAP has no concerns with the recertification for the Stillwater Hydroelectric Project and the mapped botanical features along this stretch of the Stillwater River.

Feature	State Status	State Rank	Global Rank	Occurrence Rank	Site
Hyssop-leaved Fleabane <i>Erigeron hyssopifolius</i>	SC	S2	G5	B Good	Stillwater Dam Ledges
New England Violet <i>Viola novae-angliae</i>	SC	S2	G4	B Good	Stillwater Dam Ledges
Long-leaved Bluet <i>Houstonia longifolia</i>	SC	S2S3	G5TNR	B Good	Stillwater Dam Ledges
Long-leaved Bluet <i>Houstonia longifolia</i>	SC	S2S3	G5TNR	H Historical	Stillwater Picnic Ledges

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Silver Maple Floodplain Forest	N/A	S3	GNR	C Fair	Stillwater River at Gilman Falls
Rivershore Outcrop <i>Bluebell-balsam ragwort shoreline outcrop</i>	N/A	S2	G3	BC Good-Fair	Stillwater River at Gilman Falls
New England Violet <i>Viola novae-angliae</i>	SC	S2	G4	BC Good-Fair	Stillwater River at Gilman Falls
Long-leaved Bluet <i>Houstonia longifolia</i>	SC	S2S3	G5TNR	BC Good-Fair	Stillwater River at Gilman Falls
MacGregor's Rye <i>Elymus macgregorii</i>	SC	S2	G5	BC Good-Fair	Stillwater River at Gilman Falls

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.

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 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,

