STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

IN THE MATTER OF

BROOKFIELD WHITE PINE HYDRO LLC Skowhegan, Fairfield, Clinton, Benton Kennebec and Somerset Counties SHAWMUT HYDROELECTRIC PROJECT #L19751-33-H-N (DENIAL)	MAINE WATER QUALITY PROGRAM; CLEAN WATER ACT WATER QUALITY CERTIFICATION

Pursuant to the provisions of 38 M.R.S. §§ 464 *et seq*., Section 401 of the Clean Water Act (CWA), 33 U.S.C. § 1341, and Department Rules, including 06-096 CMR Chapters 579-581, the Department of Environmental Protection (the Department) has considered the application of BROOKFIELD WHITE PINE HYDRO LLC (the Applicant or Brookfield) with all supporting data, agency review comments, public review comments, and other related materials in the administrative record. Based on the record evidence and the Department's professional judgment and expertise, the Department makes the following findings of fact, determinations, and conclusions:

1. APPLICATION SUMMARY

A. Application

On August 28, 2020, the Applicant submitted an application to the Department for Water Quality Certification (WQC) pursuant to Section 401 of the CWA for the proposed relicensing and continued operation of the existing Shawmut Hydroelectric Project, P-2322 (Project), located on the Kennebec River in the Towns of Skowhegan, Fairfield, Clinton and Benton, Kennebec and Somerset Counties, Maine.

B. History

The Department finds that the first mill of record at the Shawmut site was built about 1835 and over time, until 1912, was used for a grist mill, several sawmills and wood pulp mills. In 1912, Shawmut Manufacturing Co. redeveloped the site with construction of a new dam a short distance downstream and incorporating the original dam structure and increasing the head from 12 to 19 feet. The new powerhouse was built with the potential for six generating units; Units 1, 2 and 3 began generating in 1913, unit 4 in 1915, unit 5 was installed in 1918, and unit 6 in 1921. In 1981, an additional powerhouse was constructed to house two additional generating units. Units 7 and 8 began operating in 1982. In 2008 and 2009, the pin-supported flashboards were replaced with a 730-foot-long inflatable rubber bladder dam in three sections, each 4.46-feet-high when fully inflated. The station is operated remotely from Marlborough Massachusetts with

supervisory control equipment updated in 2013. In 1963, the then-owner, Central Maine Power Company applied to the Federal Energy Regulatory Commission (FERC) to operate the existing Project and an initial FERC license was issued in 1964 with an effective date of June 1, 1954 in accordance with FERC criteria and a May 21, 1954 finding by FERC that the Kennebec River is a navigable water of the United States. The initial license terminated on December 31, 1993. In 1980, Central Maine Power Company filed two applications for the Shawmut Project to amend the Project license by accelerating its expiration date and seeking a new license including installation of 3.44 MW of additional generating capacity. In 1980, the Department approved construction of the new powerhouse and, in 1981, certified that the new construction would not cause a violation of water quality standards. Redevelopment was completed in 1982 and generation of electricity at the Project continues today. The administrative record shows that on October 14, 1980 the Department issued a water quality certification in accordance with Section 401 of the CWA for ongoing operations of the Project, finding that there was a reasonable assurance that the proposed activity would not violate applicable water quality standards if the (then) applicant continued to comply with all laws, statutes, and regulations of the State of Maine, its agencies, municipalities or quasi-municipal organizations relating to the enhancement and protection of the environment. In 1981 FERC issued a New License for the Project for a term of 40 years. On August 1, 2018, Brookfield Renewable Partners, L.P.[1] requested FERC to extend the term of the Shawmut license. On December 11, 2018, FERC issued an Order extending the Shawmut license term by one year, until January 31, 2022.

C. Existing Project Features

The existing Project consists of a 23-foot-high, 1,135-foot-long concrete gravity dam topped with three sections of rubber bladders totaling 730 feet in length that inflate to a height of 4.46 feet; a 1,310 acre reservoir extending upstream for approximately 12.3 miles; a forebay; two powerhouses containing eight generating units with a total generating capacity of 8.65 MW; and appurtenant facilities.

1) Project Dam

The Shawmut Dam is a concrete gravity type overflow section with the fixed crest at elevation 108.0 feet U.S. Geological Survey (USGS) datum.[2] The spillway section is comprised of several sections totaling 1,135 feet in length with an average height of approximately 24 feet; the total dam is approximately 1,480 feet in length. The spillway

[1] The Applicant Brookfield White Pine Hydro LLC is a subsidiary company of Brookfield Renewable Partners, L.P.
[2] All references to elevations in this certification are based on USGS datum, as reported by the Applicant in its Final License Application.

section is approximately 19 feet high, has 380 feet of 4-foot-high hinged flashboards serviced by a steel bridge with a gantry crane, a 25-foot-wide sluice with a timber and steel gate having a crest elevation of 104.0 feet, a 730-foot-long section topped with three sections of rubber bladders that inflate to a height of 4.46 feet; and a non-overflow section between the hinged flashboards and the forebay headworks structure. An earthen dike with a concrete core wall is located beyond the west abutment of the headworks structure.

2) Headworks and Intake

The headworks and intake structure are integral to the Project dam. The forebay intake section contains 11 headgates and two filler gates. Five of the headgates are installed in openings that are 10 feet by 15.5 feet and six are installed in openings that are 10 feet by 12.5 feet. The two filler gates measure 4 feet by 6 feet. The headgates are fitted with trash racks. In the 1912 powerhouse, the intake section has six open flumes, each fitted with two 10.5-foot-by-14-foot double leave slide gates and a continuous trash rack which extends from elevation 115.0’ to elevation 88.0’. The clear spacing of the racks in front of units 1-6 is 1.5 inches. In the 1982 powerhouse, the intake section contains two openings fitted with vertical headgates measuring approximately 12 feet high by 12 feet wide and operated by hydraulic cylinders. The trash racks are serviced by a track mounted, hydraulically operated trash rack rake with trash removal capabilities. The trash racks screening units 7 and 8 intakes (in the 1982 powerhouse) extend from elevation 115.25’ to 88.0’ and have clear spacing of 3.5 inches. The westerly non-overflow section contains a 2-foot-high by 2-foot-wide steel gate which was formerly used as an intake for process water for the now-demolished Keyes Fibre Company mill, formerly located adjacent to the Project. A retaining wall connects the west end of the non-overflow section to a concrete cut-off wall, which serves as a core wall for the earthen dike.

3) Forebay

The forebay is located immediately downstream of the headgate structure and is enclosed by the two powerhouse structures. The 1912 powerhouse is located to the east and the 1982 powerhouse is located to the south of the forebay. A retaining wall, approximately 240 feet in length, is located on the west side of the forebay. A second process water intake for the former Keyes Fibre Company is located in this forebay, similar to the one installed in the headworks structure. Located at the south end of the forebay between the powerhouses are three gates, including a 10-foot-high by 7-foot-wide Tainter gate, a 6-foot-high by 6-foot-wide deep gate and a 4-foot-wide by 22-inch-high sluice gate fitted

with three stop logs. Collectively, these three gates provide the primary downstream bypass route(s) for diadromous fish.

4) Powerhouses

The 1912 powerhouse structure, water wheel flumes and intake section are 86 feet wide by 148 feet long and are constructed of reinforced concrete. The walls of the 1912 powerhouse superstructure are built of brick. The building is 35 feet wide by 148 feet long. Approximately one-third of the building is two stories high. Steel columns are embedded in the downstream wall of the powerhouse for support of the bridge crane beam and the steel framing used for the second story floor. The roof is constructed of reinforced concrete supported by concrete encased steel beams. There is an overhead crane for handling equipment. The water wheel flume and intake section has six open flumes, each fitted with two 10.5-foot-high by 14-foot-wide double leaf slide gates and a continuous trash rack with 1.5-inch clear spacing. There are six turbines and six generators located in the 1912 powerhouse.

Turbines in the 1912 powerhouse are each horizontal, four-runner, Francis-type turbines rated at 1,200 horsepower (hp) each; five of the six generators are rated at 750 kilowatts (kW) each, the sixth is rated at 900 kW.

The 1982 powerhouse substructure and superstructure are approximately 59 feet long by 43 feet wide and are constructed of reinforced concrete. The building is approximately 28 feet high from roof to generator floor and the substructure extends down to a maximum depth of approximately 20 feet below the generator floor in the tailrace draft area. The roof is reinforced concrete supported by steel beams. An equipment service hatch is located on the roof. An overhead bridge crane is operated to service powerhouse equipment. The intake section is constructed of reinforced concrete containing two openings fitted with vertical headgates approximately 12 feet high by 12 feet wide that are operated by hydraulic cylinders and with trash racks having 3.5-inch clear spacing. The trash racks are serviced by a track mounted, hydraulically operated trash rack rake with trash removal capabilities.

The 1982 powerhouse contains two horizontal tube-type turbines, each rated at approximately 2,880 hp, and two generators rated at 2,000 kW each. The total installed capacity of the Project, limited by the generator nameplates for each unit, is 8,650 kW.

The Project related transmission facilities include three step-up transformers located in a Central Maine Power Company substation adjacent to but outside of the Project

Boundary. Generator leads between the powerhouses and the point of interconnection within the local utility substation is approximately 250 feet from the 1912 powerhouse.

5) Tailrace

The Project tailraces are excavated riverbed located downstream of the powerhouses. The normal tailwater elevation of the stations is approximately 88.0'. Water is released from the 1982 powerhouse into a 300-foot-long tailrace approximately 45 feet wide and 12 feet deep. The tailrace of the 1912 powerhouse is approximately 140 feet wide and 12 feet deep and extends approximately 175 feet downstream. The two powerhouse tailraces are separated by an island and training wall.

6) Project Impoundment

The Shawmut Dam impounds the Kennebec River and has a normal pond elevation of 112.0 feet; the Project boundary follows the 113.0- or 114.0-foot contour. The Shawmut impoundment has an estimated volume of 4,960 acre-feet but, because the Project operates as a run-of-river facility, the impoundment has no significant usable storage capacity under normal operating conditions. The Shawmut impoundment has a surface area of 1,310 acres at normal full pond elevation and extends approximately 12 miles upstream of the Project dam.

D. Existing Condition

The Kennebec River is located in western and central Maine and encompasses a watershed area of 4,200 square miles above the Shawmut Dam, joining with the Androscoggin River at Merrymeeting Bay. The Shawmut Project is located at river mile (RM) 66 in the towns of Skowhegan, Fairfield, Clinton and Benton in the counties of Kennebec and Somerset. The Project is one of ten FERC licensed hydropower and storage projects on the mainstem Kennebec River.

E. Existing Project Operation

The Project is operated as a run-of-river facility where outflow generally approximates inflow, and the impoundment water level is generally maintained within the 1 foot of normal full pond elevation of 112.0 feet during normal operations. Operated in this manner, the Project has no appreciable storage or flood control capacity. Total Project outflow varies, based on use of generational units, gates and spillway mechanisms, including flashboards and rubber dam sections, to manage impoundment water levels as prescribed by run-of-river operations. The rubber bladder sections can only be fully

inflated or fully deflated; each of the three sections is capable of passing up to approximately 7,000 cfs when deflated at elevation 112.0 feet. The top elevation of the rubber bladders is 112.5 feet, allowing 0.5 foot of freeboard above the normal impoundment elevation. The Shawmut Project is operated remotely with a Supervisory Control and Data Acquisition System link to White Pine Hydro's National System Control Center in Marlborough, Massachusetts. A local crew is available as necessary to conduct routine maintenance and operations at the Shawmut station. The dam is inspected by White Pine Hydro Engineering and Operations staff during an annual two-week shutdown and as needed. During both scheduled and unscheduled maintenance and unit shutdowns, the Project continues to pass inflows downstream through operation of remaining generating units, through the spillway sluice, or through spill achieved by deflating one or more of the rubber bladders, as necessary.

F. Proposed Facility Modification

The Applicant proposes to extend the existing concrete spillway for the forebay Tainter and deep gates by approximately 80 feet. The extension would reroute the discharge location of the forebay Tainter and deep gates from the existing plunge pools between the two powerhouses to a new location in the 1982 powerhouse tailrace to allow installation of a new upstream anadromous fish lift.

The Applicant proposes to construct a new upstream anadromous fish lift adjacent to the 1912 powerhouse to provide volitional upstream passage for approximately 1,540,000 blueback herring, 134,000 alewife, 177,000 American shad, and 12,000 Atlantic salmon. The Applicant also proposes to construct a new concrete upstream fish passage flume to provide volitional passage from the 1982 powerhouse tailrace across an island to the 1912 powerhouse tailrace and the entrance of the new, proposed fish lift.

G. Proposed Minimum Flows

The Applicant proposes to continue run-of-river operation of the Project. There is no bypass reach and all the water diverted through the powerhouse for hydropower generation is returned to the river at the tailrace of the Project powerhouses. Therefore, no minimum flow is necessary or proposed.

H. Proposed Impoundment Water Levels

The Applicant proposes no changes to impoundment water levels and will maintain the Shawmut Dam impoundment at a normal water elevation of 112.0 feet.

I. Proposed Operation and Protection, Mitigation and Enhancement Measures

The Applicant proposes the following measures to protect and enhance environmental resources:

1. Operate the Project in run-of-river mode of operation, thereby maintaining the impoundment water level within one foot of the normal pond elevation of 112.0 feet in a manner such that inflow is generally equal to outflow.
2. Implement a Project Operations Monitoring Plan specific to the Shawmut Project.
3. Construct a new upstream anadromous fish lift adjacent to the 1912 powerhouse to provide volitional upstream passage for blueback herring, alewife, American shad, and Atlantic salmon.
4. Construct a new concrete upstream fish passage flume to provide volitional passage from the 1982 powerhouse tailrace across an island to the 1912 powerhouse tailrace so fish can access the new fish lift entrance.
5. Operate the new upstream fish lift and upstream passage flume from May 1 to October 31, annually.
6. Achieve an adult salmon upstream survival standard of 95% for the Shawmut Project and accumulative adult upstream survival standard of 81.4% for the four lower Kennebec River projects[3] combined.
7. Conduct up to two years of qualitative passage effectiveness studies using up to 20 adult salmon to evaluate the performance of the new fish lift.
8. Once sufficient numbers of returning adult salmon are available (i.e., approximately 200 fish), conduct a quantitative adult salmon upstream passage study to evaluate the cumulative upstream passage effectiveness of the fish passage facilities at the Shawmut Project and the other three lower Kennebec River projects.
9. Install a fish guidance boom in the forebay upstream of the 1982 powerhouse to direct downstream migrating fish away from the turbines and toward the forebay Tainter and surface sluice gates. The guidance boom would consist of 10-foot-deep rigid panels with 0.5-inch perforations and 48% open area.
10. After the new fish lift and guidance boom are constructed and tested and the Tainter and deep gate spillway extensions are completed, prioritize operation of the generating units in the 1912 powerhouse such that Unit 1 is the first on and last off, followed consecutively by Units 2 through 6, from May 1 to October 31, annually, to increase attraction to the new fish lift entrance.

[3] In addition to Shawmut, the Lower Kennebec River projects include Lockwood, Hydro-Kennebec, and Weston.