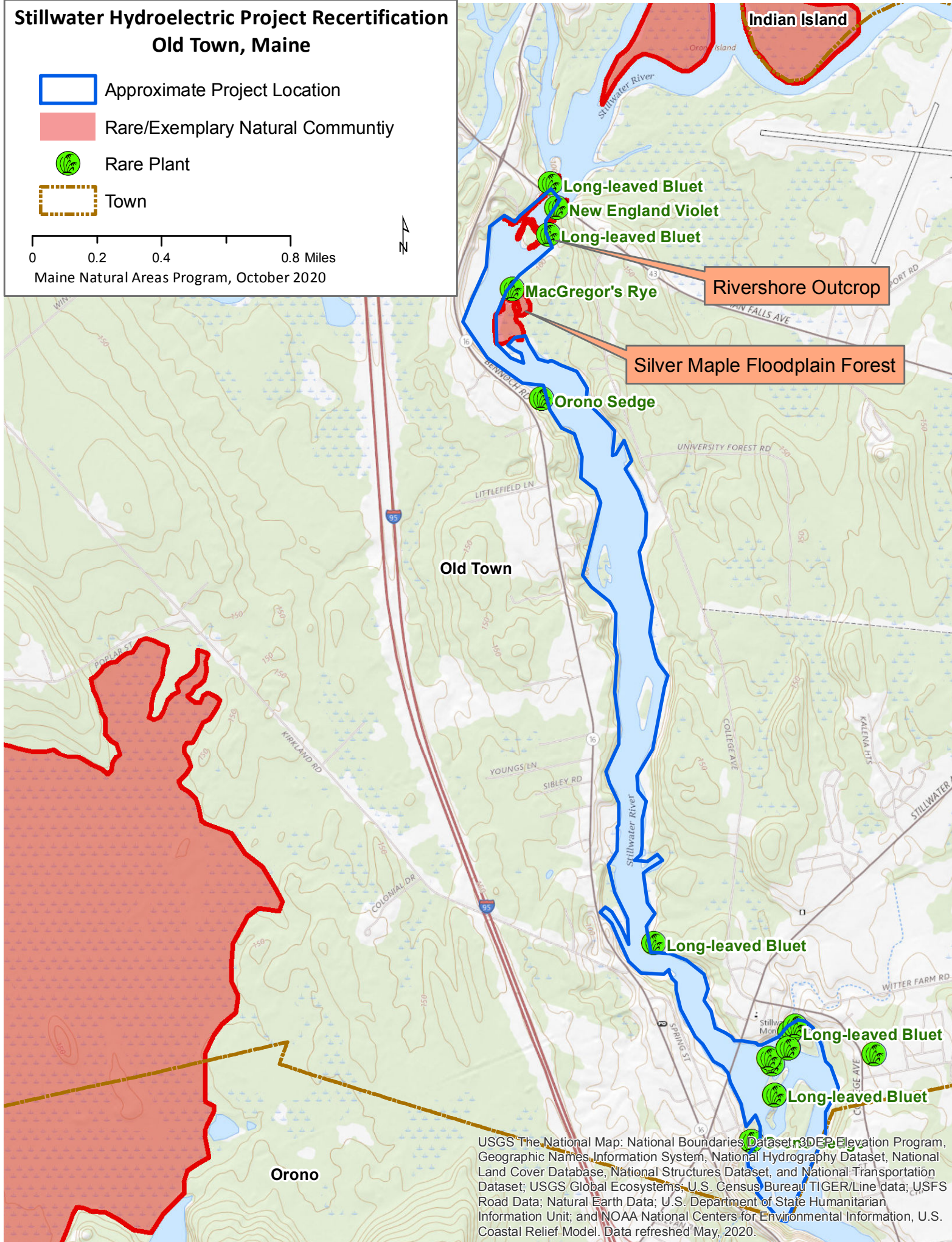


Kristen Puryear | Ecologist | Maine Natural Areas Program
 207-287-8043 | kristen.puryear@maine.gov

Stillwater Hydroelectric Project Recertification Old Town, Maine

-  Approximate Project Location
-  Rare/Exemplary Natural Community
-  Rare Plant
-  Town

0 0.2 0.4 0.8 Miles
Maine Natural Areas Program, October 2020



USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed May, 2020.

Rivershore Shrub Thicket

State Rank S2

Community Description

Dense riparian shrub vegetation (>80% cover) is dominated by a mixture of red osier dogwood and shrub willows. Alders may be present but are not dominant. A band of bush-honeysuckle often forms at the upslope edge, where the shrub vegetation abuts upland forest. Herb richness may be high in openings among the shrubs and may include some calciphiles as well as more widespread species. Bryoids are minor, and consist of bryophytes rather than lichens. More study of alluvial shrub communities is needed.

Soil and Site Characteristics

Sites occupy shores of larger rivers, below the annual high-water line, in areas somewhat protected from the extremes of ice scour and flooding. Riverbanks are moderate to steep, not flat; and the silty to sandy soils are not constantly saturated. Successional dynamics have not been studied, but at least some sites appear to persist through disturbance.



Pussy Willow Leaves

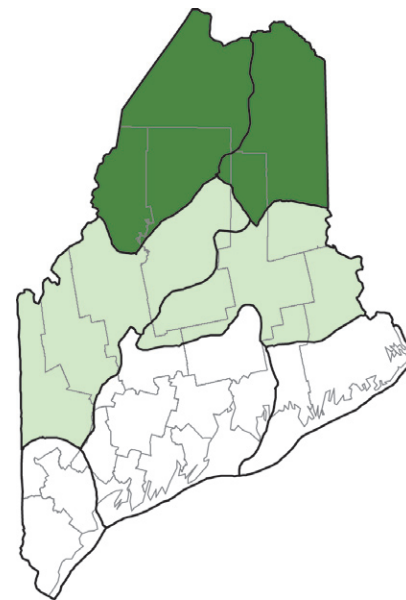
Diagnostics

This type is characterized by 1-3 m tall shrub vegetation, with red osier dogwood and willows prominent, on riverbanks where annual disturbance creates a non-forested zone between the summer water level and adjacent forest. It occurs on soils that are not regularly saturated, and mostly on larger rivers.

Similar Types

Related to and sometimes contiguous with other rivershore communities. Bluejoint Meadows are strongly dominated by bluejoint and occur on flatter substrates. Circumneutral Riverside Seeps have more sweetgale and sedges, often have seepage waters at the surface, and have indicators such as grass-of-parnassus and yellow

Location Map



Community is known from this Ecoregion
 Community may occur in this Ecoregion
 Bailey's Ecoregion
 County



Slender Willow

sedge. Sand Cherry - Tufted Hairgrass River Beaches are dominated by herbs and low shrubs.

Conservation, Wildlife, and Management Considerations

Natural river hydrology, with annual fluctuations, is important in the maintenance of this community. These areas receive little direct use but may be affected by adjacent land use, so an intact buffer of adjoining upland would be helpful. No studies of the dynamics of this community have been done.

These rivershore shrublands provide habitat for bird species that inhabit open shrublands such as common yellowthroat, alder flycatcher, Wilson's warbler, and Lincoln's sparrow. Wood turtles may also use this riparian habitat.

Distribution

Documented from northern Maine along the St. John and Allagash Rivers, and may occur on other fairly large rivers in northern Maine (Laurentian Mixed Forest Province and New England - Adirondack Province). Presumably extends into Quebec and New Brunswick.

Landscape Pattern: Small Patch, linear.

Characteristic Plants

These plants are frequently found in this community type. Those with an asterisk are often diagnostic of this community.

Sapling/shrub

Bush-honeysuckle*
 Red osier dogwood*
 Red-tipped willow*
 Round-leaved dogwood
 Shining willow
 Speckled alder

Herb

Bluejoint
 Flat-topped white aster
 Fringed bromegrass
 Fringed loosestrife
 Spotted joe-pye weed

Associated Rare Plants

Auricled twayblade
 Blueleaf willow
 Furbish's lousewort
 Nantucket shadbush
 Northern painted-cup
 Sandbar willow

Examples on Conservation Lands You Can Visit

- The Nature Conservancy's St. John River lands - Aroostook Co.



Furbish's Lousewort

Silver Maple Floodplain Forest

State Rank S3

Community Description

These forests are dominated by silver maple (>60% cover). Associates include red maple and American elm (up to 30% cover) or, in a few locations, bur oak (up to 25% cover). Widely spaced trees, many with multiple trunks, give a park like feeling. The understory is open and shrubs are sparse. Musclewood may be present and is a good indicator. The lush carpet of herbs changes from spring ephemerals such as trout lilies and bloodroot to dense fern cover in summer. Bryoid cover is minor. Some forests have a berm adjacent to the river channel, and herbaceous species composition here is different from the lower elevation interior of the floodplain.

Soil and Site Characteristics

Sites occur on plains flanking low gradient rivers, within the reach of seasonal floods, at elevations <700'. Soils are fine sand or silt, usually with good drainage capacity; the water table fluctuates. Relatively high nutrient levels result from sediment deposition of annual floods; pH is typically 5.0-6.2.

Diagnostics

Sites occur in a floodplain setting with mineral soil. Silver maple is the dominant tree. There is a dense herb layer with sensitive fern and, locally, ostrich fern. Spring ephemerals are frequent.

Similar Types

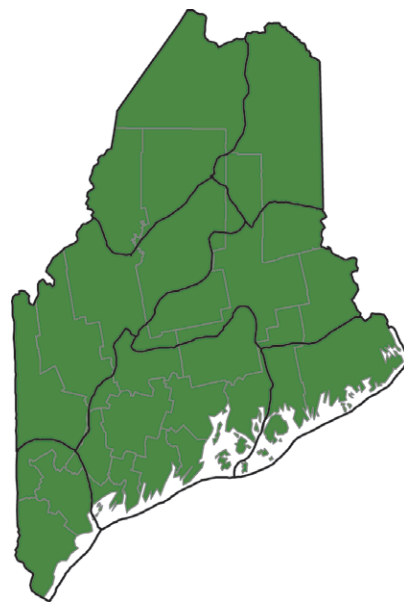
Hardwood River Terrace Forests may be adjacent to this type on the higher floodplain, but these have a much smaller proportion of silver maple in the canopy. Instead, the canopy is dominated by sugar maple, red oak, or green ash, and herb

diversity is higher. Red Maple - Sensitive Fern Swamps lack the dominance of silver maple, and have surface water or saturated soil throughout the growing season. Hardwood Seepage Forests occur along small drainages, usually sloping, rather than in extensive floodplains.

Conservation, Wildlife, and Management Considerations

Although a number of sites have been cleared or pastured in the past, current shoreland regulations provide increased protection to a number of these sites. Exotic plant species such as Japanese knotweed, which may displace those native to our area, also represent a threat to the integrity of these forests and have degraded some Maine examples. Several of the known examples are formally protected from conversion.

Location Map



Community is known from this Ecoregion
 Community may occur in this Ecoregion
 Bailey's Ecoregion
 County



Silver Maple Floodplain Forest

Northern waterthrush, barred owl, belted kingfisher, bank swallow, and green heron are associates of this community type. In the southern part of the state, the Louisiana waterthrush and yellow-throated vireo are likely associates if the canopy is closed or nearly so. Rare turtles like wood, spotted, and Blanding's turtles may feed on amphibian egg masses present in isolated pools within such forests. Wood turtles overwinter in river channels and forage in floodplain forests. The silver-haired bat often roosts in riparian habitats in trees with loose bark.

Distribution

Long and narrow floodplains along the shores or islands of large rivers and streams throughout Maine, New England, and New Brunswick.

Landscape Pattern: Large Patch (remaining sites mostly 20-200 acres, up to 1000 acres)

Examples on Conservation Lands You Can Visit

- Brownfield Bog Wildlife Management Area - Oxford Co.
- Saco River Preserve - York Co.
- Sunkhaze Meadows National Wildlife Refuge - Penobscot Co.
- The Oxbow, East Branch Penobscot River - Penobscot Co.