11. Continue to operate the existing forebay surface sluice gate at maximum capacity to pass up to 35 cfs from April 1 to December 31 to provide a continuous surface bypass route for downstream migrating fish.
12. Continue to spill 600 cfs through the existing forebay Tainter gate from April 1 to June 15 to provide a safe passage route for Atlantic salmon smolts.
13. Continue to provide a total of 6% of Station Unit Flow (about 400 cfs at maximum generation) through the combined discharge of the forebay Tainter and surface sluice gates from November 1 to December 31 to provide a safe passage route for Atlantic salmon kelts.[4]
14. During the interim period between license issuance and the installation of the new fish guidance boom, continue to lower four sections of hinged flashboards to pass 560 cfs via spill from April 1 to June 15 to provide a safe passage route for Atlantic salmon smolts.[5]
15. Conduct up to three years of downstream passage studies to evaluate the effectiveness of new downstream passage measures at meeting a juvenile salmon downstream survival standard of 96% at the Shawmut Project, and a cumulative downstream survival standard of 84.9% for the four lower Kennebec River projects combined.
16. Continue to operate the existing eel upstream fishway from June 15 to September 15 each year to provide upstream passage for American eels.
17. Continue to pass approximately 425 cfs through the forebay deep gate and shut down Units 7 and 8 for 8 hours during the night for 6 weeks between September 15 and November 15, annually, for downstream adult eel passage.
18. Consult with NMFS, FWS, and Maine DMR on additional measures, if needed, to improve upstream and downstream passage effectiveness to achieve performance standards.
19. Implement the Fish Passage Operations and Maintenance Plan filed with FERC accompanying the December 13, 2019 fish life design drawings.
20. Prepare annual fishway monitoring reports.
21. Implement the Recreation Facilities Management Plan (RFMP) filed with the license application, which includes provisions for continued maintenance and management of the Hinckley Boat Launch and Shawmut Canoe Portage.
22. Implement the Historic Properties Management Plan (HPMP) filed with the license application to protect and preserve cultural resources, which includes conducting a Phase II survey of four pre-contact archaeological sites and the Noble's Ferry West cultural site to determine eligibility for listing on the National Register.

[4] Kelts are post-spawn adult Atlantic salmon.
[5] Smolts are juvenile Atlantic salmon migrating downstream to the sea from their natal rivers.

2. JURISDICTION

The Department finds and determines that the proposed continued operation of the Project qualifies as an "activity…which may result in [a] discharge into the navigable waters [of the United States]" under Section 401 of the CWA, 33 USC § 1341. Section 401 of the CWA requires that any applicant for a federal license or permit to conduct such an activity obtain a certification that the activity will comply with applicable State water quality standards and any other appropriate requirement of State law. The Department may approve a WQC pursuant to Section 401 of the CWA if the standards of classification of the water body and the State's antidegradation policy are met, or for a project affecting a water body in which the standards of classification are not met, if the project does not cause or contribute to the failure of the water body to meet the standards of classification. 38 M.R.S. § 464(4)(F)(3).

Pursuant to a 1996 Executive Order of the Governor of the State of Maine, the Department is designated as the certifying agency for issuance of Section 401 WQC for all activities in the State not subject to Land Use Planning Commission (LUPC) permitting and review. Executive Order No. 3 FY 96/97. Therefore, the Department is the certifying agency for the Project licensing.

The Project is licensed by FERC as a water power project under the Federal Power Act (FERC Project No. P-2322). The initial FERC license was issued on March 5, 1964;[6] the most recent FERC license was issued January 5, 1981 for a term of 40 years, expiring on January 31, 2021. On December 11, 2018, FERC extended that license term for one year, to January 31, 2022. The licensee has filed an Application for New License with FERC to continue to operate the project as a Major Water Power Project; it is anticipated that a new FERC license would be issued for a term of 40 years. That application is currently pending before FERC.

3. APPLICABLE STATE WATER QUALITY STANDARDS

A. Classification

The Kennebec River, where the Project is located, is designated as both Class C and Class B waters. Traveling downstream, one Class B classification extends from the Route 201A bridge in Anson-Madison to the Fairfield-Skowhegan boundary, including all impoundments. 38 M.R.S. § 467(4)(A)(9). The upper portion of the Shawmut impoundment extends into this Class B section of the river. Then, from the Fairfield-Skowhegan boundary to the Shawmut Dam, a section of the river that is entirely a

[6] The original FERC license was issued on March 5, 1964 with a retroactive effective date of June 1, 1954.

riverine impoundment, the waters are Class C. 38 M.R.S. § 467(4)(A)(10). Finally, from the Shawmut Dam downstream to its confluence with Messalonskee Stream, the waters of the river return to Class B, excluding all impoundments. 38 M.R.S. § 467(4)(A)(10-A).[7]

B. Designated Uses

The Applicant must demonstrate that the Kennebec River, including the Shawmut impoundment and the section of the river below the Shawmut Dam, meets the applicable designated uses. The Class B and Class C waters of the Kennebec River in the vicinity of the Shawmut Project must be of such quality that they are suitable for the designated uses of drinking water supply after treatment; fishing; agriculture; recreation in and on the water; industrial process and cooling water supply; hydroelectric power generation, except as prohibited under Title 12, section 403; navigation; and as habitat for fish and other aquatic life. 38 M.R.S. § 465(3)(A); 38 M.R.S. § 465(4)(A). Additionally, habitat in Class B waters must be characterized as unimpaired. 38 M.R.S. § 465(3)(A). "Unimpaired" means without a diminished capacity to support aquatic life. 38 M.R.S. § 466(11).

C. Numeric Standards

The Applicant must demonstrate that the Kennebec River, including the Shawmut impoundment and the section of the of the river below the Shawmut Dam, meets the following numeric standards:

1) The dissolved oxygen (DO) content of the Class B waters of the Kennebec River, as established in 38 M.R.S. § 465(3)(B), may not be less than 7 parts per million or 75% of saturation, whichever is higher, except that for the period from October 1 to May 14, in order to ensure spawning and egg incubation of indigenous fish species, the 7-day mean dissolved oxygen concentration may not be less than 9.5 parts per million and the one-day minimum dissolved oxygen concentration may not be less than 8.0 parts per million in identified fish spawning areas.[8]

[7] Waters impounded by the Hydro-Kennebec Dam and the Lockwood Dam in Waterville-Winslow are Class C. 38 M.R.S. § 467(4)(A)(10-A)(a).

[8] Numeric standards for Class B waters also include standards for the number of E-coli bacteria. *See* M.R.S. § 465(3)(B). However, the presence or operation of a dam does not implicate E-coli bacteria levels, and absent affirmative evidence to the contrary, E-coli standards are generally not applied in the context of a WQC with respect to a hydropower project's operations.

2) The DO content of the Class C waters of the Kennebec River, as established in 38 M.R.S. § 465(4)(B), may not be less than 5 parts per million (ppm) or 60% of saturation, whichever is higher, except that in identified salmonid spawning areas where water quality is sufficient to ensure spawning, egg incubation and survival of early life stages, that water quality sufficient for these purposes must be maintained.[9,10] In order to provide additional protection for the growth of indigenous fish, the following standards apply.

a. The 30-day average DO criterion of a Class C water is 6.5 parts per million using a temperature of 22 degrees centigrade or the ambient temperature of the water body, whichever is less, if:
   i. A license or water quality certificate other than a general permit was issued prior to March 16, 2004 for the Class C water and was not based on a 6.5 parts per million 30-day average DO criterion; or
   ii. A discharge or a hydropower project was in existence on March 15, 2005 and required but did not have a license or water quality certification other than a general permit for the Class C water.

   This criterion for the water body applies to licenses and water quality certificates issued on or after March 16, 2004. 38 M.R.S. § 465(4)(B).

b. In Class C waters not governed by subparagraph a), DO may not be less than 6.5 parts per million as a 30-day average based upon a temperature of 24 degrees centigrade or the ambient temperature of the water body, whichever is less. This criterion for the water body applies to licenses and water quality certificates issued on or after March 16, 2004. 38 M.R.S. § 465(4)(B).

c. Compliance with DO criteria in existing riverine impoundments, such as the Shawmut impoundment, must be measured in accordance with 38 M.R.S. § 464(13).

D. <u>Narrative Standards</u>

[9] DO criteria to provide additional protection to ensure spawning and egg incubation is not required here, as no salmonid spawning areas have been identified in the Project area. See section 5(B).

[10] Numeric standards for Class C waters also include standards for the number of E-coli bacteria. *See* M.R.S. § 465(4)(B). However, the presence or operation of a dam does not implicate E-coli bacteria levels, and absent affirmative evidence to the contrary, E-coli standards are generally not applied in the context of a WQC with respect to a hydropower project's operations.

The Applicant must demonstrate that the Kennebec River, including the Shawmut impoundment and the section of the river downstream of the Shawmut Dam, meet the following narrative standards:

1) Discharges to Class B waters may not cause adverse impact to aquatic life in that the receiving waters must be of sufficient quality to support all aquatic species indigenous to the receiving water without detrimental changes in the resident biological community. The habitat must be characterized as unimpaired. 38 M.R.S. § 465(3)(C). "Without detrimental changes in the resident biological community" means no significant loss of species or excessive dominance by any species or group of species attributable to human activity. 38 M.R.S. § 466(12).

However, certain existing hydropower impoundments managed under riverine classifications under 38 M.R.S. § 464 (such as the Shawmut riverine impoundment) are additionally subject to 38 M.R.S. § 464(10) in recognition of some changes to aquatic life and habitat that have occurred due to the existing impoundments of these projects. Under Section 464(10), Class A and B riverine impoundments (including the Shawmut riverine impoundment) are generally deemed to meet their habitat characteristics and aquatic life criteria if the impounded waters achieve the Class C aquatic life criteria of 38 M.R.S. § 464(4)(C), provided that no reasonable changes can be implemented to improve habitat and aquatic life that do not significantly affect existing energy generation capacity. 38 M.R.S. § 464(10)(A)-(B). In addition, when the actual water quality of water affected by this standard attains any more stringent characteristic or criteria under the waters' classification, that water quality must be maintained and protected. 38 M.R.S. § 464(10)(D).

2) Discharges to Class C waters may cause some changes to aquatic life, except that the receiving waters must 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. 38 M.R.S. § 465(4)(C). "Resident biological community" means aquatic life expected to exist in a habitat which is free from the influence of the discharge of any pollutant. 38 M.R.S. § 466(10).

E. Antidegradation

The Department may only approve WQC if the standards of classification of the waterbody and the requirements of the State's antidegradation policy will be met. The Department may approve WQC 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. § 464(4)(F)(3).

F. Department Rules

Attainment of water quality standards is assessed, in part, through application of the following Department Rules.

1) 06-096 C.M.R. Chapter 579 – Classification Attainment Evaluation Using Biological Criteria for Rivers and Streams.

Criteria to quantify aquatic life standards for Classes AA, A, B, and C waters are defined in this chapter. The benthic macroinvertebrate community is used as a surrogate to determine conformance with statutory aquatic life standards, related statutory definitions, and statutory provisions for the implementation of biological water quality criteria that are provided in Maine's standards for classification of fresh surface waters. Methods described in this chapter are used to make decisions about classification attainment.

2) 06-096 C.M.R. Chapter 581 – Regulations Relating to Water Quality Evaluations.

These rules provide for the maintenance of stream and lake classifications without violations by computing capacity of the waters to break down waste and shows fish, wildlife, and organisms in the receiving water to migrate both up and downstream in an undisturbed section of river adjacent to the waste discharge outfall. In addition, a scale of 0-100 is established in order to measure the trophic state or degree of enrichment of lakes due to nutrient input.

4. DEPARTMENT ANALYSIS

A. Aquatic Habitat (38 M.R.S. § 465(3)(A), (C); 38 M.R.S. § 465(4)(A), (C))

For this standard, the Applicant must demonstrate that the Shawmut riverine impoundment and outlet stream below the dam are suitable for the designated use as habitat for fish and other aquatic life. The Applicant also must demonstrate that this impounded section of the Kennebec River and portion of the river below the dam are of sufficient quality to support indigenous aquatic species consistent with the applicable narrative standard.

Additionally, since indigenous aquatic species native to the section of the Kennebec River occupied by the Project, both above and below the Shawmut Dam, include diadromous fish, the Applicant must demonstrate that the waters of the Kennebec River, including where these waters flow through and over the Shawmut Dam, provides for the safe, timely, and effective passage of diadromous fish, ensuring that the river is of sufficient quality to support all indigenous aquatic species and that the discharge of the river water from the dam does not cause adverse impact to indigenous diadromous fish.

1) Aquatic Habitat – Riverine Impoundment (38 M.R.S. § 465(3)(A), (C); 38 M.R.S. § 465(4)(A), (C); 38 M.R.S. § 464(10))

For this standard, the Applicant must demonstrate that the Shawmut riverine impoundment is suitable for the designated use as habitat for fish and other aquatic life. The Applicant also must demonstrate that this impounded section of the Kennebec River is of sufficient quality to support all indigenous aquatic species and supports the structure and function of the resident biological community.

Attainment of such standards can be demonstrated in a variety of ways, including through evaluation of the structure and function of the biotic community, and measurement or submission of other evidence that demonstrates a sufficient flow to provide wetted conditions in 75% of the cross-sectional area of the river or stream, as measured from bankfull conditions.. The presence and suitability of habitat is presumed when flows and corresponding water levels provide wetted conditions for 75% of the cross sectional area of a river. Conversely, flows and corresponding water levels that provide wetted conditions for 75% of the cross sectional area of river are presumed necessary to meet aquatic life and habitat standard. This rebuttable presumption is set forth in the Department's Hydropower Project Flow and Water Level Policy dated February 4, 2002 (Water Level Policy). Additionally, while the Shawmut impoundment is managed under riverine classifications, evaluation of littoral zone[11] within the impoundment also is instructive. The presence and suitability of habitat, especially for small or young fish, as well as other aquatic life that rely on that refuge and forage provided by nearshore aquatic vegetation in an impoundment, is presumed when at least 75% of that area, called the littoral zone, as measured from full pond conditions remains watered at all times. DEP Water Level Policy (2002).

[11] The 'littoral zone' of lakes and lake-like waterbodies is defined in limnology as the portion of a lake where light penetration allows plant growth on the bottom. The littoral zone extends from the shoreline to the maximum depth where plants on the bottom receive enough sunlight for photosynthesis. This depth, known as the euphotic zone, is commonly estimated as the depth which receives approximately 1% of incident light (Cole, 1979). While depth of the zone varies with many factors, it can be estimated as a multiple of the Secchi disk transparency (SDT). Based on Tyler (1968), for more than 20 years DEP has delineated the littoral zone using a depth two times the SDT for purposes of determining attainment of Maine's Water Quality Standards.

a. Existing Habitat and Resources

The Department finds that the Shawmut riverine impoundment extends approximately 12 miles upstream of the Project Dam and has a surface area of 1,320 acres at a normal full pond elevation of 112.0 feet. The Project is operated as a run-of-river facility where the impoundment is managed to maintain water level elevations within one foot of the normal full pond elevation during normal operations, such that inflow is generally equal to outflow. It is through the regulation of the flow of the river and control of discharge from the dam that the Project Dam creates the Shawmut impoundment. Minor, temporary changes to downstream flow occur, as a result of opening or closing gates or lowering the rubber bladder section(s) or flashboards to manage variable river flows as needed to maintain the impoundment water level, for Project maintenance, or for resource protection measures such as nightly shutdowns during downstream passage of American eels. The Applicant submitted historic flow and reservoir level data as evidence that normal Project operations do not result in impoundment water level fluctuations that dewater the littoral zone. A desktop analysis of hourly impoundment elevation variations below the normal full pond impoundment level between January 2010 and December 2015 showed that deviations occur infrequently; deviations of 0.5 foot or more occurred approximately 4% of the time and deviations of 1 foot or more occurred 1% of the time during that six-year time period.