Characteristic Plants

These plants are frequently found in this community type. Those with an asterisk are often diagnostic of this community.

Canopy

American elm
Basswood*
Black ash
Black cherry*
Bur oak*
Green ash*
Red oak*
Silver maple*

Sapling/shrub

Arrowwood*
Buttonbush*
Common blackberry*
Gray birch*
Meadowsweet*
Musclewood*
Nannyberry*
Winterberry holly*

Dwarf Shrub

Swamp dewberry*

Herb

Bluejoint
Cinnamon fern*
Green ash
Jack-in-the-pulpit
Ostrich fern*
Royal fern*
Sensitive fern*
Tall meadow-rue
Wood-nettle*

Associated Rare Plants

Swamp white oak
Wild garlic
Wild leek

Associated Rare Animals

Wood turtle

- Trout Brook, Baxter State Park - Piscataquis Co.
- Wassataquoik Public Lands - Penobscot Co.

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Elymus macgregorii R. Brook &
J.J.N. Campbell

MacGregor's Wild Rye

- [State Rank](#): S2
- [Global Rank](#): GNR
- [State Status](#): Special Concern

Habitat: Rich, mesic, circumneutral soils of hardwood forests and floodplains.

Range: Eastern U.S.

Aids to Identification: Wild ryes are recognized by their coarse spike inflorescences, alternating clusters of spikelets along the rachis, and long awns. MacGregor's wild rye can easily be confused with the more common Virginia wild rye (*E. virginicus*), thus easily overlooked. Both have erect spikelets and straight awns and may occur in similar habitats. MacGregor's wild rye has longer awns; 10-25 mm long compared to 0-10 mm in Virginia wild rye. MacGregor's wild rye also has fewer nodes (9-18) per spike and longer internodes (4-7 mm) than Virginia wild rye (ie. MacGregor's wild rye appears less compact than Virginia wild rye). MacGregor's wild rye also has glaucous to pubescent leaf blades whereas Virginia wild rye has glabrous leaf sheaths.



Ecological characteristics: Little is known ecologically about this plant in Maine.

Phenology: Flowering and fruiting late May through mid June.

Family: Poaceae

Synonyms: Recently recognized as a separate species from the *Elymus virginicus* L. complex.

Known Distribution in Maine: This rare plant has been documented from a total of 10 towns in the following counties: Kennebec, Oxford, Penobscot, Somerset, Waldo.

Reason(s) for rarity: Possibly confused with *Elymus virginicus* and overlooked.



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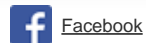
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Maine Natural Areas Program

Houstonia longifolia Gaertn.

Long-leaved Bluet

- [State Rank](#): S2S3
- [Global Rank](#): G4G5TNR
- [State Status](#): Special Concern

Habitat: Slaty ledges or rivershore gravels, not strongly acidic. [Non-tidal rivershore (non-forested, seasonally wet)].

Range: Maine to Saskatchewan, south to Georgia, Oklahoma.

Aids to Identification: Bluets are small, slender plants with opposite stem leaves, small 4-petaled flowers, and inferior ovaries. The common bluet, *Houstonia caerulea*, found growing on lawns, has flowers that have a yellow center and horizontally spreading corolla lobes. *Houstonia longifolia* has uniform colored white to pale blue flowers and ascending corolla lobes and occurs in different habitats.

Ecological characteristics: Usually found growing in slight cracks or depressions on rivershore ledges. Maine populations although apparently persistent are not large and the plants tend to be small.



Phenology:

Herbaceous perennial, flowers July - September.

Family:

Synonyms: *Hedyotis longifolia* (Gaertn.) Hook.; *Hedyotis longifolia* (Gaertn.) Hook. var. *tenuifolia* (Nutt.) Torr. & Gray; *Hedyotis purpurea* (L.) Torr. & Gray var. *longifolia* (Gaertn.) Fosberg; *Houstonia longifolia* Gaertn. var. *glabra* Terrell; *Houstonia longifolia* Gaertn. var. *tenuifolia* (Nutt.) Wood; *Houstonia tenuifolia* Nutt.; *Oldenlandia purpurea* (L.) Gray var. *tenuifolia* (Nutt.) Gray ex Chapman.

Known Distribution in Maine: This rare plant has been documented from a total of 24 town(s) in the following county(ies): Cumberland, Kennebec, Penobscot, Piscataquis, Sagadahoc, Somerset.

Reason(s) for rarity: Habitat naturally scarce, at northern limit of range.

Conservation considerations: Known populations are small, but the plant seems to persist on the few river ledges where it grows. Heavy recreational use of ledges could pose problems.

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Maine Natural Areas Program

Viola novae-angliae L.

New England Violet

- [State Rank](#): S2
- [Global Rank](#): G4Q
- [State Status](#): Special Concern

Habitat: Gravels, wet rocks, shores and meadows. [Non-tidal rivershore (non-forested, seasonally wet)]

Range: New Brunswick to Maine, New York, northern Michigan to northern Wisconsin, northwestern Ontario to southern Manitoba.



Aids to

Identification: The New England violet is a perennial herb with thick, short rhizomes. It has narrow, triangular leaves (longer than wide), heart-shaped at the base with shallow rounded teeth along the margin. The mature leaves are 2-7 cm long and 2-5 cm broad. A distinctive feature is that the blades, petioles, and peduncles are all pubescent. The plants are stemless and do not produce stolons. Flowers are purple, and the upper petals are often recurved.

Ecological characteristics: *Viola novae-angliae* is rare throughout its range; little or no information is available on its ecology. In Maine, it is restricted to calcareous slate ledges of the lower Penobscot, St. John, and Allagash Rivers. It typically grows on ledges projecting into the river, well below the spring high-water line. Usually, the plants are above the water level for all of the growing season, although unusually intense summer rains may temporarily flood the plants.

Phenology: A perennial; in Maine, flowers in early June.

Family: Violaceae

Synonyms: *Viola sororia* var. *novae-angliae* (House) McKinney.

Known Distribution in Maine: This rare plant has been documented from a total of 19 town(s) in the following county(ies): Aroostook, Penobscot, Somerset.

Reason(s) for rarity: Naturally small range. Probably dwindling due to habitat loss. Also unknown factors.

Conservation considerations: Known populations are small but not currently subject to any particular human threat; the plant seems to persist on the few river ledges





where it grows. Heavy recreational use of ledges could pose problems.

Credits








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Maine Natural Areas Program

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- [State Rank](#): S2
- [Global Rank](#): G5
- [State Status](#): Special Concern

Habitat: Calcareous rocks, talus and gravels. [Non-tidal rivershore (non-forested, seasonally wet); Rocky summits and outcrops (non-forested, upland)]

Range: Newfoundland to Mackenzie, south to New Brunswick and northern New England, and west to Michigan.

Aids to Identification: A low (up to 20 cm) herbaceous plant growing in tufts. The leaves are very narrow (linear), about 2-3 cm long, alternate on the stem, and both stem and leaves are hairless or nearly so. The stems often bear axillary tufts. The flower-heads generally resemble the common fleabanes, *E. strigosus* (daisy-like); they are up to 2 cm broad, with 15-30 white or purplish rays. Another aster-like plant, *Ionactis liniifolius*, can grow in the same habitat: it has rigid leaves and lacks axillary tufts of leaves. The other rare fleabane in Maine, [Erigeron acris var. kamtschatica](#) or [bitter fleabane](#), is taller (3-8 dm).



Ecological characteristics: A perennial, growing from slender rootstocks directly out of rock crevices. In Maine, it grows only along some rivershores in the northern half of the state. Where habitat is suitable, the plants are often abundant. Competition from other plants appears to be limited, possibly because of the severity of the habitat, which is subjected to annual ice scouring and flooding.

Phenology: In Maine, begins flowering in early July. Fruits often remain on plant through August.

Family: Asteraceae

Synonyms: Amazingly, this Asteraceae plant has not had any name changes!

Known Distribution in Maine: This rare plant has been documented from a total of 19 town(s) in the following

county(ies): Aroostook, Penobscot, Piscataquis, Somerset.

Reason(s) for rarity: At southern limit of range; natural scarcity of calcareous substrate in Maine.

Conservation considerations: Unknown; little current information on this species. Its habitat appears subject

to little threat except for recreational use, which in the past has not been heavy where it grows.