The Department finds that the run-of-river operations provide a relatively stable head pond elevation while passing inflows. Such operations protect existing littoral habitats from changes related to water level fluctuations and maintain connectivity to tributaries. Three small tributaries (Wesserunsett, Martin, and Carrabassett streams) discharge into the mainstem river upstream of the Shawmut Dam Riverbanks are steep-sided and bordered by rolling hills near Skowhegan, flattening into board floodplains on the east bank with a few steep slopes on the west bank as the river flows south to the village of Shawmut. The river averages 750 feet wide, with an average depth of approximately 20 feet. The Shawmut impoundment is approximately 1,800 feet wide and approximately 30 feet deep near the Project Dam. Shorelines contain typical shoreline littoral habitats including mud flats, tributary deltas, islands, and submerged aquatic vegetation beds. Substrates in the upper end of the impoundment are primarily large gravels and cobbles with some interspersed fine sediment; the middle and lower reaches are deeper and more fine-grained substrates including sands, silts, and clay. Marsh and wetland communities that occur within the Shawmut Project area include waterlily and macrophyte beds, pickerelweed marsh, bulrush marsh, and grass shrub marsh (palustrine emergent wetland).

b. Studies

A Tributary Access Study was conducted by the Applicant to evaluate the connectivity between the main stem Kennebec River and tributary streams when impounded water levels are lowered to elevation 108.0 feet (permanent spillway crest elevation) for maintenance work on the dam. A bathymetric survey was conducted using a boat-mounted Lowrance Elite 7 depth sounder and global positioning system (GPS) at full head pond conditions to collect depths along longitudinal transects from the mouth of each stream extending upstream to the transition from low-gradient backwater or flatwater to free-flowing riverine reaches. At the intersection of the riverine reaches and in shallow locations, additional water depths were collected with a stadia survey rod. A second survey was conducted at head pond elevation 110.9 feet, representing normal operations within one foot of full pond, and a third survey conducted at water elevation 109.1, representing water elevations during maintenance work. The Applicant reports and the Department finds that fish access to tributary habitat is not affected by normal operations and no velocity barriers were identified that would prevent fish from accessing the streams. Water depth just upstream of the Carrabassett Stream inlet was determined to be less than a foot at the lowest head pond elevation surveyed but the Applicant reports that adjacent areas provided deeper channels for fish to access the free-flowing tributaries.

Water temperatures surveyed during the Trophic State Study ranged from 16.8 ºC to 25 ºC in June; 20.6 ºC to 28.4 ºC in July; 21.4 ºC to 26.0 ºC in August; 20.5 ºC to 23.9 ºC in September; and 13.7 ºC to 18.3 ºC in October and were found to be highest in the first meter and relatively uniform throughout the water column below the first meter. These water temperatures are within the temperature range that supports a variety of fish species including brown trout, but that optimal water temperature conditions are limited during the summer months.

In 1983, 2002, and 2004, benthic macroinvertebrate (BMI) surveys were conducted[12] by the Department's biomonitoring program in the Kennebec River 0.3 kilometers upstream of the Shawmut Dam. The studies conducted in 1983 and in 2004 showed the impoundment met Class C aquatic life criteria in the Class C section of the impoundment; the 2002 study indicated non-attainment because the samples showed a low generic richness compared to the total abundance of individuals, as well as a low abundance of Ephemeroptera and low EPT relative abundance, all of which subsequently showed significant improvement in the 2004 study. All of these studies were conducted using methods that have since been updated, but are informative of the condition of the biotic

[12] The 1983, 2002 and 2004 BMI studies were not conducted in association with the relicensing of the Project but are historical data that informs the condition of the biotic community in the impoundment.

community and indicate that Class C aquatic life criteria was met in the impoundment in 2004.

c. Discussion and Findings

The Department finds that the Project is operated as a run-of-river facility and that the Applicant demonstrated by Project water level and flow data and analysis that impoundment water level fluctuations greater than 1.0 foot occur only 1% of the time when the Project water level is temporarily lowered for maintenance work. The Department further finds, based on data submitted by the Applicant, that Project operations do not cause the water level to fluctuate or draw down the river impoundment water level for the purpose of hydropower generation. Run-of-river operations maintain relatively stable water levels with minimal impoundment fluctuation from full pond conditions, subject only to natural variations related to precipitation events. Therefore, the Project operations ensure a flow providing wetted conditions for at least 75% of the cross-sectional area of the riverine impoundment, as measured from bankfull conditions and maintain 75% of the littoral zone in wetted conditions as measured from full pond, protecting habitat in the littoral zone. Based on the evidence provided by the Applicant, the Department, applying its professional judgement through application of its Water Level Policy, determines the Shawmut riverine impoundment meets the applicable aquatic life and habitat criteria, except that the Project waters of and discharge to the Kennebec River do not satisfy the State water quality standards in 38 M.R.S. § 465(3)(A), (C) and 38 M.R.S. § 465(4)(A) with respect to fish passage as discussed further below.

2) Aquatic Habitat – Outlet Stream (38 M.R.S. § 465(3)(A), (C))

For this standard, the Applicant must demonstrate that the Class B waters, such as those at the outlet of the Shawmut Dam, must be of such quality that they are suitable for the designated use of habitat for fish and other aquatic life. The habitat must be characterized as unimpaired. In addition, discharges to Class B waters may not cause adverse impact to aquatic life in that the receiving water must be of sufficient quality to support all aquatic species indigenous to the receiving water without detrimental changes to the resident biological community.

To meet the Class B aquatic life standards for the riverine outlet waters, the Applicant must demonstrate two things. First, the Applicant must show that the macroinvertebrate community attains aquatic life criteria contained in the Department's Chapter 579 rule. The benthic macroinvertebrate community is an indicator of the general state of aquatic life for the purpose of attainment of outlet stream aquatic classification standards. Where

there is documented evidence of conditions that could result in uncharacteristic findings, allowances may be made to account for those situations by adjusting the classification attainment decision through the use of professional judgement. 06-096 C.M.R. Chapter 579, § 3(G).

Second, the Applicant must show that the flow of water in the Kennebec River is sufficient to support the designated use of habitat for fish and other aquatic life by providing flow that maintains the forage and refuge functions of the littoral habitat. As discussed in section 4(A) above, the Department generally presumes, absent evidence to the contrary, that flow providing wetted conditions for at least 75% of the cross-sectional area of the affected river or stream, as measured from bankfull conditions, is needed to meet aquatic life and habitat standards. The second demonstration may be met if the Applicant demonstrates that 75% of the cross-section of the outlet stream is wetted at all times.

a. Existing Habitat and Resources

The Applicant reports and the Department finds that the tailwater area immediately below the Shawmut Dam and in downstream reaches is approximately 1,000 feet wide. The river in this area is shallow with several bedrock shoals, cobble, and boulder beds, and riffle habitat. The normal tailwater elevation is 88.0 feet. There is no appreciable bypass reach; the generating units are essentially in line with the dam.

b. Studies

The Applicant conducted a Benthic Macroinvertebrate (BMI) study between August 11 and September 7, 2016, deploying three rock baskets at each of two locations in the Kennebec River downstream of the Shawmut Dam. The BMI study was conducted in accordance with Maine's *Methods for Biological Sampling and Analysis of Maine Rivers and Streams* (2014), consistent with Chapter 579, §§ 2(B) and 3(A). Results were analyzed by Department staff applying the linear discriminant model.

Aquatic habitat in the area approximately 1,000 feet downstream of the Shawmut Dam is characterized by rubble substrate with some sand, gravel, and boulder. Rooted aquatic grasses are scattered throughout the sample area but are not abundant; a layer of filamentous algae was present on the substrate when samplers were deployed and when they were retrieved.

Sample location 1 hosted 3,217 individuals representing 59 taxa and sample location 2 found 5,344 individuals among 55 taxa. (Taken together, 8,561 individuals among 71

taxonomic classifications were collected downstream of the Shawmut Dam.) The community is dominated by four genera, making up just over 50% of the total number of specimens collected. Sensitive species[13] were present at both sample locations and comprised 49.3% of the total number of individuals collected at sample location 1 and 67.7% of the individuals collected at sample location 2. A second assessment of water quality tolerance, the Hilsenhoff Biotic Index rating, estimates the overall tolerance of the community in the sample area. A value of 4.36 at sample location 1 and 3.97 at sample location 2 (4.11 for both locations together) indicate good overall water quality. Based on linear discriminate model results, the Department determined that sample location 1 met Class A aquatic life criteria and sample location 2 met Class B aquatic life criteria.

c. Discussion and Findings

Studies conducted by the Applicant demonstrate and the Department finds and determines that the Shawmut Project operates as a run-of-river facility, where inflow is generally equal to outflow. The Project powerhouses are in line with the dam, so all flows are passed directly to the Kennebec River and there is no bypassed reach. The Department concludes, therefore, that at least 75% of the cross-sectional area of the Kennebec River downstream of the Shawmut Dam is wetted at all times. Further, Department staff analyzed the macroinvertebrate study data using the Department's linear discriminant model and determined that the macroinvertebrate community meets Class A aquatic life criteria at sample location 1 and meets Class B aquatic life criteria at sample location 2. Therefore, the Department finds that the Applicant has demonstrated the waters of the Kennebec River in the vicinity of the Project are of sufficient quality to support all aquatic species indigenous to the receiving water without detrimental changes in the resident biological community, except with respect to diadromous fish species as discussed below. Further, based on the evidence in the record, the Department determines that the outlet stream waters of the Kennebec River are of sufficient quality and sufficient quantity that they support the designated use of habitat for fish and other aquatic life, except with respect to diadromous fish species as discussed below.

3) Aquatic Habitat – Fish Passage (38 M.R.S. § 465(3)(A), (C); 38 M.R.S. § 465(4)(A))

The Shawmut facility is a run-of-river project with all of the water of the Kennebec River flowing through or over the dam, discharging to the river. By influencing the flow of the water in river, the dam and its discharge affect the physical integrity of the water and impacts the ability of fish to pass the section of the river through the discharging water

[13] The taxonomic Orders Ephemeroptera, Plecoptera, and Trichoptera are considered particularly sensitive to pollution and their relative abundance is informative of a benthic community's tolerance of poor water quality.

where the dam is located. By influencing fish passage, the dam and its discharge affect the biological integrity[14] of the waters in the river. As an aquatic ecosystem, the Kennebec River is home to and supports a variety of aquatic life. Diadromous fish are part of the biological community in the river and, due to their migratory nature and life cycle needs, must be able to pass the Shawmut Dam to spawn. Unless diadromous fish have the ability to pass the dam, the Kennebec River cannot support these species of fish.

The physical and biological integrity of the waters of the Kennebec River are important components of water quality. For the Applicant to satisfy the applicable State water quality standards, the Applicant must demonstrate that the Class B and Class C water of the Kennebec River are of such quality that they are suitable for the designated use of habitat for fish and other aquatic life, which includes flows that support the migration of native diadromous fish through the portion of the river occupied by the project, including the Shawmut Dam and accessing both upstream and downstream habitat. For the waters of the river to be suitable habitat for these fish, the waters must support their movement and passage must be safe, timely, and effective. In Class B waters, the Applicant also must demonstrate that the habitat is unimpaired.

Additionally, for the Applicant to satisfy applicable State water quality standards, the Applicant must demonstrate that the water flowing through and over the Shawmut Dam, which discharges to the Kennebec River, does not cause adverse impact to the aquatic life. This requires showing that the discharge from the dam supports safe, timely, and effective upstream passage, specifically for indigenous anadromous fish seeking to reach upstream habitat to spawn. Safe, timely, and effective upstream passage is necessary to avoid detrimental changes in the resident biological community.

a. Existing Habitat and Resources

The Applicant reports and the Department finds that the Kennebec River in the vicinity of the Shawmut Project is inhabited by approximately 50 species of freshwater and diadromous fish. Fish assemblage studies were completed in the Project area in 2002 as part of a larger survey of Maine's large river systems, and in 2019 for a relicensing study to characterize the occurrence, distribution, and relative abundance of fish species within the Shawmut Project area. Dominant resident species identified in 2002 included smallmouth bass, largemouth bass, sunfish and perch; other resident species included fallfish, white sucker, golden shiner, pumpkinseed, eastern banded killifish, black crappie, white perch, common shiner, brown trout, chain pickerel, and rainbow trout.

[14] The Department understands biological integrity to generally mean the ability of an aquatic ecosystem to support and maintain a balanced, adaptive community or organisms having a species composition, diversity, and functional organization comparable that that of natural habitats within a region.

Diadromous species, including alewife and American eel, also were reported within the Shawmut area in 2002. The Applicant reports that the 2019 study identified 13 species, including both freshwater and diadromous species, in the Shawmut impoundment, including all the species found in 2002 except common shiner, white perch, brown trout, and rainbow trout. Dominant species in 2019 included yellow perch, largemouth bass, golden shiner, and alewife. The 2019 study also identified seven species of fish downstream of the Shawmut Dam, including fallfish, smallmouth bass, American eel, white sucker, yellow perch, redbreast sunfish, and alewife.

The Department finds that the Maine Department of Inland Fisheries and Wildlife (MDIFW) regularly stock spring-yearling brown trout above and below the Shawmut Dam and also occasionally stock brown trout fry, fall-yearling, and adults below the dam; the Kennebec Valley Chapter of Trout Unlimited also stocked rainbow trout between 1992 and 2007. Although not stocked on an annual basis, rainbow trout and landlocked salmon also may be found in the Project area. MDIFW stocks brook trout and brown trout regularly in the fall and spring in Wesserunsett Lake and Wesserunsett Stream, and also stocks spring yearling brook trout in Carrabassett Stream.

The Applicant reports and the Department finds and determines that the lower Kennebec River, including waters associated with the Shawmut Project, support runs of diadromous fish, including American shad, blueback herring, alewives, Atlantic salmon, sea lamprey, and American eel. Atlantic and shortnose sturgeon also occur in the lower Kennebec but are not found upstream of the Lockwood Dam and are not found in waters associated with the Shawmut Project.

The Applicant reports and the Department finds that upstream passage is provided for Atlantic salmon, American shad, blueback herring, and sea-run alewives through the interim trap/sort/transfer operations located at the Lockwood Project fish lift. The existing WQC as amended July 31, 1998,[15] requires in pertinent part, the installation and operation of permanent upstream and downstream fish passage facilities at the Project no later than 2 years after the passage of at least 15,000 American shad in a single season through a permanent upstream fish passage facility at the Hydro-Kennebec Project or development of an alternate trigger for fishway installation based on the biological assessment process for Atlantic salmon, among other species.[16] A new, permanent fish

[15] Department water quality certification amendment #L-19751-33-A-M.

[16] In May 1998, a fisheries settlement agreement for the lower Kennebec River was finalized by members of the Kennebec Hydro Developers Group (KHDG), which included the (then) owner of the lower Kennebec River dams, a coalition of non-governmental organizations (Kennebec Coalition), and State and federal resource agencies. The KHDG agreement provided a comprehensive settlement governing fisheries restoration for numerous diadromous fish species in the Kennebec River, including interim passage facilities at the Lockwood Project and eventual permanent upstream passage facilities at each of the lower Kennebec River dams. With respect to the Shawmut dam, permanent upstream fish passage facilities have not yet been constructed. On July 13, 2020, FERC denied an

lift was constructed at Hydro-Kennebec in 2016-2017 but is not yet in service, as fish trapped at the downstream interim fish trap at the Lockwood Dam are transported upstream of the Shawmut Project. The interim facility at Lockwood is ineffective at passing American shad and so the biological trigger identified in the fish passage amendment for Shawmut has not been achieved. The fish resource agencies and FERC have identified the relicensing of the Shawmut Project as the appropriate venue in which to address fish passage at the Shawmut Dam, as opposed to through the prior license and 1998 amended WQC.

i. Atlantic salmon

Historically, the Atlantic salmon fishery in the Kennebec River extended to Caratunk Falls, located approximately 42 river miles upstream of the Project. Historical upstream barriers to Atlantic salmon were Grand Falls on the Dead River and the falls immediately above the Kennebec River Gorge, now the site of Harris Station, also known as the Indian Pond Hydroelectric Project. NMFS listed the Gulf of Maine Distinct Population Segment (GOM DPS) of Atlantic salmon in the Kennebec River as federally endangered in 2009. Currently, Atlantic salmon captured at the interim Lockwood trap and truck facility are transported to the Sandy River by MDMR. Safe, timely, and effective upstream passage and downstream passage is necessary for these fish to reach spawning habitat and successfully return to the sea to complete their life cycle. NMFS reports that approximately two-thirds of the necessary rearing habitat for Atlantic salmon occurs in the Sandy River, located upstream of the Shawmut Dam.[17] The Sandy River is where nearly all stocking of Atlantic salmon occurs in the Kennebec River watershed and where all adult pre-spawn salmon trapped at the Lockwood dam are transported.