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STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION



JANET T. MILLS
GOVERNOR

GERALD D. REID
COMMISSIONER

November 3, 2020

Kelly Maloney
Brookfield Renewable
150 Main Street
Lewiston, Maine 04240

Subject: FERC No. 2712 – Stillwater, FERC No. 2710 – Orono & FERC No. 2666 – Medway Projects Comments to Water Quality Certification Terms and Conditions – LIHI Recertification

Dear Kelly Maloney:

In response to a written request by Black Bear Hydro Partners, LLC (Applicant, BBHP, Black Bear), a subsidiary of Brookfield Renewable, on September 24, 2020, related to recertification of three hydropower facilities by the Low Impact Hydro Institute (LIHI), the Maine Department of Environmental Protection (Department or MDEP) reviewed the Terms and Conditions of the Water Quality Certifications (WQC) for the Stillwater, Orono and Medway Projects. The Stillwater, Orono and Medway Hydroelectric Projects (Projects) are located on the Penobscot River in the Towns of Old Town, Orono, Medway, East Millinocket and TA-R7 respectively. These towns are all located in Penobscot County, Maine. Here, the Department outlines how BBHP has addressed the Conditions of the WQCs for the above Projects.

Stillwater Hydroelectric Project (SHP)

The Stillwater WQC was issued by the Department on December 30, 1992. On January 14, 2005, modifications to the existing WQC Conditions were made through Department Order #L-16773-33-F-M, for the installation of new flashboards at the SHP. Pertinent Conditions to LIHI Recertification and how the Applicant has addressed these Conditions are as follows:

1. MINIMUM FLOWS

On May 31, 2017, with support from the National Marine Fisheries Service (NMFS), the US Fish and Wildlife Service (USFWS), the Maine Department of Marine Resources (MDMR), and the Maine Department of Inland Fisheries and Wildlife (MDIFW), known collectively as the resource agencies, as well as The Penobscot Indian Nation (PIN), BBHP requested a temporary variance in minimum flow requirements at the Project in order to reduce flows in the vicinity of the upstream eel ladder and to perform upstream eel passage studies. The goal of this variance was to reduce flow through the flashboard gap at the west channel and to minimize associated false attraction of juvenile eels, thereby better directing eels to the entrance of the upstream eel ladder. Additionally, other alterations were made to the upstream eel passage with the intent of improving passage effectiveness. Upstream passage through the eel ladder markedly improved

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in 2017 following these flow modifications. BBHP submitted an application to modify the minimum flow requirements associated with the SHP, proposing to eliminate specific minimum flow location requirements and direct the entire 70 cfs total minimum flow through the Stillwater B downstream fishway or powerhouse located in the east channel. The Department found the requested minor revision would enhance eel passage at the Project and found the proposal to be in accordance with all relevant Departmental standards and approved the application. All remaining Terms and Conditions for minimum flows are currently upheld by the applicant.

2. WATER LEVELS

In the 2005 Order, Condition 3 of the WQC was modified to stipulate impoundment water levels associated with the installation of flashboards at the Project. The modified Condition stipulates that water levels in the Stillwater project impoundment shall be maintained within one foot of full pond elevation, 94.65 feet msl, when flashboards are in place. During times of flashboard failure, the Applicant will maintain water levels at or above the spillway crest. During those times when flashboards are being replaced, the Applicant will maintain water levels within one foot of the spillway crest. All Terms and Conditions for water levels are currently upheld by the applicant.

3. FISH PASSAGE

The Lower Penobscot River Multi-party Settlement Agreement (Settlement Agreement) was filed with FERC on June 25, 2004, as part of the Penobscot River Restoration Project. The Settlement Agreement was intended to restore native sea-run fish and their habitat while also providing the opportunity to maintain comparable hydropower production from the Penobscot River. In this agreement, the owner of the Stillwater, Orono, Veazie and Great Works Projects, agreed to transfer the license of the Veazie and Great Works Projects to the multi-party Trust (Trust), which consisted of several federal, state and non-governmental organizations. The transfer of these licenses occurred in 2008. When the transfer occurred, BBHP could then expand their generating capacity at the SHP. Department Order #L-16773-35-J-N, dated August 18, 2011, approved the expansion of generating capacity at the SHP.

Condition 4 of the 2005 Order stipulates the installation and operation of fish passage facilities at the SHP in accordance with the Settlement Agreement dated June 2004. The Condition stipulates (A) the installation and operation of an upstream eel passage and (C) the continued operation of the downstream eel and (B) fish passage facilities. Contingent upon the purchase of the Veazie and Great Works Projects by the Trust, the Condition stipulates (D) the potential construction of an upstream fish passage at the SHP and (E) establishing a mitigation fund for fisheries impacts from the Project. Lastly the Condition stipulates (F) the submittal of final design and operational plans to all the resource agencies and the PIN.

On March 23, 2010, the Department issued Order #L-16773-33-I-C approving final design and operational plans for permanent upstream eel passage facilities at the SHP. These plans were submitted in compliance with Condition 4(F) of the 2005 Order. In September of 2015, the Department issued Order #L-16773-34-N-N, a maintenance and repair permit for the repair of 42 feet of spillway as well as the construction of the permanent upstream eel passage at the SHP.