FERC has approved The Recovery Plan for the Gulf of Maine Distinct Population Segment of Atlantic Salmon, filed jointly by USFWS and NMFS (2019), which has the overall goal of removing the GOM DPS from the Federal List of Endangered and Threatened Wildlife and an interim goal of reclassifying the DPS from endangered to threatened. According to this plan, reclassification can be accomplished by maintaining sustainable, naturally reared populations and ensuring access to suitable habitat in at least two of the three Salmon Habitat Recovery Units (SHRUs) within the GOM DPS, better understanding threats to marine survival, and reducing or eliminating threats that either

extension of time request for construction of upstream fish passage and informed Brookfield that such construction would be considered as part of the Shawmut relicensing proceeding.

[17] Designated critical habitat within the Kennebec River basin contains about 90,000 modeled Atlantic salmon rearing habitat units; 63,000 of which occur upstream of the Shawmut Dam. United States Department of Commerce's Preliminary Prescriptions for Fishways for the Shawmut Hydroelectric Project (P-2322), August 28, 2020.

individually or in combination endanger the DPS.[18] The agencies propose to reduce or eliminate those threats that pose a risk of imminent DPS extinction. Delisting will require maintenance of self-sustaining wild populations with access to sufficient suitable habitat in each SHRU, ensuring that necessary management options for marine survival are in place, and reducing or eliminating all threats that individually or in combination pose a risk of endangering the DPS.

ii. Alosines[19]

The historic upstream migration limit for American shad and river herring, including blueback herring and sea-run alewives, in the Kennebec River was Norridgewock Falls, located upstream of the Shawmut Dam. Currently, river herring and American shad are transported from the Lockwood trap and truck facility for release into the Shawmut impoundment and in the Kennebec River downstream of the Shawmut Dam. Alewives, which need quiet water for spawning, are also trapped at Lockwood and transported and released into lakes and ponds that drain to the Kennebec River.

iii. American eel

Juvenile and adult American eel are present in the Shawmut Project area. Upstream eel passage facilities, first installed in 2003 on the eastern end of the spillway and since installation of the rubber bladder in 2009 now located between the first section of the hinged flashboards and the Unit 1 tailrace, are operated separately from planned anadromous fish passage facilities between June and September each year. In 2019, a second eelway was installed adjacent to the forebay plunge pool.

iv. Sea Lamprey

Sea lamprey are known to be present in the Kennebec River, although their abundance and distribution is not well known. Sea lamprey are co-evolved with other anadromous fish, including Atlantic salmon and benefit the endangered fish by improving spawning habitat for salmon redds by their own nest-building habits that flush compacted silt and sediment from the riverbed. In addition, they deliver marine nutrients to inland waters because they die shortly after spawning, providing forage for a variety of birds, fish and macroinvertebrates. MDMR reports that most of the habitat for sea lamprey is located upstream of the Lockwood Project.

[18] Threats to species viability listed in the Recovery Plan include, among others, present or threatened destruction, modification, or curtailment of its habitat or range. The plan indicates that dams are a significant threat associated with habitat loss or degradation.

[19] Alosines refers to fish in the genus *Alosa*, including American shad, blueback herring and alewife.

b. Studies

i. Upstream Passage Study

The Department also finds that in May and June 2016, the Applicant conducted a study of adult river herring behavior immediately below the Shawmut Dam to evaluate the fish's use of Project tailwater areas to aid in the design of the upstream fish passage facility. During the study, 150 radio-tagged alewives were released approximately 3.4 miles downstream of Shawmut and their movements were monitored between the release point and the Shawmut Dam. The study showed that 79% of the tagged fish moved upstream and were detected in one or more of the monitored tailrace zones, most frequently in the area downstream of the hinged flashboard spillway section of the dam and spent the most time in the area of the forebay Trainor gate located between the two powerhouses and were found less frequently in the Units 1-6 tailwater area. The results of this study assisted development of the upstream fish lift design.

ii. Downstream Passage Studies

The Department further finds that a radio-telemetry study of downstream smolt passage was conducted by the Applicant to determine the preferred passage routes and to estimate whole station survival.[20] The study included release of tagged smolts at Shawmut during 2013, 2014 and 2015. Study results showed that the downstream bypass was used 38.7% of the time, followed by passage over the spillway (21.4%), through the 1982 powerhouse (21.1%), and through the 1912 powerhouse (11.6%). The hinged-board spill route, only used during the final release of 2014 and in the 2015 study years after study determined that downstream smolt passage did not achieve survival rates proposed in the 2019 proposed Species Protection Plan for the lower Kennebec River dams (SPP), passed smolts through three sections of opened hinged flashboards adjacent to the power canal and was shown to be used just 5.2% of the time. Survival for smolts using the downstream bypass passage route was 97.4% and those passing over the spillway achieved 100% survival. Smolts passing through the hinged boards spill saw 86.7% survival, and those passing through the turbines achieved 92.1% survival through the 1912 powerhouse and 93.1% though the 1982 powerhouse. Whole station survival for the Project was determined to be 93.5%.[21, 22] NMFS estimates the cumulative survival of

[20] Whole station survival is the combination of survival statistics for each passage route, determined through study of various downstream passage routes.

[21] Whole station survival values reported by Brookfield are based on all passage routes, including turbine passage and represent the three year average at each project location based on the subset of smolts released immediately upstream of each dam and adjusted for background mortality using passage success of the concurrent subset of smolts released immediately downstream of each dam.

[22] Baseline whole station survival estimates for radio-tagged smolts were 96.3% in 2013, 93.6% in 2014, and 90.6% in 2015.

smolts along their downstream migration route through Shawmut and the other three lower Kennebec dams (Weston dam in Skowhegan, Hydro-Kennebec and Lockwood in Winslow and Waterville) to average 81.1%, accounting only for the direct effect of dam passage.[23] NMFS notes that dam passage, particularly through the turbines, can cause disorientation, loss of equilibrium, scale loss, and physical injury that can ultimately contribute to secondary impacts including higher disease rates or increased predation. Project effects on downstream migration of shad, blueback herring, alewife, sea lamprey, and adult Atlantic salmon have not been studied.

The radio-telemetry studies of downstream migrating smolts demonstrated that the survival rate of Atlantic salmon smolts was less (93.5%) than the survival rate proposed in the (then) ISPP (96%), Brookfield agreed to lower four hinged flashboard sections during the smolt migration period to increase the total flow via the downstream fish bypass from 420 cfs to 560 cfs to achieve survival rates consistent with the incidental take limit established for Shawmut.[24]

The Department also finds that in 2007, the Applicant conducted a radio-telemetry study of out-migrating silver eels.[25] The study showed that 93% of radio-tagged silver eels released upstream of the Shawmut Project passed via turbine Units 7 and 8 (located in the 1982 powerhouse), and that use of the downstream bypass by eels was low, at between 0-8%. Immediate survival of silver eels was estimated to be 69%. The Applicant conducted a second radio-telemetry study in 2008 to evaluate the effectiveness of the deep gate located between the two powerhouses at various flows while altering nighttime operations of turbine Units 1-6 and shutting down nighttime use of turbine Units 7-8. The study determined that opening the deep gate 2.5 feet at a flow of approximately 425 cfs and shutting off Units 7-8 increased use of the downstream bypass system to 83% and resulted in an and increase in immediate survival to 92%. As a result of its studies on out-migrating silver eels, the Applicant annually opens the deep gate and turns off Units 7 and 8 during the night for a six-week period between September 15 and November 15 as a permanent means to pass adult eels downstream.

c. Applicant's Proposal for Fish Passage

i. Anadromous Fish

The Applicant proposes to construct and operate a fish lift to facilitate volitional passage of anadromous fish over the Shawmut Dam. The proposed fish lift consists of a new fish

[23] United States Department of Commerce's Preliminary Prescription for Fishways for the Shawmut Hydroelectric Project (P-2322). August 28, 2020.
[24] Determined by NMFS in a letter dated May 22, 2017.
[25] The term silver eel refers to a migratory adult American eel.

lift adjacent to the 1912 powerhouse and a concrete bypass channel through the island separating the two powerhouse tailraces, to enable fish migrating upstream in the 1982 powerhouse tailrace to move across the island and into the 1912 powerhouse tailrace where they can access the new fish lift entrance and pass over the dam. The Applicant represents in the Shawmut Fish Passage Operations and Maintenance Plan (December 2020) that the proposed fishway is designed to pass sea lamprey, approximately 1.54 million blueback herring, 134,000 alewife, 177,000 American shad, and 12,000 Atlantic salmon per year.

Fishway performance standards are used to assess the performance of a fishway at facilitating passage for a given fish species. In its license application to FERC, filed with the Department as part of the WQC application, the Applicant indicates the proposed upstream fish passage is designed to achieve fish passage measures included in a proposed Species Protection Plan (SPP) for the Lockwood, Hydro-Kennebec, Shawmut, and Weston Projects filed with FERC on December 31, 2019, and that the Shawmut Project will be operated in accordance with the Shawmut Fish Passage Operations and Management Plan (December 2019). The referenced December 31, 2019 SPP states Brookfield's intent to achieve cumulative upstream passage rate of at least 81.4% (for all four lower Kennebec projects combined), which translates to an average individual passage rate of 95% at each project, including at the Shawmut Dam. On July 13, 2020, FERC declined to act on this proposed SPP, and determined it would not act on any request to commence construction of the fishway under the ISPP.

In a new Interim SPP, or ISPP, specific to the Shawmut Project filed by Brookfield with FERC on May 31, 2021, Brookfield does not address upstream performance standards at the Shawmut Dam. However, in a separate SPP for the other three lower Kennebec River projects, simultaneously filed by Brookfield with FERC on May 31, 2021, Brookfield states:

> Although the Shawmut Project is not part of this SPP, the performance standard considered and included in this SPP are based on the reasonable expectation that the Shawmut Project will be relicensed with the fish passage facilities and measures currently proposed or prescribed. These include installation of a new upstream fish lift, improvements to downstream fish passage facilities proposed by the Licensee, and implementation of preliminary fish passage prescriptions issued by NMFS in August 2020, including a project-specific upstream performance standard of 96% and a downstream standard of 97%.

SPP for Lockwood, Hydro-Kennebec, and Weston Projects (May 2021) at pg. 8-1, fn. 27.

The Applicant proposes to test the effectiveness in the first full passage season after construction of the new fish passage facilities at all four lower Kennebec River dams,[26] initially with a qualitative passage study for two years using radio-telemetry methods on up to 20 adult Atlantic salmon, followed by quantitative passage studies once sufficient numbers (approximately 200) of returning adult salmon are available. NMFS' preliminary prescription requires the Applicant to develop study plans in consultation with state and federal fish resource agencies, apply scientifically accepted practices to complete all required monitoring, begin such monitoring at the start of the first migratory season after the Shawmut fishway is operational and conduct such monitoring for up to three years or as required through further consultation with the fish resource agencies, and prepare reports of the study results.

The Applicant proposes to operate the new fish lift from May 1 to October 31 each year to coincide with the operational schedule at the downstream Lockwood dam; NMFS' preliminary prescription specifies operations to run from May 1 to November 10 each year. Based on its experience passing sea lamprey at Milford, the Applicant recommends limiting 24-hour operation to a period from May 15 to June 30, extending through July 30 if American eel are observed using the anadromous fish lift for upstream passage.

Downstream passage is currently provided at the Project through dedicated spill flow of 35 cfs through the forebay surface sluice gate from April 1 to December 31 and by providing 600 cfs through the Tainter gate from April 1 to June 15 for smolt passage and providing a flow of 6% of the total powerhouse discharge from November 1 to December 31 through a combination of the surface sluice gate and the Tainter gate for downstream kelt passage. In addition, to meet required performance standards, the Applicant currently lowers four sections of the hinged flashboards to provide an additional 560 cfs of spill; the Applicant proposes to continue this practice for an interim period until the proposed forebay fish guidance boom is installed. The fish guidance boom will direct downstream migrating fish to the Tainter gates. NMFS' preliminary prescription further requires new trash racks or overlays with 1-inch bar spacing[27, 28] on the intakes of Units 7-8, new trash racks or overlays with 1-inch bar spacing or implementation of adaptive measures if 1-inch spaced bars are infeasible, and prioritization of Units 1-6 in the 1912 powerhouse such that Unit 1 is operated first on and last off, followed consecutively by Units 2-6.

[26] Lower Kennebec River dams include Lockwood, Hydro-Kennebec, Shawmut, and Weston. A fish lift was constructed at Hydro-Kennebec in 2016. In addition to the fish lift discussed here for the Shawmut Project, permanent fish passage facilities are planned but not yet constructed at Lockwood and Weston dams.
[27] If 1-inch bar spacing is infeasible, NMFS requires 1.5-inch spacing.
[28] 1-inch bar spacing is intended to protect downstream migrating salmon kelts and most adult alosines and would minimize entrainment of juvenile alosines, adult American eel, and adult sea lamprey.

In the December 31, 2019 SPP cross referenced in its WQC application materials and ultimately declined by FERC, Brookfield proposed to achieve an individual project average Atlantic salmon smolt survival standard of 96%, including for the Shawmut Dam. (This equates to a cumulative survival rate of over the four lower Kennebec River dam of 84.9%.) In the more recently filed SPP for the three other lower Kennebec River dams quoted above, Brookfield states it will achieve a higher survival rate at the Shawmut Dam of 97%. The Applicant does not propose performance standards for other anadromous species. NMFS' preliminary fishway prescription for Shawmut requires at least 97% survival of Atlantic salmon smolts and 95% for alosines.

The Applicant proposes to conduct up to three years of downstream passage effectiveness testing for Atlantic salmon smolts, and to implement minor structural or operational changes to improve passage effectiveness if the studies indicate performance standards are not met at the Project. NMFS' preliminary prescription for downstream passage effectiveness requires the Applicant to develop study plans in consultation with state and federal fish resource agencies, use scientifically accepted practices, begin monitoring at the start of the first migratory season after the Shawmut fishway is operational, monitor for up to three years, and prepare reports of study results.

ii. American Eel

The Applicant currently operates two upstream eelways at the Shawmut Project from June 15 to September 15, annually. One eelway is located between the hinged flashboard section and Unit1, and the second is located between the two powerhouses. The Applicant proposes to continue operating both existing eelways under existing conditions. In its preliminary prescriptions for the Project USFWS requires and MDMR recommends continued operation of the existing eelways until any new upstream and downstream fish passage facilities are completed and operational for one year, after which siting studies be conducted to assess the best location for upstream eel passage and then construct new volitional upstream eelways consistent with USFWS Design Criterial Manual, based on the results of such siting studies. New and existing upstream eelways will be required to operate from June 1 to September 15.

In its preliminary prescription, USFWS requires at least two years of effectiveness testing for any new upstream eelway(s) at the project.

Downstream eel passage is provided by opening the Tainter gate and passing 425 cfs while shutting down Units 7-8 during the night for six weeks between September 15 and November 15. USFWS' preliminary prescription requires shutdown of all units for eight

hours each night from August 15 through October 31,[29] opening the deep gate at least 2.5 feet to allow at least 425 cfs of water flow, and passing excess flow over the spillway until any new upstream or downstream fish passage facilities are operational for one season. After the initial season of operation of any new upstream fish passage facilities, USFWS requires at least one year of downstream passage studies[30] to determine downstream passage routes preferred by eels under the new flow patterns and survival rates that will inform the need for any new eel passage measures. Implementation of any new downstream passage measures required would be followed by at least two years of effectiveness studies to determine eel survival rates for such new measures.

d. Review Agency Comments

The Maine Department of Marine Resources (MDMR) submitted comments to the Department on Brookfield's WQC application in October 2020 and July 2021. The July 2021 comments reflect MDMR's professional assessment separate and apart from the draft 2020 Kennebec River Fish Restoration Management Plan that MDMR was working on at the time of its October 2020 comments but subsequently withdrew. Unless otherwise specified, all references to MDMR's comments in this Order are to the agency's July 2021 comments.