As mentioned above, the Veazie and Great Works Project licenses were transferred to the Trust in 2008; therefore no upstream fish passage was constructed at the SHP. To date, the upstream eel passage installed in 2015 and the downstream fish passage are operated seasonally by BBHP. The Applicant has modified and improved upstream eel passage and downstream alosine passage at the SHP by conducting various fish passage studies from 2014 to the present.

The Department finds that BBHP has acknowledged the impacts that the SHP has on fisheries resources. Provided Black Bear continues to consult with the fisheries resource agencies, the Department finds that the Applicant has made provisions to mitigate the impacts of the SHP on fisheries resources in the Stillwater Branch of the Penobscot River. The Department finds that BBHP continues to abide by the Terms and Conditions of the SHP WQC.

Orono Hydroelectric Project (OHP)

The Orono WQC, #L-21917-33-A-N, was issued by the Department on December 15, 2004. Similar to the SHP, on August 18, 2011, modifications to the existing WQC Conditions and the generating capacity of the OHP were made through Department Order #L-21917-35-H-N. Pertinent Conditions to LIHI Recertification and how Black Bear has addressed these Conditions are as follows:

1. WATER LEVELS AND FLOWS

The 2011 Order stipulates impoundment water levels associated with the installation of increased generating capacity at the Project. The modified Condition 2(A) stipulates that the Orono Project will operate in run-of-river mode, with inflow approximately equal to outflow on an instantaneous basis, except for flashboard failure and replacement. The impoundment shall be maintained within one foot of full pond elevation, 73.0 feet msl, when flashboards are in place. During times of flashboard failure, the Applicant will maintain water levels at or above the spillway crest. During those times when flashboards are being replaced, the Applicant will maintain water levels within one foot of the spillway crest. The Condition additionally stipulates a minimum flow of 200 cfs to be maintained to the bypass reach. All Terms and Conditions for water levels and minimum flows are currently upheld by the applicant.

2. FISH PASSAGE

Similar to the SHP, the OHP was part of the Settlement Agreement discussed in the previous section of this letter. Similar to the terms of the Agreement for the SHP, when the transfer of the licenses for the Veazie and Great Works Projects occurred in 2008, BBHP could then expand their generating capacity at the OHP. The 2011 Department Order approved the expansion of generating capacity at the OHP according to the 2004 Agreement.

Condition 2 of the original WQC, #L-21917-33-A-N, stipulates the installation and operation of fish passage facilities at the SHP in accordance with the 2004 Settlement Agreement. The Condition stipulates (A) the installation and operation of an upstream eel passage, (C) downstream eel and (B) fish passage facilities. As mentioned above, similar to the SHP, contingent upon the purchase of the Veazie and Great Works Projects by the Trust, the Condition

stipulates (D) the potential construction of an upstream fish passage at the OHP and (E) establishing a mitigation fund for fisheries impacts from the Project. Lastly the Condition stipulates (F) the submittal of final design and operational plans to the resource agencies and the PIN as well as (G) passage effectiveness studies.

In Department Order #L-21917-33-C-C, dated January 16, 2008, the Department determined that the upstream eel passage facility design and operational plans for OHP addressed the requirements of Condition 2(F). On March 25, 2009, the Department issued order #L-21917-33-E-C, which approved downstream fish passage facility design and operational plans for the OHP. In Department Order #L-21917-33-L-C, the Department approved the construction of upstream fish passage facilities, approved the submittal of final design and operations plans, and approved passage effectiveness studies for the facilities. This demonstrated compliance by the Applicant with Condition 2 (A), Condition 2 (F), and Condition 2(G) respectively. Additionally, many fish passage studies for the SHP from 2014 to the present were conducted in coincidence with passage studies at the OHP.

By conducting various fisheries studies and the construction of various fish passage facilities at the Project, the Department finds that BBHP has acknowledged impacts that the Project has on fisheries resources and has made provisions to mitigate the impacts of the OHP to the fisheries of the Penobscot River. Provided that the Applicant continues to consult with the resource agencies on passage enhancements and future studies, the Department finds that the Applicant continues to abide by the Terms and Conditions of the OHP WQC.