In its July 2021 comments, MDMR notes that Shawmut Project waters contain natural, historic spawning and rearing habitat and act as a migratory corridor for five indigenous fish species and that dams, including the Shawmut Dam, pose significant adverse impacts on these fish species and their habitat by blocking passage. Adverse impacts to habitats from the Project, as the Project is proposed to be operated, include anticipated low upstream and downstream passage efficiency rates, mortality and injury to upstream and downstream migrating fish, impaired in-stream habitat, significant delays in passage, and cumulative effects of multiple proposed fish passages at other project in the watershed. MDMR objects to the Applicant's proposed upstream and downstream fish passage plans, finding that the proposed facilities are unlikely to pass sufficient numbers of fish in a safe, timely, and effective manner to meet minimum population goals necessary to restore and sustain wild populations of Atlantic salmon (500 naturally reared returning adults for downlisting from endangered to threatened status, 2000 naturally, reared adults for removal from the endangered species list altogether); American shad (260,500 adults passing upstream of the Project, annually); and river herring (1,535,000 adult blueback herring passing upstream of the Project, annually and 608,200 adult alewives passing

[29] MDMR also recommends providing, operating, maintaining, and evaluating volitional downstream eel passage facility, and that such facility be operated during nighttime hours between August 15 and October 31. MDMR recommends three consecutive years of effectiveness testing, rather than one to two years prescribed by USFWS.
[30] Downstream eel passage studies required by USFWS are specified to use balloon tagging and radio-telemetry methods.

upstream of the Project, annually) to their historic spawning and rearing habitats. MDMR also comments on the safe, timely, and effective passage of sea lamprey and American eel through the proposed upstream and downstream fish passage facilities but does not enumerate population goals for these species.

Modeling of impacts from upstream and downstream passage on target species shows that efficient upstream and downstream passage is critical to support these fish species' life cycles. MDMR comments that unless the upstream and downstream passage facilities meet what MDRM refer to as "minimum goals," and also provide effective passage for American eels, the Project water will likely be of insufficient quality to support self-sustaining runs of these indigenous species and would preclude recovery of the endangered Atlantic salmon in the entire Distinct Population Segment (DPS). Based on its modeling, MDMR provided in its comments minimum goals for each of the target species. MDMR further comments it does not support a cumulative performance standard for the group of lower Kennebec River dams because cumulative performance standards can allow one or more facility in the group to perform poorly and have a detrimental effect on restoration efforts. MDMR concludes that its model runs indicate that the minimum goals for Atlantic salmon can only be achieved with a 99% upstream and downstream efficiency at each lower Kennebec River project individually, including the Shawmut Dam.

With regard to the fish lift at the Shawmut Project, MDMR comments that it has concerns with the design, operation, and location of the proposed fish lift and believes that the current proposal will suffer poor performance and result in significant delays for multiple species. The maximum station hydraulic capacity is 6,690 cfs, a flow that is exceeded approximately 65% of the time in May, 35% of the time in June, and 20% of the time in July; these are the primary months when the majority of anadromous species migrate upstream. The flow exceedances will result in spill at multiple locations along the face of the dam that will provide false attraction flow at points distant from the fish lift entrance, leading to passage delays for fish that cannot find the entrance or are confused by false attraction flows. CFD[31] modeling conducted by the Applicant to evaluate potential locations for the proposed fish lift studied the site at a limited range of flows that did not represent flows present during the majority of the migration period. Further, the Applicant conducted a siting study[32] in May and June 2016 using alewives, which MDMR finds are not representative of other fish species attraction flow responses.

[31] CFD means computational fluid dynamics. CFD modeling is modeling based on the principles of fluid mechanics, using numerical methods and algorithms to simulate the interaction of liquids and gases. CFD modeling is useful to study the interaction of water with dam structures to identify eddies and other features that can inform the proposed location(s) for fish passage structures at dams.

[32] The Applicant conduced a siting study using real fish to document the areas of flow through or over Dam where fish congregate in order to identify potential location(s) for upstream fish passage structure(s).

Additionally, the siting study was conducted at flows not representative of the passage season.

The Applicant proposes to operate the fish lift at Shawmut between May 1 and October 31 during daylight hours. MDMR comments that this operation period is inadequate to effectively pass all the species upstream. MDMR comments that the fish passage facility should be operated until November 10 to accommodate the full passage season for Atlantic salmon and should be operated 24 hours per day between May 1 and June 30 to accommodate diurnal and nocturnal migrants, including sea lamprey.

MDMR also comments on downstream fish passage operations, finding them inadequate to safely and effectively pass Atlantic salmon, American shad, river herring, American eel, and sea lamprey. Based on a radio telemetry study of downstream fish passage structures and operations at the Shawmut facility, baseline survival of downstream migrating Atlantic salmon smolts averaged 93%. The study analyzed only passage through the Dam and did not account for delayed mortality attributable to passage but occurring after the fish has passed through the Shawmut Dam or other mortality effects of passing multiple dams. MDMR comments that whole station survival values do not account for impacts associated with impoundments or latent impacts. Further, MDMR cites NMFS' preliminary prescription that predicted overall survival of Atlantic salmon kelts through the four lower Kennebec River dams would be 42% to 51%, which would preclude repeat spawning for up to half the fish.

MDMR opposes use of surface guidance booms at Shawmut, finding them inadequate to protect Atlantic salmon and other diadromous species in the Kennebec based, in part, on a 2015 study of adult and juvenile river herring passage at the downstream Lockwood dam that showed the guidance boom there did not adequately re-direct the fish to the downstream bypass route (53% of the study fish went through the Lockwood turbines). MDMR comments that the proposed guidance structures are unlikely to prevent juvenile American shad or river herring from becoming entrained in the turbines. Because of their small size and weaker swimming ability, they are more likely to use passage routes where the most flow is directed and so they are more likely to be entrained in the turbines as they migrate downstream. Turbine passage has the highest mortality compared to other passage routes.

MDMR also finds the Applicant's proposed operational period for the downstream fishway to be inadequate to safely and effectively pass all species downstream. River herring and American shad begin their downstream migration immediately after spawning, typically passing downstream between May and September each year. Juvenile alosines begin migrating downstream as early as July or as late as November,

depending on environmental variables in their nursery habitats. The Applicant proposes to cease operation of the forebay Tainter gate, which provides 600 cfs flow to aid the downstream migration, after June 15, leaving only the forebay sluice gate in operation for downstream migration, providing only 35 cfs of flow to this designated downstream passage route. The Applicant indicates it will prioritize units to protect downstream migrating Atlantic salmon smolts. However, MDMR points out that based on average daily inflows, station capacity will be exceeded and, therefore, all the generating units will be running for the majority of the smolt's downstream migration, as well as for the adult alosines' downstream migration in spring and juvenile alosines' and adult eels' migration in summer and fall. As a result, unit prioritization will have no effect.

Additionally, MDMR questions the efficacy of installing screens as a protective measure (as proposed by FERC in its Draft Environmental Assessment), finding that the suggested full-depth trashrack bars, clear spaced at 1.5 inches and 3.5 inches, for units 1-6 and 7-8, respectively, would be inadequate to protect all the anadromous species on their downstream migrations. MDMR indicates that full depth inclined or angled screening with small spacing and sized so that normal velocities do not exceed 2 feet per second measured at an upstream location would be necessary to protect all species.

With respect to America eel, as noted above, upstream and downstream passage is currently operational at the Project at two upstream eel passage facilities that are operated from June 15 to September 15, annually. Brookfield proposes to continue current operations under a new license. In its July 2021 comments, MDMR does not provide minimum goals for upstream or downstream passage of American eel, but does indicate that the existing eelway locations were selected based on flow conditions that will change under new proposed operations.

In its August 28, 2020 comments to FERC, MDMR indicated Brookfield should conduct new siting studies to identify the best location for upstream eel passage and then construct new volitional upstream eelways, if necessary.

MDMR states in its July 2021 comments that it consulted USFWS and concurs with USFWS's assessment that floating guidance booms do not protect out-migrating eels, a bottom-oriented species. Such guidance booms are designed for pelagic fish that typically approach the structure in the upper portion of the water column, so full depth guidance systems are strongly preferred in order to protect eels as well as other fish.

e. Discussion and Findings

i. Upstream Fish Passage

Upon evaluating the information submitted by the Applicant and MDMR's comments, the Department finds the Kennebec River, including the Shawmut Project waters contain natural, historic spawning and rearing habitat and act as a migratory corridor for five indigenous, diadromous fish species: Atlantic salmon, American shad, blueback herring, alewife, and American eel. No upstream passage is provided at the Shawmut Dam for the first four of these fish species. Upstream passage exists for juvenile American eel.

Diadromous fish, because of their migratory nature, must be able to travel through the waters of the Kennebec River to survive and reproduce. With respect to the catadromous American eel, consistent with the comments provided by MDMR, depending on the design of any fish passage ultimately constructed at the Shawmut Dam, which may affect flows and thus eel passage, the Department finds the location of the existing eel passage should be reevaluated upon construction of other fish passage.

With respect to the four anadromous species listed above and other anadromous species more generally, MDMR commented: "Almost 100% of high quality Atlantic Salmon spawning and rearing habitat, over 50% of spawning and rearing habitat for American Shad and Blueback Herring, and significant areas for the other native anadromous species in the Kennebec river watershed is upstream of the Shawmut project." MDMR Comments, July 2021, at 1. The Applicant's assessment of the importance and extent of upstream habitat differs from that of MDMR. See, e.g., Brookfield Comments, July 16, 2021, Attachment B, pgs. 61-67[33] (commenting on American shad and blueback herring habitat). Although some differences in the habitat assessment by Brookfield and MDMR exist, the Department finds the record as a whole, without having to resolve these differences, demonstrates that considerable habitat for anadromous species, particularly for Atlantic salmon, exists upstream of the Shawmut Dam.

To comply with State water quality law, upstream passage must be provided at the Shawmut Dam for indigenous anadromous fish species, providing access to this upstream habitat. The physical and biological integrity of water are important components of water quality. The Shawmut Dam and its discharge affects the physical integrity of the water by affecting the flow of the river. The flow of the river through and over the dam—the dam's discharge—presently prevents upstream passage.[34] The result is an adverse effect

[33] Attachment B includes a March 26, 2021 letter from Counsel for Brookfield to MDMR regarding "Comments in Response to the Maine Department of Marine Resources' (MDMR) December 29, 2020 Notice of Agency Rule-Making Proposal for Chapter 60 Section 10, Kennebec River Fish Restoration Management Plan Diadromous Resources Amendment (the "2020 Amendment")". This letter, in turn, includes multiple attachments. The page references in this WQC to Attachment B of Brookfield's July 16, 2021 comments are to the page numbers of the overall pdf document identified as Attachment B.

[34] The Department recognizes that presently, as part of an interim approach to upstream fish passage, alewife, blueback herring, American shad, and Atlantic salmon are trapped at the interim facility at the Lockwood Project and trucked upstream of the Shawmut Project. Thus, these species are not able to swim upstream and access the

on the biological integrity of the waters of the Kennebec River; these waters are not able to support a balanced and diverse aquatic ecosystem comparable to that of natural habitat if native anadromous fish cannot access the habitat upstream of the dam.

For the Applicant to satisfy the applicable State water quality standards, the Applicant must demonstrate that the Class B and Class C water of the Kennebec River are of such quality that they are suitable for the designated use of habitat for fish and other aquatic life, which includes flows that support the upstream migration of indigenous anadromous fish through the portion of the river occupied by the Project, including the Shawmut Dam and its discharge. For the waters of the river to be suitable habitat for these fish and support their movement, passage must be safe, timely, and effective.

Additionally, for Class B waters the habitat must be characterized as unimpaired.

Finally, for the Applicant to satisfy applicable State water quality standards, the Applicant must demonstrate that the water flowing through and over the Shawmut Dam, which discharges to the Kennebec River, does not cause adverse impact to the aquatic life. This requires showing that the discharge supports safe, timely, and effective upstream passage for indigenous anadromous fish seeking to reach upstream habitat to spawn. Safe, timely, and effective upstream passage is necessary to avoid detrimental changes in the resident biological community.

Presently, without upstream passage for diadromous fish other than juvenile American eel, the Department finds the Shawmut project waters in the Kennebec River do not meet State water quality standards.

What constitutes safe, timely, and effective upstream fish passage depends on the species of fish. Focusing on Atlantic salmon, the Applicant's stated position is that a project-specific performance standard of 96% at the Shawmut Dam will provide "safe and effective passage" for Atlantic salmon. SPP for Lockwood, Hydro-Kennebec, and Weston Projects (May 2021) at pg. 8-2. The Applicant indicates passage would be considered timely if adult Atlantic salmon pass upstream through all four lower Kennebec River dams with a cumulative delay of no more than 192 hours, *id.*, and states "[t]he Shawmut Project is expected to have a site-specific delay goal of 48 hours," *id.* at pg. 8-2, fn. 31.

Shawmut Project waters. When hydro power projects along the Kennebec River go through FERC licensing and the associated State WQC processes, each individual project dam is review by the State for compliance with State water quality standards. Because the sequencing of FERC licensing does not necessarily begin with downstream projects and then move upstream, the fact that a downstream project may prevent fish from swimming upstream does not relieve upstream projects from having to satisfy those State water quality standards related to upstream fish passage.

In its July 2021 comments, MDMR states that a 96% upstream performance standard is insufficient to support self-sustaining populations of Atlantic salmon. For this species, in light of its endangered status under the federal Endangered Species Act (ESA), MDMR states that for upstream passage to be safe, timely, and effective it must be sufficient to support recovery of the Atlantic salmon so that it may be removed from the threatened and endangered species lists. Although the Department does not administer the federal ESA, the Department considers the inclusion of a species on either the threatened or endangered species list to be significant. Continuation of a water quality expected to ensure a threatened or endangered species remains threatened or endangered in turn ensures a continuation of an adverse impact on the biological integrity of the waters of the Kennebec River. Moreover, it does not satisfy the State's designated use requirements, does not allow the Class B water of the outlet stream to be characterized as unimpaired, and does not satisfy the narrative standards for discharges from dams to Class B waters.

In its comments, MDMR states that a minimum annual return of 500 naturally-reared adult salmon to historic spawning/rearing habitat in the Kennebec River is necessary to enable down-listing of the species (i.e., reclassification of Atlantic salmon from endangered to threatened) and that a minimum annual return to the Kennebec River of 2,000 naturally-reared adult salmon is necessary for delisting. The Department finds that a water quality, which includes fish passage at the Shawmut Project where the river flows over and through dam and discharges downstream, that will support these returns is necessary to meet State water quality standards.

MDMR, based on its modeling and analysis, states that a 99% upstream adult Atlantic salmon passage efficiency at the Shawmut Dam is necessary to support the minimum necessary annual returns. Further, based on its modeling, MDMR states, "the 99% upstream and 99% downstream effectiveness scenario resulted in 28%-29% more adult salmon returns than the 96% upstream and 97% downstream scenario" the Applicant proposes to achieve. MDMR Comments, July 2021, at 4. In other words, what otherwise appears to be a small difference in passage effectiveness rates is in fact a material difference, especially with respect to an endangered species.

The Applicant objects to MDMR's model and model results, critiquing, for example, assumptions regarding smolt production and smolt survival calculations incorporated into the model, the exclusion of the potential effects of climate change, and incorporation of a marine survival rate that the Applicant states is too high. See., e.g., Brookfield Comments, July 16, 2021, Attachment B, pgs. 58-59 (listing its concerns with MDMR's model) and pgs. 87-95 (providing a detailed comments on Atlantic salmon modeling,

originally prepared as part of comments on the draft 2020 Kennebec River Fish Restoration Management Plan, which included the same modeling).

MDMR explains its model and the various inputs and assumption in a background information document it prepared and submitted to the Department along with its July 2021 comments. MDMR's model for the Kennebec River is based, in large part, on a similar model developed by NMFS for the Penobscot River. In the background information document, MDRM explains the basis for different model inputs with supporting citations to related publications and source material. The model enables evaluation of the impact of dams on the lower Kennebec River, including the Shawmut Dam, under different model scenarios, for example, scenarios with different assumptions about upstream and downstream passage efficiency and different marine survival rates.

The Department finds the basic model framework reasonable and proven considering that a similar model developed by NMFS has been used on the Penobscot River. The Department also finds the model inputs and assumptions, made by the State resource agency with expertise in the management of diadromous species such as Atlantic salmon, are rational and supported by existing literature. Inherent in any model is that various assumptions must be built into the model and decisions made about which underlying data sources are most appropriate to rely on. Although the Applicant critiques these assumptions and inputs, the Department finds the critiques are not sufficiently compelling to call into question the professional judgement of MDMR in developing and applying its deterministic model for the Kennebec River. As presented in its comments, the model results, which MDMR ran under different scenarios, are relevant and instructive when evaluating whether the Shawmut Dam and proposed fish passage at the dam will result in water quality meeting State water quality standards.

Additionally, the Department recognizes, as the Applicant points out in its July 16, 2021 comments, that many factors influence the survival of Atlantic salmon and the future of this endangered species depends not just on the water quality in the Kennebec River and the ability for this species of fish to pass the dams on the river, including the Shawmut Dam, in a safe, timely, and effective manner. Climate change and factors affecting marine survival rates are key influences. In this water quality certification, however, the Department's focus is on the quality of the waters in the Kennebec River, as affected by the Shawmut Dam and its discharge and whether the river's waters provide the required habitat for Atlantic salmon, meeting State standards. While other significant factors influence Atlantic salmon survival, without suitable State waters that will allow self-sustaining populations of Atlantic salmon, the Gulf of Maine Distinct Population Segment of Atlantic salmon's continued struggle to survive is ensured.

Based on its model results, MDMR comments the Shawmut Dam would have to enable passage of at least 99% of adult Atlantic salmon within 48 hours for the Kennebec River to have the potential to support a self-sustaining population of this species. The evidence in the record indicates the fish passage proposed by the Applicant initially was designed to achieve 95% upstream passage efficiency consistent with the December 31, 2019 SPP, and that the Applicant has more recently represented to FERC that the proposed passage will achieved a 96% upstream passage efficiency. Taking this into account, MDMR stated in its comments: "With salmon runs below replacement levels currently, MDMR concludes that the adverse impacts of the current proposal will not provide conditions where a minimum sustainable population of Atlantic salmon can be supported in the receiving waters." MDMR Comments, July 2021, at 4. The Department agrees that the record evidence supports this conclusion and finds that, even with the upstream fish passage proposed by the Applicant, continued operation of the Shawmut Project and its discharge will result in an adverse impact to the water quality of the Kennebec River directly impacting the recovery and, therefore, potential survival of Atlantic salmon.[35] As a result, the Department finds the Project water within the river will not be of such a quality that they are suitable for the designated use of habitat for fish. Additionally, within the Class B outlet stream, as a result of the dam and its discharge blocking passage and the proposed passage not designed to provide sufficient passage to support a sustainable population of Atlantic salmon, the habitat in this section of the Kennebec River cannot be characterized as unimpaired; rather it is impaired by the dam and its discharge, which does not allow safe, timely, and effective fish passage. Finally, because the water flowing through and over the Shawmut Dam, and discharging to the Kennebec River will not allow safe, timely, and effective passage of Atlantic salmon seeking to reach upstream habitat to spawn, the Department finds the Applicant has failed to demonstrate the Project will not result in detrimental changes in the resident biological community as a result of impacts of the discharge to Atlantic salmon, an endangered species.

Additionally, and even assuming for the sake of argument that a 96% passage rate would be adequate, the Department finds that the Applicant has failed to demonstrate that its proposed fish passage would in fact achieve this efficiency. The Department further finds that the Applicant also has failed to demonstrate that the proposed upstream fish passage will adequately enable passage of other anadromous species.

[35] Brookfield points to the Draft Environmental Assessment (DEA) prepared by FERC as supporting its WQC application. In the DEA, FERC staff do not recommend adoption of a 99% upstream passage efficiency as recommended by MDMR and instead favor the 95% passage efficiency originally proposed by Brookfield in its FERC license application. FERC, however, did not apply State water quality standards in preparing the DEA nor is FERC the agency responsible for applying these Maine water quality standards. Section 401 of the Clean Water Act and the authority it gives to Maine exist to address this exact issue by ensuring that state concerns are respected in the federal licensing process.

The Department reaches this conclusion after reviewing the Applicant's proposal and considering MDMR's most recent July 2021 comments. In these comments, MDMR expressed concern about the significant likelihood of false attractions, the uncertainty about the proposed location of the fish lift and whether it will function as intended, whether American shad will use the proposed fish passage facility at all, and about the proposed operations of the fish lift. With respect to the likelihood of false attractions, MDMR noted that May, June, and July are critical months for upstream passage. During this period, MDMR commented that the maximum station hydraulic capacity at the Shawmut Dam is likely to be exceeded with regularity, with historical data showing this capacity is likely to be exceeded 65% of the time in May, 35% of the time in June, and 20% of the time in July. When this occurs, excess water is spilled at the sluice gate in the middle of the 1,435-foot-long dam, the hinged flashboards on the west side of the dam, or the rubber crest(s) on the eastern half of the dam. This spilled excess water creates false attractions for migrating fish. MDMR concluded: "As a result, there will be false attraction at the project during the majority of the upstream migration season to multiple areas without a fishway to the headpond. A proposed cross channel egress from an identified false attraction zone would not provide passage to the headpond or directly to the lift." MDMR Comments, July 2021, at 5.

With respect to the location of the proposed fishway, MDMR expressed concern that 1) the CFD modeling conducted by the Applicant looked at a very limited range of flows that are not representative of the majority of the migration period, 2) the 2016 siting study by the Applicant, although conducted in May and June 2016, occurred during a low flow period not representative of flows during the passage season, and 3) and that the Applicant's reliance on an alewife study may be misplaced because they are not necessarily a good proxy for fish attraction of other species. Further, as evidence that its concerns about the effectiveness of the proposed upstream passage at the Shawmut Dam are justified, MDMR points to the fish passage challenges currently experienced at the Lockwood Dam. MDMR observed that that Lockwood and Shawmut are similar in that both dams are located at complex, wide sites that have multiple sources of spill that create false attraction for migrating fish. With respect to the passage of American shad, MDMR stated it is possible this species will be fully precluded from using the lift based on experience at the Lockwood Dam and at dams on other rivers noted by MDMR in its background document. Finally, MDMR expressed concern with the proposed operation of the fish lift, commenting on both the time of day and time of year the Applicant proposes to operate the lift. The Department finds these concerns raised by MDMR, as laid out in the agency's comments, are rational and justified based on MDMR's experience, knowledge of diadromous fish, and familiarity with fish passages designed for these types of migratory fish.

The Department's rule, 06-096 C.M.R. ch. 2, *Rule Concerning the Processing of Applications and Other Administrative Matters* (last amended June 9, 2018) (Chapter 2) provides that an applicant for a license, which includes certifications such as the one requested by Brookfield in its WQC application for the Shawmut Project, has the burden of proof to affirmatively demonstrate to the Department that the proposed operation of the Project will meet State water quality standards. Ch. 2, § 11(F). In light of the significant concerns raised by MDMR about the ability of the proposed fish lift at the Shawmut Dam to function as proposed by Brookfield with respect to the passage of Atlantic salmon and to function at all with respect to American shad, the Department finds that the Applicant has not carried it burden because it has not demonstrated that the proposed fish lift will provide safe, timely, and effective upstream passage of indigenous anadromous fish. The Applicant has not demonstrated that the Shawmut Project will be operated such that the water quality in the Kennebec River will be suitable for the designated use of habitat for fish. Additionally, the Applicant has not demonstrated the Class B waters of the outlet stream can be characterized as unimpaired. Finally, the Applicant has not demonstrated that the water discharging from the dam will not cause an adverse impact to aquatic life. The Applicant has not demonstrated the discharge flow through the fish lift will allow safe, timely, and efficient passage necessary to the life cycle of migratory species. Nor has the Applicant demonstrated that discharges from the dam during the critical months of May, June, and July will not result in false attractions both delaying passage and impacting the effectiveness of the fish lift, resulting in an adverse impact to aquatic life—specifically, anadromous fish attempting to migrate upstream.

ii. Downstream Fish Passage

All fish passing the Shawmut Dam downstream are discharged from the Dam, whether they pass, for example, through the downstream bypass, over the spillway, or through the 1982 or 1912 powerhouse. How the fish pass influences their rate of survival. For example, Brookfield's downstream passage studies of Atlantic salmon smolt survival shows passage through a powerhouse and Shawmut Dam's turbines decreases the rate of survival compared to passage via the downstream bypass or spillway. Thus, minimizing the passage through the turbines is central to increasing downstream passage efficiency.

As discussed above in the analysis of proposed upstream fish passage at the Shawmut Dam, MDMR developed a simple deterministic model to evaluate the impact of dams on the lower Kennebec River, including the Shawmut Dam, under different model scenarios (i.e., scenarios with different assumptions about upstream and downstream passage efficiency and different marine survival rates). Also as discussed above, the Department

finds the basic model framework reasonable and proven, and that the model inputs and assumptions, made by the State resource agency with expertise in the management of diadromous species such as Atlantic salmon, are rational and supported by existing literature. Although the Applicant has critiqued the model, assumptions built into the model, and model inputs, the Department finds the critiques are not sufficiently compelling to call into question the professional judgement of MDMR in developing and applying its deterministic model for the Kennebec River. As presented in MDMR's July 2021 comments, the model results, which DMR ran under different scenarios, are relevant and instructive when evaluating whether the Shawmut Dam and proposed fish passage at the dam will result in water quality meeting State water quality standards.

As conveyed to the Department in its July 2021 comments, by applying the model, MDMR determined that at least 99% of Atlantic salmon smolts must pass the Shawmut Dam within 24 hours for the water quality in the Kennebec to be suitable to support the down-listing and ultimate delisting of Atlantic salmon. Although factors beyond passage efficiency in the Kennebec River influence long-term survival of this species, a lower passage rate within the river at the Shawmut Dam would not allow for a self-sustaining, indigenous population. Therefore, the Department finds a 99% downstream passage efficiency for Atlantic salmon smolts is necessary to ensure safe, timely, and effective passage and to satisfy State water quality standards in the Project waters of the Kennebec River.[36]

The Applicant represented in the materials submitted in support of its WQC application and referenced in those application materials that the Shawmut Dam will achieve an individual, project average Atlantic salmon smolt survival standard of 96% when operated as proposed by the Applicant. This survival standard is achieved when the survival at the Shawmut Dam is averaged with those of the other lower Kennebec River dams. (This equates to a cumulative survival rate over the four lower Kennebec River dam of 84.9%.) In the more recently filed SPP for the three other lower Kennebec River dams quoted above in the summary of the Applicant's proposal, the Applicant states it will achieve a higher downstream smolt survival rate at the Shawmut Dam of 97%. Even if a 97% downstream passage efficiency for smolts is achieved, this is still less than the rate necessary to support a self-sustaining population of indigenous Atlantic salmon in the Kennebec River. Therefore, the Applicant's proposal fails to satisfy State water quality standards.

[36] MDMR also comments that a 99% downstream passage efficiency for Atlantic salmon kelts is necessary to achieve minimum goals. MDMR, however, did not model the impact of different kelt survival rates. MDMR noted that "in their August 28, 2020 preliminary prescription for the Shawmut project, NOAA predicted that the overall survival of kelts through the four projects cumulatively would be 42% to 51%, an incredibly low number of fish that would preclude the important life history trait of repeat spawning." MDMR Comments, July 2021 at 7.

MDMR modeled both 96% and 97% smolt passage rates at the Shawmut Dam, the two rates the Applicant has indicated it will achieve during the FERC licensing and State water quality certification process. In these two model runs, MDMR assumed the same downstream passage rate at the other lower Kennebec River dams and an upstream passage rate for Atlantic salmon of 96% at each dam. Although the focus of this water quality certification is on the impact of the Shawmut Project on the quality of the waters in the Kennebec River, the broader environment in which that dam is located cannot be ignored when evaluating the Shawmut Project. Thus, assumptions about the effectiveness of passage at other lower Kennebec River dams is necessary. It is also consistent with the Applicant's approach to evaluating fish passage in several of the SPPs noted above. MDMR therefore considered this in its model runs using both the 96% and 97% whole station survival rates.

MDMR also incorporated into its model runs smolt survival with dam dependency based on work done by the National Oceanic and Atmospheric Administration (NOAA) (Neiland and Sheehan). The model results showed that the downstream passage scenario of 96% survival at Shawmut and the other lower Kennebec River projects would result in a 45% reduction in smolt survival to sea compared to smolt survival without dams. The model results showed that the downstream passage scenario of 97% survival at Shawmut and the other lower Kennebec River projects would result in a 36% reduction in smolt survival as a result of Project effects alone, irrespective of the impacts on survival from passage over other lower Kennebec River dams. MDMR stated, "The loss between 36%-45% of smolts form dam impacts in addition to baseline mortality of a salmon run that is currently below replacement is not supportive of recovery, even under the most favorable marine survival and freshwater production scenarios." MDMR Comments, July 2021 at 7.

The Department finds that these model results underscore the impact even small changes in downstream passage efficiency can have on Atlantic salmon and smolt survival will not be sufficient to support a self-sustaining population of indigenous salmon even if the Applicant operates the Shawmut Dam to achieve a 97% smolt survival rate (and the other lower Kennebec dams were operated similarly). As a result, the Department finds the proposed operation of the Shawmut Dam will not ensure water quality in the Kennebec River is suitable for the designated use of habitat for fish and other aquatic life. Additionally, the Department finds the Applicant has not demonstrated the discharge from the Shawmut Dam will not directly impact aquatic life in the receiving water because smolts will pass over and through the dam in the discharge and into the receiving water. By not passing these fish in a safe, timely, and effective manner that allows for a self-sustaining population of this indigenous species, the dam and its discharge will cause

a significant loss of this species, violating the State water quality standard in 38 M.R.S. § 465(3)(C).

Additionally, the Department finds that the Applicant has failed to demonstrate that it can even achieve a 97% (or 96%) smolt survival rate or that it will provide for the safe, timely, effective downstream passage of other diadromous fish. With respect to Atlantic salmon smolts, and assuming for the sake of argument that either a 96% or 97% downstream smolt survival rate at the Shawmut Dam would be sufficient to meet State water quality standards, the Applicant has not demonstrated its proposed operations will achieve either rate. Downstream passage studies by the Applicant show that, to achieve these rates, passage through the two powerhouses at the dam must be minimal. The whole station survival rate observed in the fish passage studies was 93.5%, with 32.7% of the fish passing through one of the powerhouses. MDMR commented that it is unlikely the Applicant could achieve a 97% rate based on its proposal because "many fish would still be entrained in the turbines without shutdowns or full screening." MDMR Comments, July 2021 at 7. MDMR's assessment is based on concerns it expressed (and USFWS shares) about the effectiveness of surface booms uses to guide fish away from the turbines, concerns it expressed about proposed unit prioritization and whether this will be achievable at the flow levels anticipated during smolt migration, and concerns about proposed screening and screening size. MDMR Comments, July 2021 at 8-10.