Medway Hydroelectric Project (MHP)

The WQC for the Medway Project, #L-18893-33-B-N, was issued on December 23, 1998. On December 20, 2004 the Department authorized flashboard replacement through Order #L-18893-33-H-M. On May 17, 2005 the Department issued modifications to the WQC conditions through Order #L-18893-33-I-M. Pertinent Conditions to LIHI Recertification and how the Applicant has addressed these Conditions are as follows:

1. WATER LEVELS AND FLOWS

The December 2004 WQC amendment stipulates that impoundment water levels at the Project shall be maintained within 6 inches of full pond elevation, 260.3 feet msl, when flashboards are in place, and within 6 inches of the spillway crest elevation when flashboards are not in place. Condition 2 of the WQC stipulates that the Project will be operated as run of river and that outflow will be approximately equal to inflow at the facility at all times. All Terms and Conditions for water levels and minimum flows are currently upheld by BBHP.

2. EEL PASSAGE & FISH STUDIES

The 1998 WQC included several Special Conditions to assess the impacts of the MHP to fisheries resources. Condition 3 of the Medway WQC stipulates that the Applicant shall (A) install and operate upstream and downstream eel passage facilities and (B) submit final design and operational plans for the facilities to MDEP, in consultation with the resource agencies.

Condition 4 requires eel passage effectiveness monitoring studies. Condition 5 stipulates that the Applicant, in cooperation with the PIN and MDEP, conduct fish tissue sampling and collect sediment samples to assess the impacts of the Medway impoundment on Mercury and PCP accumulation in the impoundment and its fisheries resources.

On December 8, 2003, the Department issued Order #L-18893-33-F-C, which approved the final design and operational plans for the eel passages. Order #L-18893-33-E-C, dated August 27, 2002, approved the Applicants mercury and PCB sampling plans and the Department concluded that the Applicant complied with Condition 5(B). By Condition Compliance Order #L-18893-F-C, issued September 18, 2003, MDEP approved the Applicants plans for the design, installation and operation of permanent upstream eel passage facilities at the Medway Project. In accordance with this Order, a plan to study the effectiveness of the permanent upstream eel passage facilities was due no later than 60 days prior to the May 15, 2004 commencement of fishway operation. In Department Order #L-18893-33-G-C, March 5, 2004, MDEP concluded that the Applicant complied with Condition 4(B) and approved their eel passage effectiveness monitoring plan. Over the course of several years the Applicant had difficulty carrying out the eel passage effectiveness studies as proposed. Some of these difficulties included problems collecting the desired number of eels from the Penobscot River and acquiring proper consultation to use eels originating from other river basins. On October 6, 2020, FERC filed an Order approving the applicants downstream American eel study plan. This Order outlines Black Bear's plan to conduct downstream eel passage studies in the fall of 2020. These studies should be ongoing, and the Applicant will consult on the results of the study with the resource agencies. If BBHP is unable to conduct the studies in the fall of 2020, they will be repeated in the fall of 2021.

Through the construction of eel passage facilities and ongoing studies at the Project, the Department finds that BBHP has acknowledged impacts that the Project has on fisheries resources and has made provisions to mitigate the impacts of the MHP to fisheries resources in the Penobscot River. Provided that the Applicant continues to consult with the resource agencies on passage enhancements and continued studies, the Department finds that the Applicant continues to abide by the Terms and Conditions of the MHP WQC.

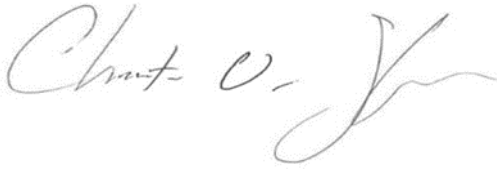
Summary

Collectively, the Department finds that BBHP has made provisions to monitor and mitigate the impacts of these hydroelectric Projects on the waters of the Penobscot River. Further, over several years, BBHP and previous license holders of these Projects, have consulted and collaborated with the fisheries resource agencies to develop and enhance fish passage facilities and mitigate the impacts of these Projects. The Department finds that BBHP operates the SHP, OHP and the MHP under the Terms and Conditions set forth by each project's WQCs and has taken steps to fulfill the Conditions of each WQC. Therefore, the Department supports LIHI recertification of these three Projects.

Thank you for the opportunity to comment on the LIHI Recertification. If you have any questions, please contact me by phone at (207) 446-1619 or by email at Christopher.Sferra@maine.gov.

Maine DEP Letter to BBHP
Stillwater, Orono & Medway Hydro Projects
November 3, 2020

Sincerely,

A handwritten signature in cursive script, appearing to read "Chris O. Sferra". The signature is written in a light gray or blue ink.

Christopher O. Sferra
Hydropower Program, Project Manager
Maine Department of Environmental Protection