Many of the concerns MDMR expressed about the impact of the proposed operation of the Shawmut Dam on smolt survival rates also apply to the survival of other diadromous species, including concerns about the effectiveness of surface guidance booms; whether the proposed operational periods, including shutdowns, Tainter gate operations, and unit prioritization provide for safe and effective passage; and whether the propose screening is adequately size for juvenile river hearing, shad, sea lamprey, or American eels. For example, with respect to screening MDMR commented, "In order to protect downstream migrating Atlantic Salmon smolts and kelts, adult and juvenile Alewife, adult and juvenile American Shad, adult and juvenile Blueback Herring, and adult American Eel, and adult and juvenile sea-lamprey, [Brookfield] would need to install full-depth inclined or angled screening with much smaller spacing and sized so that the normal velocities should not exceed 2 feet per second measured at an upstream location where velocities are not influenced by the local acceleration and around the guidance structures." MDMR Comments, July 2021 at 10.

Chapter 2 of the Department's rules provides that an applicant for a license, which includes certifications such as the one requested by the Applicant in its WQC application for the Shawmut Project, has the burden of proof to affirmatively demonstrate to the Department that the proposed operation of the Project will meet State water quality

standards. Ch. 2, § 11(F). In light of the significant concerns raised by MDMR about the proposed operation of the Shawmut Dam to provide downstream fish passage with respect to the passage of Atlantic salmon smolts, the Department finds that the Applicant has not demonstrated that the proposed operations will achieve 96% or 97% downstream passage efficiency. Thus, even assuming these rates would be sufficient to meet State water quality standards, the Department finds that the Applicant has failed to carry its burden because it has not demonstrated that proposed operation of the Shawmut Dam will provide safe, timely, and effective downstream passage for indigenous Atlantic salmon. Similarly, in light of the significant concerns raised by MDMR about the impact of the proposed operation of the Shawmut Dam on the downstream passage of other indigenous, diadromous fish, the Department finds that Applicant has not carried it burden because it has not demonstrated safe, timely, and effective downstream passage will be provided for these species. The Applicant has therefore not demonstrated that the Shawmut Project will be operated such that the water quality in the Kennebec River will be suitable for the designated use of habitat for fish. Additionally, the Applicant has not demonstrated that the water discharging from the Shawmut Dam, which will include Atlantic salmon smolts and other diadromous fish, will not directly impact aquatic life in the receiving water because the smolts and other migrating diadromous fish will pass over and through the dam into the receiving water. The Department therefore finds the Applicant has failed to demonstrate the proposed operations of the Shawmut Dam will meet the State water quality standard in 38 M.R.S. § 465(3)(C).

B. Dissolved Oxygen – Outlet Stream (38 M.R.S. § 465(3)(B), 38 M.R.S. § 465(4)(B))

For this standard, the Applicant must demonstrate that Project waters meet the Class B and Class C dissolved oxygen (DO) criteria as appropriate. Waters subject to Class B standards, including the portion of the riverine impoundment in the Kennebec River upstream of the Fairfield-Skowhegan boundary and the river downstream of the Shawmut Dam, shall be not less than 7 parts per million or 75% of saturation, whichever is higher, except that for the period from October 1 to May 14, in order to ensure spawning and egg incubation of indigenous fish species, the 7-day mean dissolved oxygen concentration may not be less than 9.5 parts per million, and the one-day minimum dissolved oxygen concentration may not be less than 8.0 parts per million in identified fish spawning areas.[37] Waters subject to Class C standards, including the riverine impoundment between the Fairfield-Skowhegan boundary and the Shawmut Dam, shall not be less than 5 parts per million or 60% of saturation, whichever is higher. The Applicant also must

[37] No fish spawning areas are identified by the Maine Stream Habitat Viewer in the Shawmut Project waters. Further, DIFW reported that it is unaware of any salmonid spawning habitat within the Project area. DIFW Comments, July 26, 2021.

demonstrate that DO will not be less than 6.5 parts per million as a 30-day average based upon a temperature of 22 degrees centigrade or the ambient temperature of the water body, whichever is less.

1) Existing Conditions

The Department finds that the Shawmut Project operates as a run-of-river facility and its impoundment receives waters discharged to the Kennebec River from the upstream Weston Project as well as surface water runoff, ice melt, and water from tributary streams.

2) Studies

The Applicant measured DO concentrations twice each month between June 6, 2016 and October 18, 2016 in the Shawmut riverine impoundment as part of its Trophic State Study. River flows ranged from 1,360 cfs to 8,980 cfs during the study period and was below the median daily value throughout the majority of the study period. The average air temperature was approximately 17.8ºC to 21.1ºC, approximately 1 ºC to 4 ºC above normal. Water temperature ranged from 18.0 ºC to 28.4 ºC near the surface and averaged 13.9 ºC throughout the water column. DO concentrations ranged from 1.4 mg/L to 9.7 mg/L. Low DO measurements collected near the bottom of the impoundment on June 21, June 30, and July 27, 2016 represented stratified conditions. DO concentrations measured in the impoundment above the point of stratification ranged from 7.07 mg/L to 9.71. On September 8, 2016, a single measurement of 6.8 mg/L was collected at a depth of 8 meters in unstratified waters in the impoundment, demonstrating that all the water samples met Class C criteria for DO and, in fact, met Class B water quality standards for DO most of the time in the Class C portion of the impoundment. DO percent saturation was found to be greater than 75% except below the point of stratification in stratified waters. The Department's Division of Environmental Analysis (DEA) reviewed data submitted by the Applicant and determined that a single DO excursion occurred below the impoundment's thermocline on June 30, 2016 when there was sufficient thermal refuge in waters above the thermocline (temperature < 24 ºC). Further, DEA determined that the Shawmut project did not cause or contribute to the DO excursions.[38] Therefore, the water in the Shawmut impoundment is determined to be acceptable and not a basis for denying this WQC pursuant to 38 M.R.S. § 464(4)(F)(3).

The Applicant also measured DO concentrations downstream of the Shawmut Dam between June 2, 2016 and August 31, 2016. DO concentrations in the Kennebec River downstream of the Project ranged from 7.7 mg/L to 9.6 mg/L in June, from 7.5 mg/L to

[38] DEA email dated 11/9/2020.

8.9 mg/L in July, and from 6.8 mg/L to 8.5 mg/L in August 2016. DO concentrations fell below the Class B criterion on three dates in August 2016, measuring 6.8 mg/L in the nighttime hours of August 9-11, and rebounding during the daylight hours to levels greater than 7.0 mg/L. DO percent saturation was above 75% throughout the monitoring period. DEA analyzed the slight DO excursions downstream of the dam and determined them to be the result of discharges[39] from a non-Project facility located upstream of the Shawmut Dam or from plant respiration.

3) Discussion and Findings

DO data collected by the Applicant indicates, and the Department finds, that water in the Shawmut riverine impoundment and in the portion of the Kennebec River downstream of the Project is sufficiently oxygenated. The Department finds that data collected in the impoundment showed a single DO excursion below the Class B criterion of 7 parts per million but exceeding 5 parts per million in unstratified waters subject to Class C criterion and that all impoundment DO measurements met the percent saturation standard. The Department further finds that data collected downstream of the Project Dam showed DO excursions during the nights of August 9-11, 2016, and DEA analysis indicates the nighttime excursions are likely to the result of plant respiration or related to a non-Project facility located upstream. The Department's analysis determined that the operations of the Shawmut Project do not cause or contribute to the DO excursions but, rather, the DO excursion result from conditions related to discharge of nutrients at a non-Project upstream facility or nighttime respiration of plants. The Applicant's sampling results demonstrate that the Kennebec River in the Shawmut riverine impoundment and in the section of the river below the Project meets applicable Class B and Class C dissolved oxygen standards during critical water quality conditions. Based on the evidence in the record, the Department concludes that the Project meets DO water quality standards under current and proposed operating conditions.

C. Fishing and Recreational Access and Use (38 M.R.S. § 465(3)(A); 38 M.R.S. § 465(4)(A))

[39] DEA reported its analysis of DO concentrations, stating that "impoundment data show only one date when DO <5 mg/l , that is below the thermocline and there is sufficient water with temp <= 24C and DO>5mg/l higher in the water column on that day, such that the impoundment attains its class". Email dated 11/2/2020. DEA's analysis is based on all classes of rivers and streams including impoundments classified as such, requiring that water quality be suitable for the designated uses of fishing and habitat for fish and other aquatic life and must be of sufficient quality to support all species of fish indigenous to the receiving waters. Indigenous is defined in 38 M.R.S. § 466 and includes cold water fish. After consultation with DIFW, DEP concluded that there must be at least a 1-meter thick layer of habitat to provide a thermal refuge to support cold water fish during low flow warm summer periods. Therefore, where there is cold water (24ºC or less according to DEP rule 06-096 CMR 582), there must be at least a 1-meter think layer of water with a minimum DO for the class.

For this standard, the Applicant must demonstrate that the project waters are suitable for the designated uses of recreation in and on the water, fishing, and navigation. It's the Department's longstanding position that a hydropower impoundment may be found suitable for recreation in and on the water if it has a stable or decreasing trophic state and is free of culturally induced algal blooms that impair its use and enjoyment.

A hydropower impoundment may be considered to have a stable or declining trophic state unless it exhibits (1) a perceivable and sustained increase in its trophic state as characterized by its Trophic State index or other appropriate indices, or (2) the onset of algal blooms. 06-096 C.M.R. ch. 581, § 6(C).[40] The trophic state is the ability of water to produce algae and other aquatic plants. The trophic state of a body of water is a function of its nutrient content and may be estimated using the Maine Trophic State Index (TSI), which includes measurements of chlorophyll, phosphorus, and Secchi disc transparency. 06-096 C.M.R. ch. 581, § 6(A). An algal bloom is defined as a planktonic growth of algae which causes Secchi disk transparency to be less than 2.0 meters. 06-096 C.M.R. ch. 581, § 6(B).

1) Existing Facilities and Use

The Applicant reports that recreational uses in the Kennebec River valley in the vicinity of the Project include boating, fishing, hiking, hunting, mountain biking, all-terrain vehicle riding, wildlife watching, snowmobiling and more. The Fort Halifax State Historical Site, Easton Mountain Ski Area, Two Rivers Campground, and the Skowhegan Riverwalk are in the vicinity of the Project. Hiking opportunities can be found at Good Will-Hinkley Trails near the west side of the Project behind the L.C. Bates Museum, Hills-to-Sea Trail in Unity, Kennebec River Rail Trail located south of the Project on the Kennebec River, and Skowhegan Riverwalk along the Kennebec River Gorge in Debe Park, Skowhegan.

Recreation within the Project boundary typically includes motorized and non-motorized boating and fishing. Project lands and waters are generally available for public recreational use. Two formal recreation sites are provided at the Project, including the Hinkley Boat Launch on the west side of the Project impoundment, which includes a single lane concrete boat launch and ADA-compliant concrete dock (along with ADA

[40] Although Chapter 581, § 6(C) applies to Class GPA waters and does not expressly mention non-GPA riverine impoundments, the Department, where appropriate, utilizes the analytical framework contained in Chapter 581 to evaluate the trophic state of such non-GPA impoundments. The Department has done so here because, based on the Department's professional expertise and judgement as well as the size and nature of the Project's Class B and C riverine impoundment, the Department has determined that use of the trophic analysis outlined in Chapter 581 is appropriate for evaluating attainment of the designated use of recreation in and on the water for this non-GPA waterbody.

compliant parking for one and parking for three vehicles with boat trailers and five spaces for vehicles without trailers); and the Shawmut Canoe Portage located on the west side of the impoundment, consisting of a take-out area (including parking for eight vehicles) and a put-in area (and parking for five vehicles) and a quarter-mile-long gravel path. Angler access is provided at the take-out and put-in locations.

Two non-project recreational access sites include the Skowhegan Boat Launch, located approximately 11 miles upstream of the dam along Route 2 and the Skowhegan Wayside Picnic Area. The Skowhegan Boat Launch provides access for motorized and non-motorized boat access and for shoreline fishing and has a single-lane concrete boat launch and a parking lot with one paved ADA parking space and a gravel parking area with space for two vehicles with trailers and 3-4 vehicles without trailers. The Skowhegan Wayside Picnic Area is also located on Route 2 and provides informal shoreline fishing access, nine picnic tables, three with grills, and parking for 23 vehicles. Informal recreation sites include two informal, road-side gravel parking pull-off areas along Route 2 that provide angler access to the impoundment from several informal foot trails. The easternmost informal access site along Route 2, south of Skowhegan, can accommodate approximately three vehicles; the westernmost informal access is also on Route 2, south of Skowhegan, and can accommodate 9-10 vehicles. On the east side of the impoundment, a gravel pull-off is located on River Road, approximately .5 miles downstream of the dam with informal access to the shoreline that offers access from several informal foot trails and room for four vehicles and, finally, anglers access the east abutment area of Shawmut Dam from several informal 4x4 vehicle tracks and trails across privately owned lands and via a gated road. This area provides access to a rock ledge area downstream of the dam and the shoreline just below the Project tailrace.

2) Water Quality Data

The Applicant conducted a Trophic State Study in accordance with the Department's Lake Trophic State Sampling Protocol for Hydropower Studies (MDEP 2014) from June through October 2016. Water quality samples were collected in the deepest location upstream of the boat barrier that was identified by bathymetric survey, in water approximately 30 feet deep. The Applicant reports and the Department finds that sample results indicate that the Shawmut impoundment is mesotrophic, with a Trophic State Index value of 43. The range of chlorophyll-*a* (0.0016 mg/L to 0.0090 mg/L, averaging 0.034 mg/L) and total phosphorus (0.011 mg/L to 0.021 mg/L, averaging 0.016 mg/L) values measured in the Shawmut impoundment were found to be at the margin between mesotrophic and eutrophic water. Both phosphorus and chlorophyll-*a* average concentrations measured in the Shawmut impoundment were below the threshold for mesotrophic waters but for one day's measurement (August 9 for total phosphorus,

September 22 for chlorophyll-*a*). Secchi disk transparency measurements ranged from 2.6 to 4.4 meters with an average of 3.8 meters, indicating no nuisance algal blooms were present and supporting a finding that the Shawmut impoundment is mesotrophic.

The Applicant collected recreational use data between June 2016 and May 2017 at each of the Project recreation sites and the informal access areas including the Hinckley boat launch, Shawmut canoe portage take-out and put-in, Skowhegan boat launch, Skowhegan Route 2 wayside picnic area, Route 2 informal fishing access areas, River Road angler access area, and east abutment informal access area. Use was highest in summer (60.9%), followed by fall (23.8%), spring (10.9%), and lowest in winter (4.4%). The most popular recreation site was the Skowhegan Route 2 wayside picnic area, followed by the Skowhegan boat launch, Route 2 west roadside access, Hinckley boat launch, and the canoe portage put-in site. Utilization of the sites was estimated based on parking area capacity, and showed the highest utilization rate occurred at the Skowhegan boat launch, followed by the Hinckley boat launch, both used at approximately 50% of the parking capacity during summer weekends. All other recreation sites were found to have a utilization rate of 15 % or less on average during summer weekends.

The Applicant also conducted a number of studies related to fisheries resources in support of Project relicensing, include a fish assemblage study and a radio-telemetry study

The 2017 radio telemetry study of trout stocked upstream of the Shawmut impoundment provided information on the movements of stocked brown trout in the Shawmut Project area including population dynamics, the movements and behaviors of both newly stocked fish and older-aged fish, and the effects of Project operations on the movement and behaviors of stocked brown trout. This information helped fisheries managers determine the cause of the decline in the brown trout fishery downstream of the Project dam and provided information on fish that drop down from stocking locations in the Skowhegan section of the Kennebec River. The study documented that 40% of hatchery-reared trout and most of the in-river trout remained in the upper impoundment and 52% of the hatchery reared trout moved downstream past the Shawmut Dam soon after release. Of those fish that moved downstream of the Shawmut Dam, most continued further downstream, past the Hydro-Kennebec and Lockwood Dams. Data collected from the trout radio telemetry study suggests that the Shawmut tailwater does not provide a significant fishery for brown trout stocked upstream of the impoundment, limiting the sport fishery for trout to those that remain in the impoundment.

3) Discussion and Findings

The Applicant reports and the Department finds and determines that regional recreational opportunities include hiking, hunting, mountain biking, all-terrain vehicle riding, wildlife watching, snowmobiling and skiing, and that the Shawmut impoundment additionally supports and provides for fishing and both motorized and non-motorized boating uses. The Applicant assessed and the Department finds that the Project's formal recreations sites are in good condition and are lightly used, with other non-Project sites seeing heavier use. The Department finds that there is sufficient capacity and access opportunities to Project waters to meet current and future uses. The Applicant reports and the Department finds and determines that the Shawmut impoundment is mesotrophic, with nutrient levels in the high end of the trophic state guidelines for mesotrophic waters, but that there are no algal blooms present and Secchi disk transparency measurements were greater than 2.0 meters. Secchi disk measurements consistently greater than two meters indicates a low potential for nuisance algal blooms. Therefore, in the Department's professional judgment and consistent with 09-096 C.M.R. ch. 581, the Department concludes that the trophic state of the Shawmut Project impoundment is stable and its waters are suitable for recreational use.

Additionally, the Department finds that resident fish are present in the Project area and that DIFW provides and Project operations support a sport fishery for resident and stocked salmonids and smallmouth bass above and below the Shawmut Dam. Based on the studies made by the Applicant and other information in the record, the quality of the water in the Project area is sufficient to support a sport fishery. Based on the evidence in the record, the Department determines that the Project operations meet the Class B and Class C designated uses of recreation in and on the water, fishing, and navigation.

D. Hydroelectric Power Generation (38 M.R.S. § 465(3)(A), 38 M.R.S. § 465(4)(A))

For this standard, the Applicant must demonstrate that the Project waters are suitable for the designated use of hydroelectric power generation.

1) Existing Generation

The Department finds that the Project operates as a run-of-river generating facility and has a total authorized nameplate generating capacity of 8.650 MW and is capable of producing a gross average energy output of 51,058 megawatt-hours (MWH) of electricity annually. The Applicant states this is equivalent to the energy that would be produced by burning 85,096 barrels of oil or 23,660 tons of coal each year.

2) Energy Utilization

The Project generates renewable power for Maine and the regional power pool administered by ISO New England. Currently, output is sold on the open market through bidding into the New England Power Pool market administered by ISO New England, the non-profit independent system operation for New England. Project power is fed to CMP's transmission system through three General Electric (GE) transformers rated 750 kilovolt-ampere (KVA) 3 phase, 60 hertz; three GE transformers rated 1,250 KVA 3 phase, 60 hertz; and one Westinghouse step-up transformer rated 5,000 KVA, 3 phase, 60 hertz. All transformers are located in CMP's substation, adjacent to but outside the Project boundary.

3) Discussion and Findings

The Applicant proposed to continue the current mode of operations at the Project during the term of a new license, providing a dependable source of energy to the public power grid. This renewable power generation helps to offset reliance on non-renewable fossil fuel sources. Based on the evidence on record, the Department determines that the Project operations meet the Class B and Class C designated use of hydroelectric power generation.

E. Drinking Water Supply (38 M.R.S. § 465(3)(A)), 38 M.R.S. § (465(4)(A))

Class B and Class C standards require that water must be of sufficient quality to be used as drinking water after treatment.

1) Discussion and Findings

The Applicant does not report that Kennebec River waters in the vicinity of the Shawmut Project are used for drinking water. However, as discussed above, water quality data collected for the Trophic State Study in the impoundment and DO downstream of the dam generally indicate that water quality meets State standards and there are no culturally induced algal blooms. The Department, therefore, determines that the Project operations meet the Class B and Class C designated use of drinking water after treatment.

F. Industrial Process or Cooling Water Supply (38 M.R.S. § 465(3)(A)), 38 M.R.S. § 465(4)(A))

Class B and Class C standards require that water must be of sufficient quality to be used as an industrial process and cooling water supply.

1) Discussion and Findings

The Applicant reports and the Department finds that the Kennebec River in the Project area is used by Sappi North America, Inc.'s (Sappi) Somerset Operations mill for process water at approximately the mid-point of the Project impoundment[41] and water quality data collected during the Trophic State Study indicates its suitability for this use. Based on the evidence on record, the Department determines that the waters of the Kennebec River within the Project boundary meet the Class B and Class C designated use of industrial process and cooling water supply.

G. Antidegradation (38 M.R.S. § 464(4)(F))

For this standard, the Applicant must demonstrate that the Project waters maintain existing in-stream water uses occurring on or after November 28, 1975. The Department may approve a WQC pursuant to Section 401 of the CWA if the standards of classification of the water body and the State's antidegradation policy are met, or for a project affecting a water body in which the standards of classification are not met, if the project does not cause or contribute to the failure of the water body to meet the standards of classification. 38 M.R.S. § 464(4)(F)(3).

1) Discussion and Findings

The Department finds that the present Shawmut Hydroelectric Project dam was originally developed for hydroelectric power generation in 1912 and included the dam and 1912 powerhouse. An additional powerhouse was added in 1982 and, in 2008-2009, the pin-supported flashboards were replaced with a 730-foot-long inflatable rubber bladder in three sections, each being 4.46-feet-high when fully inflated. While structures and operations have been modified over time, in-stream uses are generally the same on and after November 1975 and include hydropower generation, recreation in and on the water, including fishing and navigation, and providing a supply of process and cooling water.

With respect to the designated use of the Kennebec River as habitat for fish and other aquatic life and narrative standard as it pertains to fish passage, as explained in Section 4.A.3), above, the Shawmut Dam, as proposed to be operated and with the proposed fish passage, fails to meet State water quality standards. The Department finds the Shawmut Dam and the flow of the river through and over this dam—the dam's discharge—cause and contribute to the failure of the Kennebec River to meet the applicable Class B and C

[41] On March 29, 2021 Pierce Atwood LLP submitted comments on behalf of Sappi North America, Inc. on the WQC application noting, primarily, concern over the economic burden of modifications to the plant's water intake and waste water discharge structures if the Shawmut Dam were removed and it's impoundment were released.

standards of classification. Therefore, the Department finds the Applicant has not satisfied the antidegradation policy of the State and that the Department, pursuant to 38 M.R.S. § 464(4)(F)(3), may not issue a water quality certification for the proposed continued operation of the Shawmut Project.

5. PUBLIC COMMENTS

A. Comments on Application. The Department received written comments on the water quality certification application from Pierce Atwood, LLP on behalf of Sappi North America, Inc. (Sappi), United Steelworkers Local 4-9 on behalf of the membership of 470 United Steelworker members that work at the Sappi Somerset Plant and State Senator Brad Farrin representing Senate District 3. Each of the comments submitted support approval of the water quality certification application in order to maintain the Shawmut impoundment, citing various reasons including; operational impacts and burdens associated with modifying the water intake and wastewater discharge infrastructure at the Sappi plant in Skowhegan and potential regional economic impacts associated with mill closure, and recreational use impacts and property value impacts related to a lower water level. The Department reviewed the comments submitted and notes here that removal of the Shawmut Dam and the associated release of its impoundment is not proposed or considered in the water quality certification application before the Department and the comments do not address the elements of Maine's water quality standards reviewed herein. For that reason, the comments, while appreciated, are not considered in this review.

B. Comments on Draft Order

On DATE, the Department issued a draft Order denying water quality certification for the continued operation of the Project. Comments on the draft order were invited from the Applicant, the state resource agencies, and other interested parties. The deadline for comments was 5:00 P.M. on DATE.

Comments on the draft Order were received from the INTERESTED PARTIES.

Procedural, factual and legal issues raised in the comments received on the draft Order are discussed below.

6. DEPARTMENT CONCLUSIONS

BASED on the above findings and determinations, and on the evidence contained in the record, including the application and supporting documents as well as agency and public comments, the

Department CONCLUDES that the continued operation of the SHAWMUT HYDROELECTRIC PROJECT and its discharge, as described above, will not comply with all applicable State water quality standards. More specifically, the Department CONCLUDES:

A. The proposed operation of the Shawmut Hydroelectric Project will result in the Class B and Class C waters of the Kennebec River being of such a quality that they are suitable for the designated uses of drinking water supply after treatment, fishing, agriculture, recreation in and on the water, individual process and cooling water supply, hydropower generation, and navigation.

B. The proposed operation of the Shawmut Hydroelectric Project, because of the impact of the dam and its discharge on indigenous species of diadromous fish, particularly Atlantic salmon, will result in the Class B and Class C waters within the Project boundary not being of such a quality that they are suitable for the designated use of habitat for fish and other aquatic life. The Applicant has not demonstrated that under its proposed operation the Project will meet the narrative classification standards for Class B and Class C waters of the designated use of habitat for fish and other aquatic life because the dam and its discharge do not allow species of indigenous fish to pass upstream or downstream in a safe, timely, and effective manner. The Applicant has not demonstrated that a fish lift, proposed to be constructed at the Project to provide passage through the dam to upstream habitat, will adequately pass American shad or will pass in a safe, timely and effective manner endangered Atlantic salmon sufficient to support a sustainable natural population necessary to achieve downlisting of the species from endangered to threatened or delisting the species entirely. Further, the Applicant has not demonstrated the fish lift proposed for the facility will pass all species indigenous to the applicable upstream reach of the Kennebec River through or past the Project discharge in a safe, timely and effective manner. Therefore, the Applicant has not demonstrated that the Project discharge will not cause adverse impact to aquatic life pursuant to the standards set forth in 38 M.R.S. § 465(3)(A) and 38 M.R.S. § 465(3)(C).

C. For the reasons stated in Paragraph B and herein, the proposed operation of the Shawmut Hydroelectric Project will not satisfy the requirements of 38 M.R.S. § 465(3)(A). The Applicant has not demonstrated that the habitat of Class B waters downstream of the Project can be characterized as unimpaired because the Project dam and its discharge currently block safe, timely, and effective upstream passage of indigenous diadromous fish. The Applicant has not demonstrated that the proposed fish lift is adequate to meet performance standards necessary to restore those species to their historic spawning and rearing habitats upstream in order to support restoration of sustainable populations. Additionally, the Applicant has not demonstrated that current and proposed downstream passage facilities and measures are sufficient to meet

necessary performance standards to sustain Atlantic salmon populations by passing these fish downstream in a safe, timely, and effective manner. Thus, the Class B waters downstream of the Project will have diminished capacity to support aquatic life due to the dam and its discharge.

D. The Applicant has provided adequate evidence that DO concentrations in the Shawmut impoundment meet or exceed 5 of parts per million and so attains Class C numeric water quality standards for DO in that portion of the impoundment so classified. The Department also concludes that DO in the Shawmut impoundment attains Class B numeric water quality standards for all but one sample, collected on June 30, 2016 in unstratified impoundment waters. Further, the Department determines that DO concentration in the Kennebec River downstream of the Project Dam meets or exceeds 7 parts per million except for three dates in August during nighttime hours, rebounding during daylight hours to levels greater than 7 parts per million, and that the Project did not cause or contribute to the DO excursions measured in the vicinity of the Project but the excursions were the result of impact from upstream discharges and/or from natural nighttime plant respiration; therefore, the water in the Shawmut impoundment is determined to be acceptable and not a basis for denying the WQC. 38 M.R.S. 464(4)(F)(3).

7. DECISION AND ORDER

THEREFORE, the Department DENIES the water quality certification of the Applicant BROOKFIELD WHITE PINE HYDRO LLC pursuant to Section 401 (a) of the Clean Water Act because there is a reasonable assurance that the continued operation of the SHAWMUT HYDROELECTRIC PROJECT, as described above, will violate applicable water quality standards.

DONE AND DATED AT AUGUSTA, MAINE, THIS _____ DAY OF _____, 2021.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:_____

For: Melanie Loyzim, Commissioner

PLEASE NOTE THE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.

KH/L19751HN/ATS#86474

DEP INFORMATION SHEET

Appealing a Department Licensing Decision

Dated: August 2021 **Contact: (207) 314-1458**

SUMMARY

This document provides information regarding a person's rights and obligations in filing an administrative or judicial appeal of a licensing decision made by the Department of Environmental Protection's (DEP) Commissioner.

Except as provided below, there are two methods available to an aggrieved person seeking to appeal a licensing decision made by the 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.

I. ADMINISTRATIVE APPEALS TO THE BOARD

LEGAL REFERENCES

A person filing an appeal with the Board should review Organization and Powers, 38 M.R.S. §§ 341-D(4) and 346; the Maine Administrative Procedure Act, 5 M.R.S. § 11001; and the DEP's *Rule 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

Not more than 30 days following the filing of a license decision by the Commissioner with the Board, an aggrieved person may appeal to the Board for review of the Commissioner's decision. The filing of an appeal with the Board, in care of the Board Clerk, is complete when the Board receives the submission by the close of business on the due date (5:00 p.m. on the 30th calendar day from which the Commissioner's decision was filed with the Board, as determined by the received time stamp on the document or electronic mail). Appeals filed after 5:00 p.m. on the 30th calendar day from which the Commissioner's decision was filed with the Board will be dismissed as untimely, absent a showing of good cause.

HOW TO SUBMIT AN APPEAL TO THE BOARD

An appeal to the Board may be submitted via postal mail or electronic mail and must contain all signatures and required appeal contents. An electronic filing must contain the scanned original signature of the appellant(s). The appeal documents must be sent to the following address.

Chair, Board of Environmental Protection

c/o Board Clerk

17 State House Station

Augusta, ME 04333-0017

ruth.a.burke@maine.gov

The DEP may also request the submittal of the original signed paper appeal documents when the appeal is filed electronically. The risk of material not being received in a timely manner is on the sender, regardless of the method used.

At the time an appeal is filed with the Board, the appellant must send a copy of the appeal to: (1) the Commissioner of the DEP (Maine Department of Environmental Protection, 17 State House Station, Augusta, Maine 04333-0017); (2) the licensee; and if a hearing was held on the application, (3) any intervenors in that hearing proceeding. **Please contact the DEP at 207-287-7688 with questions or for contact information regarding a specific licensing decision.**

REQUIRED APPEAL CONTENTS

A complete appeal 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 bring the 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 of 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 criteria 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 to changes in specific license 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 hearing must be filed as part of the notice of appeal, and it must include an offer of proof regarding the testimony and other evidence that would be presented at the hearing. The offer of proof must consist of a statement of the substance of the evidence, its relevance to the issues on appeal, and whether any witnesses would testify. 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 supplemental evidence must be submitted with the appeal. The Board may allow new or additional evidence to be considered in an appeal only under limited circumstances. The proposed supplemental 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. Requirements for supplemental evidence are set forth 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 accessible by the DEP. Upon request, the DEP will make application materials available to review and photocopy during normal working hours. There may be 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 the appeal.* DEP staff will provide this information upon 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 licensee may proceed with a project pending the outcome of an appeal, but the licensee 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 acknowledge receipt of an appeal, and it will provide the name of the DEP project manager assigned to the specific appeal. The notice of appeal, any materials admitted by the Board as supplementary evidence, any materials admitted in response to the appeal, relevant excerpts from the DEP's administrative record for the application, and the DEP staff's recommendation, in the form of a proposed Board Order, will be provided to Board members. The appellant, the licensee, and parties of record are notified in advance of the date set for the Board's consideration of an appeal or request for a hearing. The appellant and the licensee will have an opportunity to address the Board at the Board meeting. The Board will decide whether to hold a hearing on appeal when one is requested before deciding the merits of the appeal. The Board's decision on appeal may be to affirm all or part, affirm with conditions, order a hearing to be held as expeditiously as possible, reverse all or part of the decision of the Commissioner, or remand the matter to the Commissioner for further proceedings. The Board will notify the appellant, the licensee, and parties of record of its decision on appeal.

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 Clerk at 207-287-2811 or the Board Executive Analyst at 207-314-1458 bill.hinkel@maine.gov, or for judicial appeals contact the court clerk's office in which the appeal will be filed.

Note: This information sheet, in conjunction with a review of the statutory and regulatory provisions referred to herein, is provided to help a person to understand their rights and obligations in filing an administrative or judicial appeal. 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.